



United Nations Development Programme
Government of Madagascar
Global Environment Facility

PROJECT DOCUMENT

English version

A Landscape Approach to conserving and managing threatened Biodiversity in Madagascar with a focus on the Atsimo Andrefana Spiny and Dry Forest Landscape

Link to UNDP Strategic Plan (2014-2017)

Primary Outcome: (1.3) Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste [\[Link\]](#)

Secondary Outcome: [From *UNDP's Biodiversity and Ecosystems Global Framework 2012-2020*:] (*Signature Programme #1*): Integrating biodiversity and ecosystem management into development planning and production sector activities to safeguard biodiversity and maintain ecosystem services that sustain human wellbeing. [\[Link\]](#)

UNDAF 2015-2019 Outcome(s):

Outcome #1) Vulnerable populations, living in the project intervention zones, have improved opportunities to access to income generating activities and jobs, improve their resilience, contributing to inclusive and equitable growth for sustainable development.

Expected CP 2015-2019 Outcome(s): [derived from UNDAF's and stated above]

CPAP component 2) Sustainable and inclusive development

Expected CPAP Outputs:

Output #4) Structural transformation, the strengthening of sustainable productive capacities and the good environmental governance are effective and help create jobs and livelihoods for the benefit of the poor or vulnerable populations, especially women and the youth.

[Project Objective]: To protect biodiversity within the Atsimo Andrefana Landscape from current and emerging threats, and to use it sustainably, by developing a collaborative governance framework for sectoral mainstreaming and devolved natural resource management.

[Project Outcomes]: (1) Landscape level planning and economic analysis support the mainstreaming of biodiversity into management of the Atsimo Andrefana Landscape, covering three districts and totalling ~2.4 million; (2) Community-based production and resource use activities incorporate the conservation and sustainable use of biodiversity into management practice including through the establishment and operationalisation of Community Conservation Areas.

Implementing Partner: Ministry of Ecology, the Environment, the Sea and Forests (MEEMF) in collaboration with 'Fondation TANY MEVA' and 'SAGE'

Brief Description

The project is designed to strengthen conservation across the multi-use Atsimo-Andrefana Spiny and Dry Forest Landscape, straddling an area of 2.4 million hectares. The landscape harbours spiny thickets and dry forests that rank amongst the most distinctive, yet least protected, ecosystems in Madagascar. It is rich in biodiversity, but faces accelerating anthropogenic pressures. Historically, land conversion for subsistence agriculture has comprised the major threat. However, large-scale projects such as road construction, irrigation schemes, oil & gas developments and mining activities present a future threat- potentially opening the landscape to large scale commercial agriculture (e.g. cotton farming), open pit mining and other developments which may also lead to an influx of economic migrants. These emerging threats are not unique to the target landscape. They are likely to prevail to a greater or lesser extent across large swathes of the country. Government lacks an effective management framework for ensuring that such development does not come at unacceptable price in terms of biodiversity loss. There is an urgent unmet need to mainstream biodiversity management into development and to influence the trajectory of development, to contain pressures in the most ecologically sensitive areas, including protected areas (PAs) and their adjacent areas, and important ecological corridors. The project will address this need through a two-pronged approach. First, it will strengthen resource use governance at the landscape level by developing and implementing a Landscape Level Land-Use Plan that explicitly incorporates biodiversity conservation needs and prescribes land uses with a view to mitigating threats—the BD LUP. It will work with national and sub-national level stakeholders to engage economic sectors, and negotiate the application of biodiversity conservation and sustainable use measures, and bring about necessary policy change. Second, the project will work with local communities to strengthen conservation on communal lands, addressing existing threats to biodiversity linked to artisanal livelihoods and subsistence activities. The project will work with communities to establish and operationalise multi-use ‘Community Conservation Areas’ (CCAs), including by putting in place measures to ensure the sustainable utilisation of wild resources and conservation-friendly farming. In order to secure the buy-in from local communities, the project will support sustainable livelihood activities that effectively generate socio-economic benefits and build their capacity to achieve development goals.

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Atlas Business Unit:	MAD10
Atlas Award #:	00080514
Atlas Output Project #:	00090153
PIMS # (UNDP-GEF):	5263
Start date:	Upon Signature
End Date:	+ 5 years
Mgt Arrangements:	NIM
LPAC date:	[date]

<i>Total resources required (total project funds) [A + B]</i>		\$49,142,272
[A]	Total resources allocated to this award	\$5,329,452
	- Regular resources (UNDP TRAC)	\$0
	- GEF	\$5,329,452
[B]	Other (partner managed resources):	\$43,812,820
	- Government	\$38,000,000
	- Bilateral / multilateral donors	\$1,100,000
	- NGOs	\$3,781,673
	- Private Sector / Parastatals	931,147

Agreed by (Government): _____

Date

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Date

Agreed by (UNDP): _____

Date

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List of Acronyms and Abbreviations

ADER	: Development Agency for Rural Electrification (Agence de Développement de l'Electrification Rurale)
AfDB	: African Development Bank
BCMM	: Madagascar Mining Registry Office (Bureau Cadastre Minier de Madagascar)
BD LUP	: Biodiversity and Land Use Planning
CBD	: Convention on Biologic Diversity
CBO	: Community Based Organization
CCA	: Community Conservation Areas
CFM	: Forest Management Contract Agreements (Gestion Contractualisé des Forets)
CI	: Conservation International
COAP	: Code des Aires Protégées (Protected Area Code)
COBA	: Community based organization (Communauté de Base)
CPAP	: Country Programme Action Plan
CSO	: Civil Society Organisation
DIDE	: Directorate in charge of Mainstreaming Environmental Measures (DIDE)
DREEMF/ RDEESF	: Regional Directorate for Environment, Ecology, Sea and Forest (Direction Régionale de l'Ecologie, l'Environnement, la Mer et les Forets)
DTPA	: Directorate in charge of Terrestrial Protected Areas
DTPM	: Directorate in charge of Land-Use Planning and Management (DAGT)
EAP	: Environmental Action Plan
SEA	: Strategic Environment Assessment
EIA	: Environment Impact Assessment
EP	: Environment Program
ESSA	: Ecole Supérieure des Sciences Agronomiques (High School for Agronomic Sciences)
FAMARI	: Fati-drà Miaro ny Ala sy ny Riake (Local Association for protection of the Forest and Marine environment)
FDI	: Foreign Direct Investment
FIMAMI	: Fikambanana Miaro ny Ala Mikea (Association to protect Mikea Forest)
GDP	: Gross Domestic Product
GEF	: Global Environment Facility
GELOSE	: Gestion Locale Sécurisée (« Secured Local Management of natural resources»)
HDI	: Human Development Index
ICCA	: Indigenous Community Conservation Areas
ICMM	: International Council on Mining and Metals
IUCN	: International Union for Conservation of Nature
KBA	: Key Biodiversity Area
MECIE	: Decree regulating Environment Measures within Productive Sectors (Miser end Compatibility des Investissements avec l'Environnement)
MEESF/ MEEMF	: Ministry for Environment, the Ecology, the Sea and Forests (Ministère de l'Ecologie, de l'Environnement, de la Mer et des Forets)
MEPATE	: Ministère d'Etat en charge des projets présidentiels de l'aménagement du territoire et de l'équipement (Ministry in charge of presidential projects, territory planning and equipment)
MINAGRI	: Ministry of Agriculture
MGA	: Malgache Ariary (national currency)
MNP	: Madagascar National Parks
MPA	: Marine Protected Areas
MRPA	: Managed Resources in Protected Areas
NEB	: National Environment Board (ONE)
NEP	: National Environment Policy/Program

NGO	: Non-Governmental Organisation
NR	: National Road
NPA	: New Protected Area
NPC	: National Project Coordinator
NPD	: National Project Director
NRM	: Natural Resources Management
NSSMB	: National Strategy for the Sustainable Management of Biodiversity
NTFP	: Non Timber Forest Product
OMNIS	: Office Regulating National Mining and Strategic Resources (Office des Mines Nationales et des Industries Stratégiques)
ORBE	: Observatory for Regional Biodiversity and Ecosystems
SAPM	: Protected Areas System of Madagascar
PRLUBC	: Plan of Recommendations for Land-Use with Biodiversity Considerations
PA	: Protected Area
PAG-T	: Community Homeland Management Plan
PCD	: Municipal Development Plan (Plan Communal de Développement)
PCU	: Project Coordinating Unit /Project Coordinator
PEDD	: Environment Program for Sustainable Development (Programme Environnemental pour de Développement Durable)
PIC	: Pole for Integrated Growth (Pôle Intégré de Croissance)
PoWPA	: Programme of Work of Protected Area
PPG	: Project Preparation Grant (Phase de Développement du Projet)
PRBM	: Project to rehabilitate the Bas Mangoky infrastructure (Projet de Réhabilitation de Bas Mangoky)
PRIASO	: Project to rehabilitate agricultural infrastructure in the South West (Projet de Réhabilitation des Infrastructures Agricoles dans le Sud-Ouest)
PRODOC	: Project Document
QMM	: Quebec Iron & Titanium of Canada and Madagascar Minerals, acronym for the joint venture
RCTP	: Regional Committee for Territory Planning
RDP	: Region Development Plan
REDD	: Reducing Emissions from Deforestation and forest Degradation
SAGE	: Support Agency for Environment Management (Service d'Appui à la Gestion de l'Environnement)
SC	: Steering Committee
SMNR	: Sustainable Management of Natural Resources
SNAT	: National Land-Use Plan (Schema National d'Aménagement du Territoire)
SNOST	: National Plan for Sectorial and Transversal Land-Use Planning Guidelines (Schéma National d'Orientation Sectoriel et Transversal)
SRAT	: Regional Land-Use Plan (Schema National d'Aménagement du Territoire)
TDG	: Resource Management Transfer Contract (Transfert de Gestion- TDG/Transfert de Gestion de Ressources Naturelles -TGRN)
CU FEM	: Coordination Unit for Global Environment Facility (Unité de Coordination du Fond pour l'Environnement Mondial –UC)
UNDAF	: United Nations Development Assistance Framework
UNDP	: United Nation Program for Development
WCS	: Wildlife Conservation Society
WHH	: Welt Hungerhilfe
WWF	: World Wild Fund

1 Situation Analysis

1.1 Introduction

1. This project is designed to build national conservation management capacities for the conservation and sustainable use in Madagascar, with a focus on the dry and spiny forest landscape of the Atsimo Andrefana Region, located in southwestern part of the island and which harbour unique spiny thickets and dry forests, and within them a number of globally important species. Although spiny and dry forests are considered as one of the most distinctive ecosystems of Madagascar, their landscape still remains among the least protected in the country. Natural resources and biodiversity in the Region are subject to increasing and emerging pressures, which are mostly of anthropogenic origin.
2. Historically, human activity has already resulted in the massive loss of the unique biodiversity that characterises Madagascar and led to substantial ecosystem degradation. Across the country, the average forest cover makes up only 10% of what it used to be 1,500 years ago, which is when human presence started to have a more marked footprint on the island.¹ Of note, the pace of forest loss and degradation has accelerated over the last decades and it has today reached a critical level. In the Atsimo Andrefana Region, land conversion for the purpose of subsistence agriculture has until now posed the most significant threat to biodiversity and ecosystem services. This is however changing as new economic trends are taking shape.
3. New threats to ecosystems and biodiversity are currently emerging due to large-scale extractive and agriculture investments, such as oil and mining and commercial agriculture projects. The Atsimo Andrefana Region holds e.g. the highest number of environmental permits granted to mining and oil & gas companies in the country. The Marombe district harbours one of the largest commercial agricultural projects in the country, currently being revived with new investments in irrigation and mechanisation. With the current levels of underdevelopment and social deprivation that characterises Madagascar, these new investments are expected to generate jobs and revenues, and to boost the uptake of new technologies and techniques. At the same time, without adequate support to counter the actual and potential disruptive impacts of these new investments on the environment, they could cause a rapid and possibly irreversible degradation of Atsimo Andrefana's natural assets. Yet, for the positive socio-economic gains to realise, an adequate negotiation of trade-offs needs to take place, along with the introduction of mainstreaming measures that will help decision-makers and the population in general avoid and manage the negative impact. Moreover, these economic and environmental emerging trends are not exclusive to the target landscape, but they have also been increasingly experienced in other parts of the country. Hence, positive changes that the project may bring about could also apply to other regions.
4. Currently, the Government indicates that it does not have an effective framework for the protection and management of Atsimo Andrefana's landscapes. Also, in spite of expected changes in the economic profile of the Region, it will still take a while before local communities are able to fully participate in these changes and reap benefits. Subsistence agriculture and extraction of local natural products are likely to remain the basis of their livelihoods, which is also likely to have an impact on the integrity of ecosystems, unless land-use can be more appropriately governed. There are very few incentives in place for local communities to changing harmful production practices and adopt more sustainable ones.

¹ Goodman, 2008; Humbert, 1927.

5. The project is designed to strengthen conservation management capabilities across the multi-use Atsimo Andrefana Spiny and Dry Forest Landscape, straddling an area of some 2.4 million hectares. There is an urgent unmet need to mainstream biodiversity management into development and to influence the trajectory of development, to contain pressures in the most ecologically sensitive areas, including protected areas (PAs), their adjacent zones and important ecological corridors.
6. The project will address this need through a two-pronged approach: First, it will strengthen resource use governance at the landscape level by developing and implementing a Landscape Level Land-Use Plan, in support of the Regional Plan, that explicitly incorporates biodiversity conservation needs and prescribes land uses with a view to mitigating threats—the BD LUP. It will collaborate with stakeholders from the national and regional levels so as to involve development sectors, as well as the private sector and negotiate the implementation of environmental and biodiversity conservation measures, with the aim of mitigating the impacts of large-scale investments on fragile ecosystems. Second, the project will work with local communities to strengthen conservation on communal lands—addressing existing threats to biodiversity linked to artisanal livelihoods and subsistence activities. It will also address the exclusion of communities from decision-making processes relating to large-scale economic projects by raising their awareness on their right to public consultation. The project will work with communities to establish multi-use ‘Community Conservation Areas’ (CCAs), put in place the necessary institutional framework for management, and install measures to ensure the sustainable utilisation of wild resources, while reinforcing local participation in decision-making processes.

1.2 Development and Environmental Management Context

1.2.1 National development context

Key development data

7. Madagascar is a vast island located southeast of Africa. With a surface area of 592,000Km², it is the fourth largest island in the world. The country ranks among the poorest of the world when it comes to income per capita (USD 950 per annum). With a population of 21 million (two thirds of which live in rural areas), it has low adult literacy rates (64%) and high child mortality (61/1,000 live births). In spite of a wealth of natural resources, the economic and social development of the Malagasy population remains low. With a Human Development Index of 0.480, it ranks 151st out of 185 countries.²
8. Poverty is widespread. Seventy-one point five percent (71.5%) of the Malagasy population lives under the poverty line, including 52% under the extreme poverty line. Twenty-eight percent (28%) are affected by food insecurity. The poverty rates reach close to 80% or more in nine (9) out of the country’s twenty-two (22) regions. The most affected Regions are Androy and Atsimo Andrefana, with rates of poverty prevalence respectively estimated at 97% and 93%. Such large social, economic, and regional disparities pose a risk to the stability and unity of the country as a whole. The national economy essentially relies on the primary sector (agriculture, but also forestry and fishing), which employs 80% of the active population, but accounts only for approximately 25% of the GDP.³
9. The country is currently recovering from a long political crisis that formally ended in 2013, but which had a profound negative impact on the economy. Low rates of economic growth for the past years five also

² (1) Income per capita is GNI per capita, PPP (current international \$), from WB Data 2011; (2) percentage of urban/rural population (*ibid.*); (3) literacy rate, adult total (% of people ages 15 and above) (*ibid.*); (4) mortality rate, under-5 (per 1,000 live births) is from WB Data 2010; (5) HDI is from UNDP HDR 2012.

³ Madagascar’s National Statistics Institute (INSTAT), 2013. Madagascar Millennium Development Goals National Monitoring Survey.

meant that the poverty and deprivation continued to be widespread and that the government has been struggling to provide vulnerable groups with generalized access to basic social services, income generation, or jobs, extreme poverty and social, economic, and regional disparities were exacerbated. Social sectors, such as health and education, have been and continue to be heavily dependent on external aid. (See more about this topic in Annex 5-D).

10. Although the context in the past years was not favourable to investments, requests for lands for agribusiness development purposes were maintained and some permits were issued to foreign companies.⁴ In the same way, emerging industries of the oil and gas sectors, as well as industrial mining are expected to develop rapidly in the next few years. Attracting investments in these sectors is at the heart of government's development policies. It is estimated that the mining sector currently generates approximately 15% of the GDP against less than 1% in 2010.⁵ Although oil and gas developments are mostly at the exploration phase, the launching the production phases for one or two extractive projects could be sufficient to trigger an economic boom in the Malagasy economy. The Oil Code dates back to 1996 and is largely considered as outdated, although a revision is currently being undertaken.

The country's natural endowment and recent trends

11. Madagascar constitutes one of the world's most important storehouses of biodiversity. The country is one the seventeen "Megadiverse States", harbouring up to three quarters of the World's estimated species. Madagascar and its neighbouring island groups are considered one of Conservation International's 34 Conservation hotspots, housing an astounding total of 8 plant families, 4 bird families, and 5 primate families that are found nowhere else on Earth. Moreover, Madagascar shelters 4 of WWF's Global 200 terrestrial ecoregions (forests and shrub lands; dry deciduous forest, spiny thicket and mangroves) and 1 freshwater ecoregion. The known species count includes 210 species for mammals (98% endemic), 310 species for the avifauna (60% endemic), 630 species for hepetafauna (98% endemic), 164 species for freshwater fish (60% endemic), and 13,700 species for higher plants (>90% endemic). (For a related discussion on **Madagascar's biodiversity endowment**, refer to **Annex 5**, section **B**, on '*Natural Assets and recent trends in NRM*', and a sub-section **under C** on '*The Biodiversity of global significance in Atsimo Andrefana*')
12. The natural endowment of Madagascar in terms of natural habitats is the first line of economic resources used by its population, constituting 49% of the country's total wealth.⁶ This includes both the diversity of ecosystems and species, but also valuable assets generated by ecosystem services. It is estimated that protected areas alone provide water services to at least 430,000 ha of irrigated perimeters and potable water to 17 major towns in Madagascar.⁷ Biodiversity rich land- and seascapes equally attracts tourism to the country. It is estimated e.g. that 70% of the tourists who come to Madagascar visit at least one Protected Area. Tourism in turn generates jobs and help the country earn hard currency, even though the number of foreign visitors remains limited, when compared with those of other Indian Ocean countries.
13. Another aspect of Madagascar's natural capital is its geology, which from many accounts is very promising with respect to metals and minerals. Historically, mining has always had a role to play in the economy, where the focus was on gold mining and gem stones mainly. Numerous deposits of commercially interesting minerals, as well as petroleum and gas, were either confirmed or newly discovered. Some are expected to enter into production phase in the next few years.

⁴ Official figures on requests for land lease are however not available.

⁵ Banque Mondiale (2010) Opportunités et défis pour une croissance inclusive et résiliente, Ch. 8 Le secteur minier.

⁶ Country Environmental Assessment (CEA), World Bank (2013).

⁷ Ibid.

14. The past governments of Madagascar have all placed mining at the heart of their strategic vision for development. Although the recent launching of the Ilimite Project at Fort Dauphin (also known as “QMM”) and the Ambatovy megaproject denote a clear change in scale. They represent a turning point in the country's development model.
15. **Refer to Annex 5 for more details on:**
- The consequences of the political crisis (section [A](#))
 - Natural assets and recent trends in NRM (section [B](#))
 - The regional development context (section [C](#))
 - Emerging sectors: mining, oil, and large scale commercial agriculture (section [D](#))



Fig1



Fig2

Figure 1: Lemur catta, emblematic lemur species of the region of Atsimo Andrefana

Figure 2: Dry spiny forest, Atsimo Andrefana, Madagascar

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1.2.2 Threats to Biodiversity and Drivers of Ecosystem Change

16. In this section, the general threats to biodiversity in Madagascar and their drivers are discussed. For an analysis of threats to and impacts to biodiversity that are **specific to the target landscape Atsimo Andrefana**, refer to [Annex 5](#), section [E](#), with focus on:
- Land use changes and habitat loss
 - Loss of high value species
 - Emerging sectors: potential threats, examples
 - Climate change
 - Tourism sector
 - The ‘park-edge’ effect
 - Dune shifting

Direct Threats

17. Overall, the different terrestrial and marine landscapes of Madagascar are faced with multiple anthropogenic threats. Under the typology of the Millennium Ecosystem Assessment (MEA, 2003), there are five groups of threats that endanger biodiversity survival: (i) changes in land use, including habitat transformation; (ii) irrational use (or over-exploitation) of biological resources; (iii) the impact of invasive alien species; (iv) pollution; and (v) climate change. These threats impact biodiversity either at the level of ecosystems or species, or both.
18. **Land-use / habitat change.** Currently, the most significant threat to Madagascar's biodiversity is associated with changes in land use, i.e. transformations made to the natural habitats of animals and plants.
19. In forest ecosystems, land use change often takes the form of deforestation, which is mainly associated with slash-and-burn subsistence farming, commercial production of maize, logging to produce fuel wood and timber, as well as hunting and poaching. Deforestation may also be linked to land clearance for the

establishment of roads, mining sites and human settlements. In the medium and long term, deforestation leads to significant habitat loss and gradual fragmentation of terrestrial landscapes.

20. When clearing for the establishment of croplands, local farmers practice slash-and-burn farming and shifting cultivation and generally start by clearing the forest cover in places located far from inhabited areas. These practices are very traditional and rudimentary. Although they may well have been sustainable in the historical past, today they have become unsustainable due to demographic pressure and poverty. The drivers behind the persistence of unsustainable agricultural practices include: limited access to both knowledge on improved farming techniques and to rural credit, as well as outdated land tenure practices.
21. More than 90% of the island's primary forests have already been lost or degraded, with intensified rates of conversion over the past 50 years, culminating in large-scale deforestation.⁸ According to the Global Forest Watch, the estimated surface area of Madagascar's forest cover in the year 2000 amounted to 17 million hectares. Between 2001 and 2013, 1,616,374 hectares of this cover was cleared.⁹ The cleared area only over a 3-year period corresponds to almost 10% of previously remaining forests. This is significant, especially in light of the fact that large parts of the country's biodiversity is forest-dependent. When complex forest ecosystems are degraded beyond a certain threshold, their inter-dependent ecological functions collapse. At scale, this can trigger loss of endemic species, or an increased threat level to them, due to habitat loss. Restoring forests is both very costly and, in the case of Madagascar, technically difficult to carry out.
22. **Bushfires** also contribute to clearing and degrading forests and related ecosystems, especially in the western region of the country where rainfall rates are low. Fires are linked to slash-and-burn farming and charcoal production further aggravate degradation.
23. **The over-exploitation of biological resources** exercises a strong pressure on woody, fauna, and reef resources. Populations of specific species suffer heavy losses that sometimes lead to their extinction at the local level. This also leads to overall depletion of ecosystem resources. Species with high commercial value are particularly vulnerable to exploitation, which is often illicit. The species affected by irrational use are *palissandre* and rosewood, lemurs, amphibians and reptiles, and a long list of halieutic resources.¹⁰ The exploitation of turtles as well as lemurs has strongly increased in recent years, probably in relation to the progressive lifting of taboos prohibiting their hunting as game, along with other factors such as food insecurity and lax controls.
24. **Invasive alien species (IAS)** have tended to be overlooked in Madagascar but their impacts can be quite severe and highly persistent. In natural forests, IAS may become established as a result of partial forest fragmentation or logging. An example includes the scrubby tree *Ziziphus mauritania* and the flowering plant *Lantana camara*, both of which have severely hindered natural regeneration and led to major ecological imbalance in forest areas in the western part of Madagascar. Selective logging conducted 50 and 150 years ago have led to persistent changes caused by alien invasive plants¹¹ and can have long-term impacts on lemur population densities.¹² IAS have also had significant impacts in freshwater ecosystems and could even threaten some of the country's unique freshwater species. The parthenogenic crayfish, *Procambarus* sp. ('Marmokrebs') has recently appeared in Madagascar and is known to be highly invasive elsewhere in the world. The exact impacts are still to be determined.¹³

⁸ Cinquante années de déforestation et de fragmentation forestière à Madagascar. Conservation environnementale (Harper et al. (2007).

⁹ www.globalforestwatch.org/country/MDG

¹⁰ Madagascar: le commerce illégal de bois de rose continue (Madagascar: illegal trade of rosewood continues), IRIN(2012) and Activités de pêche non signalées, population affamée et troubles politiques : la recette pour une crise d'insécurité alimentaire à Madagascar ? (Menach et al. (2011) in Politique marine.

¹¹ Brown, K.A. & Gurevitch, J. (2004). Long-term impacts of logging on forest diversity in Madagascar. PNAS.

¹² http://icte.bio.sunysb.edu/pdf_files/whiteetal1995.pdf.

¹³ See: <http://www.springerlink.com/content/w4635m7327471764/>.

25. **Pollution.** Madagascar remains for the most part a rural country. However, the country seems to be entering a new phase of development that will lead to the development of infrastructure and industry and possibly also the sprawling of urban centres. In such scenario, loss of the natural environment and pollution could become significantly more important. Currently, the tools being employed to measure and control these impacts require strengthening.
26. **Climate change.** Natural climate change during the Pleistocene has been enormously influential in shaping patterns of Malagasy diversity and endemism. Hence, one may reasonably anticipate that there is considerable intrinsic resilience within Madagascar’s biodiversity, even though the predicted rates of climate change in the coming years are almost certainly unprecedented. Likely impacts climate change on biodiversity will include: (i) a break in ecosystem resilience, e.g. of forest blocks, now subject to a different fire, rainfall or temperature regime, phenomena that will affect fragmented ecosystems more strongly than the less fragmented ones, which could then play a *refugia* role; (ii) changes in species’ ranges, as climate changes locally and certain species cannot adapt, possibly leading some to extinction; and (iv) and unforeseen proliferation of invasive species, pathogens or vectors that can be attributed to sudden or extreme changes in climatic variables.¹⁴

Emerging sectors: potential threats and drivers

27. The profile of threats affecting biodiversity at the landscape level is changing. This is due to the rising importance of mining, oil, and gas development, as well as agribusiness. These sectors are also likely to attract migration and the establishment of informal settlements, generating a number of **secondary impacts**. These are often difficult to manage with tools designed to directly regulate the industry and its activities. In addition to being negatively impacted by the scale of infrastructure developments and other localised inevitable impacts, if un-managed, cumulative and secondary impacts persist unabated, biodiversity could be deeply and irreversibly affected. Some damages are already visible and will become even more so in the future.
28. **Mining and oil production.** The main direct threats resulting from mining are manifested in different forms. The most tangible is the clearing of forests, soil extraction, and relocation of large masses of soil, plus construction of related infrastructures such as feeder roads, processing plants, etc. These works are large-scale and will alter the landscape profile and cause habitat degradation and fragmentation. Works at such scale will unavoidably affect the local environment in significant ways.
29. “Valuing natural resources”, including minerals, features among country’s strategic choices for future development (see e.g. the new [National Development Plan](#) (2015-2019), analysed further down). However, only under ideal conditions is mining beneficial to a country or to the local population in the long term. The experience from a swath of developing countries undergoing an “extractive boom” show that it rarely results in equitable benefits for the host region, or country, for at least two reasons: (i) the mining methods are generally chosen in the best interests of the operator, without consistently applying the measures foreseen in the ‘**mitigation hierarchy**’ for minimising environmental harm¹⁵; and (ii) the trade-offs or compromises negotiated for balancing the interests of biodiversity or local communities on the one hand, and of extractive sector operators on the other, are not always equitable – they are often at the expense of the local population’s long-term benefits, including those derived from ecosystems services. This last issue is linked to the poor negotiation capacity of the local administration, when faced with experts from foreign companies at the negotiating table, where decisions on trade-offs and environmental mitigation measures are made. At this current stage, the mitigation hierarchy is not being systematically applied in Atsimo Andrefana with respect to mining projects throughout the projects’

¹⁴ Deuxième communication nationale to the UNFCCC, MINENVEF (2010).

¹⁵ See more on the Mitigation Hierarchy in Box 2.

cycle. These projects are beginning to become more widespread in the region. (See e.g. Figure 5 and Box 5 in Annex 5 for more details.)

30. Indirect impacts are also frequently overlooked although they are not minor. For instance, the air and water systems may be at risk of pollution, which can very quickly get out of hand due to the fluid nature of these environments. Also, new and poorly controlled agglomerations and population settlements around new infrastructures may pose threats. In addition, the loss of certain species and widespread ecological disturbances may prove to be irreversible, which is at times difficult to foresee in the planning phase of extractive projects, when key 'go ahead' permits are issues.
31. Furthermore, in the case of Atsimo Andrefana, small mining production are extremely abundant and scattered. They have also historically been poorly controlled. This makes it especially difficult to monitor the cumulative sectoral impact. Moreover, small mines tend to enable illicit exploitation that violates existing regulations.
32. **Commercial agriculture.** Some negative impacts of commercial agriculture development are associated with competing land uses, in addition to the use of pesticides. Market incentives drive populations to find additional farm land. Forest soils are some of the most sought lands due to their high fertility. The resulting land conversion encroaches on the forest cover, pushing back the forest edge. In addition, pesticide use is extremely common in commercial farming—mainly in mono-crop plantations, as they are more vulnerable to pests. The products most commonly used to this end in Madagascar are DDT-based products¹⁶, even though DDT is known for being highly harmful to natural living organisms that are key parts of the ecosystems. DDT use is banned in Northern countries and many African countries, but not yet fully in Madagascar.

1.2.3 Environmental Management in Madagascar

Institutional framework for mainstreaming environment management in landscape governance

33. The government of Madagascar is making efforts to promote environmental considerations within other development planning sectors and through the decentralized territorial authorities and services. The **Ministry of Environment, Ecology, Sea and Forest** (MEESF or MEEMF, to use the French acronym) is the main government body responsible for the management of the environment and renewable natural resources. As an important line ministry, beyond its environmental protection mission, MEEMF is also tasked with mainstreaming the environmental measures within development policies and ensuring that development investments are compatible with environmental sustainability.
34. Beyond these basic objectives, its role is to strengthen the management of **Protected Areas (PA)** and to safeguard the biodiversity land and seascapes contain, for the development and the wellbeing of local populations. Article 1 of MEEMF's statutes indicates its goal to be to "[...] *increase the area of marine and terrestrial PAs and ensure the sustainability of their management for the preservation and promotion of biodiversity for development*".
35. Under MEEMF, a number of directorates, including national (tallying 4) and regional (tallying 22), as well as different subordinate entities, play a key role in environmental management in Madagascar and can facilitate the mainstreaming of environmental concerns in other sectoral entities. (See the Box 1 for more details on the institutional structure of MEEMF.)

¹⁶ DDT (or Dichloro-diphenyl-trichloroethane) is a Persistent Organic Pollutant (POP). It is harmful to human beings, as well as to the environment. It transfers and accumulates in the food chain.

36. Since 2002, the Directorate of the Environmental Dimension Mainstreaming (DIDE), has ensured the coordination of activities, harmonization and establishment of Environmental Units or “green units”, which operate within sector ministries, and cross-sector environment working groups. In some cases, the Environmental Units are directly attached to the Minister’s office. There are now dedicated Environmental Units within each line ministry and regional government throughout the country.
37. In the Atsimo Andrefana Region, a Regional Environmental Unit has not yet been established, but its creation is scheduled for very soon. This unit will work as a cross-sector multi-stakeholder platform, engaging various decentralized authorities from relevant ministries. Coordinated by the DREEMF, the Environmental Unit for Atsimo Andrefana will be led by regional authorities.
38. Currently under development, the Environmental Units’ Platform programme will aim to engage different sectors in an exchange and dialogue concerning landscape planning, helping to identify potential development investments in the region, and mainstream environmental measures within these projects, taking Environmental Impact Assessment (EIA) and existing legal outlines for conflicts resolution (MECIE) into account. The mainstreaming of environment considerations within the different planning instruments will be a result of information technical exchanges and discussions among different development actors, followed by decisions within the Environmental Units’ Platform.
39. At least three other key government sectors, led by both line ministries and ministers attached to the Presidency, are highly relevant to the subject matter of this project:
 - Agriculture, governed by the Ministry of Agriculture of Madagascar, whose mission is to implement the government's policy on agricultural development and to improve food security and nutrition for the Malagasy population;
 - Extractives, governed by the Minister at the Presidency in charge of Mines and Petroleum, along with the line Ministry for Energy and Hydrocarbons, in charge of policies and key decisions, with the support of the state-owned agency, Office of National Mines and Strategic Industries (OMNIS), as the operational arm of the sector – OMNIS being in charge of managing, developing and promoting the national petroleum and mineral resources in Madagascar, often working in partnership with oil and mining companies; and
 - Land-use planning and infrastructural development, governed by the Minister of State for Presidential Projects, Spatial Planning and Machinery (METAPE), with key directorates and subordinate agencies in charge of spatial planning (including of seascapes), land-use planning, land tenure governance, settlements, housing, urban and rural development, as well as social infrastructures.

Other entities could be mentioned and play a role (refer to section [Stakeholder Analysis](#) for a discussion).

Box 1. Institutional structure of MEEMF

The MEEMF has a General Secretariat (GS) and four General Directorates (DG). Under the General Directorate of Environment, is found the Directorate of the Environmental Dimension Mainstreaming (DEDM), which is in charge of mainstreaming the environment within "*all public sectors, regional and local authorities, and private sector*". One of the missions is to establish *Environmental Units* within each sector ministry.

The four General Directorates are:

- (i) The General Directorate of Forests (GDF), responsible of coordination, monitoring and controlling the implementation of the technical activities by MEEMF, and those conducted by bilateral or multilateral cooperation projects related to "forests". This unit is responsible for the Terrestrial Protected Areas Network, promoting forest resources, and controlling forest regulations
- (ii) the General Directorate of Environment (GDE) has the mission to protect, enhance and work towards Sustainable Development. It is in charge of designing and coordinating activities in accordance with the Government’s Environment Policies and monitoring and controlling their execution. Some tasks include fighting against pollution, climate change, conducting data collection and information

- sharing, mainstreaming the environmental dimension across development sectors, implementing international environment conventions, supervising the implementing the Environmental Impact Assessment law (regulated by the MECIE decree);
- (iii) the General Directorate of Seas is responsible for the conservation of the coastal zone and Marine Protected Areas; and
 - (iv) the General Directorate of Ecology, which aims to promote respect of the ecology to protect the country's natural heritage, is responsible for soil conservation and development of Green Partnerships.

The MEEMF and its different departments are represented at regional level through 22 Regional Directorates of Environment, Ecology, Sea and Forests (RDEESF).

Specialized agencies associated to the MEEMF complete the institutional framework for environmental management at the government level. These agencies are under the administrative and technical responsibility of MEEMF. Two key institutions are: (i) Madagascar National Parks (MNP)¹⁷, established in 1990 as an independent non-profit association is in charge of managing PAs under IUCN categories I, II and IV, and; (ii) the National Environmental Board (NEB)¹⁸, founded that same year, to regulate the environmental impact of economic and development investment, monitor the quality of the environment and facilitate the implementation of environmental measures within investment projects.

In addition to MNP, the EAP helped build a variety of civil society associations involved in developing, implementing and monitoring environment programs in support to PA management, such as the Support Service for Environment Management (SSEM), and two foundations with complementary roles in conservation funding, the Foundation for Protected Areas and Biodiversity of Madagascar (FPABM), created in 2005 to fund conservation activities, and Tany Meva, created in 1996 to support community development initiatives around PAs, with the aim to reduce pressures on the parks. Their current assets amount to USD 50 million and USD 18 million, respectively.

Source: PPG Report, [Study #1](#) in Annex 7.

Policy and Legal Frameworks

45. For a thorough discussion of **Key Policy Instruments and Governance Framework** that are pertinent to environmental management in Madagascar, refer to **Annex 5-F**, which contains the following:
- Frameworks for governing the extractive sector
 - Frameworks for governing the agricultural and tourism sectors
 - Other legal, policy and institutional frameworks for managing the environment
 - The Protected Area System of Madagascar (SAPM)
 - Community natural resource management within the SAPM

Herein is a summary of key features, including overarching policies and practices.

The new National Development Plan (2015-2019): valuing natural capital

46. The Government of Madagascar has adopted a new National Development Plan (NDP) for the period 2015-2019). The document states the national guidelines taking a “*new path for comprehensive and sustainable development*”.¹⁹ The NDP makes reference to the need to address the deep impact that the

¹⁷ MNP manages most of the PAs in the categories mentioned. However, there are PAs within these same categories that are managed by other environment operators. Such is the case of the Makira Park under category II, Natural Park, that is managed by WCS and the recent PA, under category IV, Ambatotsirongorongo, neither of which are managed by MNP.

¹⁸ The Office National de l'Environnement (ONE), in French.

¹⁹ Ministry of Economy and Planning website, April 2015.

political and social crisis has had on the country by way of an “*effort towards national reconciliation, by implementing a set of deep institutional reforms and by the immediate realization of emergency actions and measures that will have an immediate impact*”. The NDP action plan was developed to implement these guidelines.

47. Axe number 5 of NDP 2015-2019 aims to “Value Natural Capital and reinforce the resilience to natural disasters and risks”. This axe mentions, as a priority, “mainstreaming natural capital in the process of economic and social development planning, and within the national accounting system”. Moreover, program 19, contained in the action plan, states that "Natural Resources, are a legacy for future generations." The expected outcomes of these guidelines are the responsible management of natural resources in sync with economic development policies.
48. An important aspect of the new NDP is the land-use basis for development planning, emphasizing the importance of land-use planning tools. Additionally, the strategy emphasizes economic growth, enhancing development investments and the need to reinforce the rule of law throughout the country.
49. The Government of Madagascar has set up a National Policy for Land-Use Planning (NPLUP). This policy promotes the importance of having an integrated vision for land-use planning by combing sector based development policies, such as economic growth policies with environmental safeguards; and emphasizing the need to coordinate land-use planning with different planning processes across sectors.
50. Founded on a sustainable development vision, one of the guiding principles of the NPLUP is: “*Anticipation*, by conducting prospective analysis to understand the socio-economic changes at the national level, which enable to provide support to sustainable practices and address undesired changes”.
51. The National Outline for Sectorial and Transversal Guidelines for Land-Use Planning, was developed for the next 10 years (2015-2025). It is based on the NPLUP and confirms this vision, stressing the need to search for coherence, synergies and to coordinate different public development sector and cross-cutting programs to ensure sustainable growth.
52. The National Outline for Land-Use Planning contains both sector and spatial planning tools and analysis. This document guides the development of the National Development Planning in the PND.

The Environment Action Plan

53. The Government of Madagascar in 1990 adopted the Environment Charter (Law No. 90-33 and Law 97-012), which defines the basic framework for the implementation of the National Environment Policy (NEP) for Madagascar. An Environmental Action Plan (EAP) was developed to implement these guidelines, containing a long term plan to be set up through 3 consecutive cycles ending in 2009. This enabled the country to set up a comprehensive institutional framework to manage the environment, which focuses on biodiversity management and conservation. The Environment Charter was revised and endorsed at the beginning of this year 2015. Currently, the government is developing the Environmental Programme for Sustainable Development (EPSD), which will build on and succeed the EAP, for the next five years.
54. Madagascar’s National Strategy for the Sustainable Management of Biodiversity (NSSMB) and current action plans have been developed for the period 2002-2012. Action plans were defined for each of the six provinces of Madagascar.
55. The NSSMB 2002-2012 guiding principle underlie the need to improve the welfare of population’s in the effort to overcome poverty, based on traditional knowledge and knowledge that is yet to come. Strategic measures defined by the NSSMB focus on the establishing management structures and plans, improving the capacity of human resources, decentralizing biodiversity and natural resource management, strengthening monitoring and control actions, developing national policies on access and benefit sharing

(ABS), developing partnerships and funding mechanisms for financial sustainability and adapting policies and legislation enable the implementation of the NSSMB.²⁰

56. The EAP has enabled to set up a strong institutional structure, both based on government and civil society management structures that together ensure sound environmental governance.

Land-use planning at the regional level

57. **The regional level** is in charge of implementing the Regional Land-Use Plan (*Schéma Régional d'Aménagement du Territoire*, SRAT), which is the main legal planning tool at the landscape level, providing the various elements for the development of the National Land-Use Plan (*Schéma National d'Aménagement du Territoire*, SNAT). The SRAT is developed for each of the twenty-two regions of Madagascar, for a period of 30 years. Municipal governments set up local integrated development plans. These documents are not necessarily based on spatial planning, but they enrich significantly the SRAT, which is the key tool used to develop the Regional Development Plan (*Plan de Développement Régional*, PDR).
58. In the SRAT and the PDR, authorities focus mainly on economic and social development for the regional landscape, with little reference to biodiversity and environment conservation.
59. **A Regional Committee for Land-Use Planning** is (*Comité Régional de l'Aménagement du Territoire*, CRAT), led by regional authorities and composed of representatives from all the development sectors, is set up to develop the SRAT. A consulting firm commissioned by the CRAT coordinates studies and activities, consulting the CRAT throughout the different phases of development of the SRAT: diagnose, consultations, programming. The finalized document is validated by the members of the CRAT. This committee ensures and monitors its implementation, and is in charge of updating the information contained in the document. The CRAT issues a Charter engaging the different sector actors to respect and comply with the SRAT within their sector plans.
60. Each region through the decentralized sector ministry services, such as the DREEMF/MEEMF provide the support required to this process.

Protected Area Management

61. In the landscape of the Atsimo Andrefana Region there are **7 key biodiversity sites that have been included within the Protected Area System of Madagascar (SAPM)**, all of which have been granted formal PA status:
- The New Protected Area Complex of wetlands known as Mangoky-Ihotry (IUCN category V)
 - The National Park of Mikea (Cat. II)*
 - The New Protected Area of PK 32 Ranobe (Cat. V)
 - The New Protected Area of Tsinjoriake (Cat. V)
 - The New Protected Area of Amoron'i Onilahy (Cat. V)*
 - The Special Reserve of Beza Mahafaly (Cat. IV)*
 - The National Park of Tsimanampetose (Cat. II)*

Of the above list, the **four sites** marked with an asterisks (*) are those for which **METT** were applied at the baseline, even though this is not required for this project, whose fit is with the GEF's Strategic Objective 2 on Mainstreaming.

²⁰ Fifth National Report: Convention on Biological Diversity – Madagascar (2014).

62. At least **1.2 million hectares** of land, within 2.4 million hectares that correspond to the Atsimo Andrefana target landscape, are composed of protected areas (PAs) – i.e. half of the targeted landscape is under protection. PAs are important ‘storehouses’ of biodiversity within the landscape. In a mainstreaming approach, it is important that PAs have ideal conditions to play this role. Yet, this is not a given. The new PAs e.g. (Mangoky-Ihotry, Ranobe and Tsinjoriake) have received little management attention. In addition, there are gaps in the management of the more established PAs, as the threat analysis has shown.
63. **Governance frameworks for PAs.** IUCN category V and VII PAs in Madagascar are governed by a management structure co-governed by local communities, and where land use should tend towards conservation compatible activities – the concept is through relatively new in the SAPM.²¹ In turn, category II PAs are, of course, of strict use and fall under MNP’s responsibility, but they are also conceived to have a community support structure within their buffer zones, where communities live and conduct productive activities that are sustainable. In practice, the management of buffer zones is not always fully integrated within PA management – there are gaps in knowledge about conditions on the ground and at times in terms of the physical demarcation of sites, where a “tangible frontier” is needed. Also, without support, the management of category V and VII PAs may not always follow the guidelines provided by the COAP on sustainable use.
64. Both in category V & VI sites and in the buffer zones of national parks, there are efforts by government and partners for establishing resource management transfer contracts (TDG) and for applying regulations (GELOSE), so as to devolve management of natural resources to local communities. Only when these conditions are fulfilled, can it be said that the PAs are able to fulfil their essential role of ‘biodiversity storehouses’ within the wider landscape.
65. In general PA management in the region needs strengthening. Priority should go to supporting support critical management measures to ensure PAs’ integrity in the face of multiple threats, either from impact-heavy sectors or from communities living in PA fringe areas. These measures will reinforce management of the recently proclaimed new PAs (the NAPs or *nouvelles aires protégées*), as well as already established PAs, including the both buffer zones and core protected areas. (Refer to Annex 5-E, subsection on the SAPM for more background.)

1.3 Barrier Analysis and Long Term Solution

1.3.1 The preferred long-term solution

66. A landscape level approach to biodiversity conservation in Madagascar is still a novelty. The concept of a landscape approach stems from the understanding that ecosystems processes happen at the larger landscape level, outside the boundaries of PAs. The processes that enable ecosystem sustainability are hence subject to a variety of stakes and interests held by different groups, including small and large scale productive sectors such as mining and commercial agriculture. Maintaining the integrity of Biodiversity rich areas goes beyond the site based protection approach which the country has applied for biodiversity protection up until now, and requires a landscape approach which takes into consideration the needs and interests of multiple stakeholders in land use, and understands the risks and trade-offs involved in the planning processes. This approach in turn acknowledges the value of ecosystems processes and natural resources for local economic and social development, highlighting the benefits of biodiversity

²¹ These are generically referred to in Madagascar as “MRPAs” or managed resources protected areas, a network of which is being supported by another GEF project.

conservation and ecosystem sustainability for the well-being and long term interests of local and regional stakeholders in addition to the its global importance.

67. The **current scenario** for the Atsimo Andrefana region is that of emerging large scale productive sectors (oil, gas, mining, agriculture), in a context of complex decision making mechanisms and governance systems and weak legislative frameworks to deal with these emerging sectors.
68. Relevant codes and legislation (e.g. mining and oil codes) contain environmental safeguards. However, they are restricted to EIA and do not enable a holistic approach to ecological processes within the larger landscape. Moreover, the government has weak technical capacities when it comes to developing environmental mitigation measures and plans and conducting oversight of the measures contained in the EIA and private sector contracts, due to their complexity.
69. Information on biodiversity remains dispersed among partners and sector specific, remaining unknown and difficult to access by sectors making decisions on development investments.
70. Hence, safeguarding biodiversity remains weak within land use and development planning.
71. **The long-term solution** is to engineer a paradigm shift in the management of biodiversity from site focused conservation towards effective land and resource use governance at the landscape level. This includes taking into consideration the multiple uses of the landscape, the various interest groups that have stakes in it, but also the role of government at different administrative levels. The paradigm shift implies an anticipatory approach to addressing threats to biodiversity. This implies providing the local government with the enabling tools to conduct land use planning with environmental considerations and taking into account the value of biodiversity for local development. Local authorities must also be provided with the necessary information to actively and effectively apply the mitigation hierarchy for safeguarding biodiversity where significant impacts can be foreseen (avoid, mitigate, compensate, off-set).²²
72. This paradigm shift will be operationalised by *mainstreaming* biodiversity within land use planning at all levels- national, regional, communal and local. The project proposes to reinforce land use planning and enable informed decision making by: (1) developing tools that highlight and develop biodiversity and ecosystem processes relevant information; (2) by promoting the mainstreaming of these elements at all land use planning levels including across sector ministries, by (3) promoting active participation by the private sector, by mobilizing partnerships and negotiating environmental considerations, and; (4) engaging civil society, from the grass roots, in order to improve their knowledge on the rights they have to be informed and to participate in the planning stages of productive investments before the full implementation of projects.
73. Information on the environmental trade-offs and consequences of large scale productive investments, such as mining and oil extraction, in the region, are key inputs to government decision making. With key information at hand, decision makers may apply a mitigation hierarchy that enables to anticipate, manage and reduce potential environmental impacts rather than off-set its consequences.
74. To reach this goal the project aims to reinforce the following management and planning elements:
 - Spatial planning
 - Stakeholder consultations
 - Negotiation, conciliation and mitigation hierarchy techniques between environment and productive sectors
 - Stakeholder platforms for decision making
 - Integration of an ecosystem approach and biodiversity conservation within spatial planning

²² See more on the Mitigation Hierarchy in Box 2.

- Community based sustainable natural resource management (CBNRM), including devolving responsibilities to local communities through support to Resource Transfer Decrees (TDG)
- Right to access to information by all stakeholders, with emphasis on community free access to information, regarding potential and future large scale investments, including consultations within context of the application of environmental impacts due diligence procedures
- Environmental sustainability within productive investments
- Environmental due diligence and integrated strategic environmental evaluations processes, enabling a common vision for Regional and Local development and conservation.

1.3.2 Barriers to achieving the solution

75. The project adopts a barrier-removal approach to the biodiversity management issues at the landscape level, as outlined in the previous sections. **There are two sets of barriers** that apply to this project:

Barrier #1. Weakness in landscape-level management decision-making processes

76. Decision-making on land use at the landscape level is complex It is subject to an evolving legal and policy framework, and it falls under the responsibility of various entities with asymmetrical management capacity. In fact, it has not yet been effectively applied in Madagascar, where approaches to conservation have been site based and PA focused.
77. While PAs are critical for protecting forest remnants and threatened species, the current approach has not halted their degradation and will certainly not be enough to mitigate the emerging threats resulting from large scale high-impact projects. These will take place not only in the Atsimo Andrefana Region but in many other parts of the country -- with considerable secondary impacts.
78. An effective response that combines both investment in PAs and ecosystem management, within land use plans at the land-scape level (e.g. the SNAT, SRAT and derived planning instruments), and within development plans (PRD), enabling to integrate sustainable development measures beyond PA sites. A broader understanding is required of: the complexity of the landscape, both rich in extractive resources and biodiversity, and; the needs that each sector has (conservation and development). Land use planning and decision making with a full understanding of the impacts and consequences that productive investments have on the natural capital is lacking. A broader effort to manage threats and adopt mitigation measures is missing. The trade-offs inherent in land-use allocation within a landscape, that is both rich in extractive resources and biodiversity, will need to be negotiated on an informed and consultative basis.
79. Additionally, it is necessary to invest in PA management in light of the threats to ecosystems in the surrounding landscape and develop mitigation measures accordingly.
80. The key barriers relate to:
- (i) Limited capacity to access, combine and use biodiversity information (there is a wealth of information and data, but it is not being effectively used);
 - (ii) Difficulties in enforcing and regulating land use (diffuse responsibility, weak governance frameworks); and,
 - (iii) The insufficient level of protection afforded biodiversity rich ecosystems, including Protected Areas.
- We elaborate:

81. First, while much of the spatially based biodiversity data are publicly available, it is held by different entities and is not always available in a format that can be readily used for planning. There is limited capacity for analysing and using the data—with much of the capacity residing outside of Government.
82. With respect to investments in land-uses that typically impact biodiversity (mining, oil, gas and agri-business developments), biodiversity information is not being actively used in the current land allocation and permitting systems. E.g. the ONE has guidelines on both Strategic Environmental Assessment (SEA) and EIA applied to ‘sensitive zones’, wetlands, protected areas, etc. It lacks spatial analysis tools for applying these guidelines.
83. The ONE, which is the entity in charge of coordinating the monitoring activities pertaining to the application of environmental mitigation measures contained in EIA’s, does not count with resources at the Regional level. Consequently, in the Region of Atsimo Andrefana, where multiple mining projects are in the exploration phase, the capacity of the Regional authorities, as well as the capacities of the DREEMF, remain weak to conduct oversight. Moreover, due to lack of budgetary resources, the ONE does not have the ability to provide training to regional actors. Without strong regional capacity, the government is not equipped to provide technical inputs nor a landscape vision, or propose mitigation measures to safeguard biodiversity and ecosystems. Currently, only private companies investing in the Region conduct the studies required to complete an EIA, through company human and financial resources.
84. Although many ministries have created ‘Environment Units’ (‘Green Units’ or sector-based), that are in charge of providing support and expertise, in order to monitor the process of the EIA for sector based projects, their participation remains weak when it comes to providing technical expertise concerning large scale investments. Many investment projects are consequently approved without having had technical oversight or having been approved by the Environment Units.
85. Moreover, the environmental units are often ignored, referring uniquely to the DREEMF for technical expertise. They also often have insufficient technical capacities to provide support to EIA processes.
86. Another example pertains to land-tenure management—the *régime foncier*. Even though there have been tangible improvements in recent years, the national land cadastre is yet to adopt geo-referenced data in land allocation. Furthermore, it often happens that different entities will issue different permits for the same geographic space without mutual knowledge of other permits and interests (e.g. logging, mining, community property titles, all targeting the same area). This generates conflict at the local level, and fuels ecosystem degradation.
87. There are interesting and emerging initiatives, such as the new SNAT/SRAT that can potentially provide useful tools for spatial planning. However, more is needed in terms of fully incorporating biodiversity values into these processes.
88. Specifically at the regional, district and commune levels, the technological and infrastructural capabilities to access and disseminate spatially-based information are severely constrained. In their current model, the SNAT and SRAT have been mostly concerned with poverty alleviation, social infrastructure and transport sectors, as well as with addressing regional asymmetries in development. Communal plans are in turn concerned with basic local needs (a school, a road, a health post, reforestation of communal lands etc.). The SNAT and SRAT always include an environmental chapter, but the plans have yet to be connected with landscape level decisions pertaining to investment-heavy sectors, such as oil & gas, mining and agri-business. These decisions are considered strategic and are made centrally, under the Cabinet’s purview. These projects are all subject to environmental impact assessment and permitting.
However, although projects undergo environmental impact assessments and are issued permits, land use planning remains ill aware of the consequences they may entail.
89. Moreover, identifying local development priorities requires spatial planning integrating communities within the process (PAG-T), in order for the planned activities to be rendered compatible with

environmentally sustainable activities at the community level. However, the government has few means to ensure such planning processes take place in the vast national territory. Most participatory community spatial planning initiatives have been made possible thanks to the both financial and technical support by donors and partners, rendering efforts erratic and disperse.

90. Likewise, at all government levels, technological and infrastructure capacities that enable access to spatial information are, to date, extremely limited. Additionally, support must be provided at all administrative levels, in order to fully integrate the value of biodiversity within land use and development planning
91. Second, planning land use allocation is meaningless, if responsibilities for implementation and enforcement are unclear, and if the regulatory and policy environment is not conducive.
92. Many of the key decisions that affect biodiversity locally are made at the national level. Applicable regulations tend to be sector-specific. Consultation of affected stakeholders in land use decisions is still incipient in Madagascar. Also, of all the four tiers of sub-national government recognised in Madagascar, the district level has a somewhat unclear, but potentially positive role to play in land-use planning, regulation and enforcement. It remains poorly explored.
93. Platforms allowing inter-sector dialogue and technical exchanges are lacking, such that would enable to exchange and negotiate the needs that each sector has within land use planning. The Region does contain an informal platform which brings environment sector partners together, however it remains inactive. The MEEMF's current work plan includes the creation of an Environment Unit that will function as a regional inter-sector platform, however it has not yet been set up.
94. In many of the countries of origin, mining companies are confronted with strong legislative and institutional frameworks that are considered constraining, benefitting social and environment protection. Contrasting with this scenario, Madagascar, seeks to attract Direct Foreign Investments, such as mining and oil companies, offering favourable conditions for large scale investments companies, in detriment of its natural capital, although the latter represents currently 49% of the country's wealth.²³
95. Thirdly, one aspect that is specific to the Atsimo Andrefana Spiny and Dry Forest Landscape relates to the fact that key protected areas within it have weak management structures which are insufficient safeguard biodiversity.

There has been steady progress in proclaiming various 'locally managed marine areas'. Presently they comprise nine MPAs and cover more than 180,000 hectares of seascapes along a coastline of at least 350 km from Makongy to Baie de Sakoa. However, terrestrial PAs which are meant to guarantee the protection of the dry and spiny forest landscape of the Region of Atsimo Andrefana, although they have recently obtained permanent protection status, continue to have weak management structures.

Since the adoption of the PAE and thanks to the recently revised PA Code (COAP), there have been legislative and institutional advances. The country, today may extend PAs in a larger extended territory, providing support to conservation of ecosystems and KBA's within the PA IUCN category types V and VI.²⁴

96. However, PAs must still be integrated, beyond the PA sites, in a larger landscape where a there exists a multiplicity of productive land uses. These areas must also be aware of the needs of PAs. The institutional system that enables to mainstream biodiversity and PA within land use planning is still insufficient to safeguard the region's natural capital, especially in the face of new emerging productive sectors.

²³ Country Environmental Analyses (CEA), Banque Mondiale (2013).

²⁴ Refer to Annex 5-F on the Protected Area System of Madagascar (SAPM) and to PRODOC Table 13: Legal framework.

Barrier #2. Weaknesses in conservation action at the community level

97. There has been a wealth of experience in the implementation of community-based approaches to conservation in Madagascar (GELOSE, TDG, GCF...), but not all of them have successfully “married” conservation with community aspirations and livelihood needs—and thereby producing tangible conservation results. It is notable that the current livelihoods baseline at the target landscape has a strong local development focus, but it misses opportunities for integrating biodiversity concerns.
98. A weakness found in the implementation of these approaches by communities has been the strong dependency on external support through technical and financial aid, and strong involvement by local decentralized authorities, which is mostly project based and does not guarantee sustainability.
99. The UNDP-GEF project Madagascar Environment Programme III (PIMS 2762), which ended in 2012, drew important lessons on the application of TDG and *Dinas* in conservation. These lessons were outlined in the project’s Terminal Evaluation (TE) report and point out to the following determinants of ‘success’ for achieving lasting conservation results:
 - (iv) Limited capacity to access, combine and use biodiversity information (there is a wealth of information and data, but it is not being effectively used);
 - (v) Difficulties in enforcing and regulating land use (diffuse responsibility, weak governance frameworks); and,
 - (vi) The insufficient level of protection afforded biodiversity rich ecosystems, including Protected Areas.
100. With respect to these conditions, there are specific barriers to be overcome by local communities within the Atsimo Andrefana Landscape. We elaborate:
101. First, at the scale of a community’s *terroir* and beyond, land allocation among households is still poorly defined. The issue of migration is not adequately dealt with by local governments. As a result, land and resource use conflict are rife. Few mechanisms exist for supporting communities to obtain tenure security, stabilising land use and managing conflict.
102. Second, the effectiveness of a *Dina* depends directly on the level of community participation in developing the TDG contract and in enforcing it. In practice, the process requires time and intensive facilitation, which are not always available. Furthermore, the process of endorsing *Dinas* by court authorities can be bureaucratic. There is scope for incorporating biodiversity considerations in the TDG, but more is needed. Under the right enabling conditions, CCAs represent a globally tested model for achieving conservation results.
103. We note also that the internationally recognised PA category ‘Indigenous and Community Conservation Areas’ (ICCAs) are purportedly the oldest form of protected area dating back from millennia.²⁵ In Madagascar, up to date, the system that may be compared to the ICCA is the CCA (APC for its French denomination, Aire Protégée Communautaire) which is included in current PA legal frameworks (loi de Refonte du COAP, GELOSE).²⁶ If strategically located in sensitive areas, ecological corridors and PA fringes, CCAs could be instrumental in stabilising land use across the landscape and in engaging communities in the conservation and rehabilitation of forest fragments and other ecosystems.
104. Yet, specific experience from Madagascar in the establishment and operationalisation of proclamation of CCAs is incipient. It was only in early June 2013, that the TAFO MIHAAVO network of locally based

²⁵ Refer to ICCA Registry website [[Link](#)].

²⁶ Refer to section 2, Legal and Institutional Framework.

CSOs has been accepted as member of the ICCA Consortium. To date, only one official CCA from Madagascar is currently registered in the global ICCA registry.²⁷

105. Lastly, the absence of a clear national legal framework for CCAs, combined with complex bureaucracy and insufficient economic incentives at the community level, have impeded the strategic use of CCAs. The recent revision of the COAP (*loi de refonte du COAP*) seems to address this gap, and open new possibilities to secure biodiversity in co-management schemes with communities. However, it remains to be observed – and practiced – if this legal framework is sufficient to promote and ensure the sustainability of CCAs and hence biodiversity.

1.4 Baseline Analysis

1.4.1 The Status Quo of Landscape Level Management in the Atsimo Andrefana Region

106. The current ‘**baseline scenario**’ for the project zone, the Atsimo Andrefana Region, points out to a strong commitment from various partners to support conservation action in different ways. However, there are visible gaps in the baseline.
107. Many of the programmes on PAs have a narrow site focus and do not take into account the fact that PAs are part of a wider landscape. Livelihood activities produce socio-economic results, but they do not do enough to stabilise land-use change in an anticipatory and sustained way. Also, the SNAT/SRAT programme is yet to fully consider biodiversity in the Master Plans. SNAT custodians seem mostly concerned with plotting protected areas onto maps. While helpful, this is neither enough in terms of charting biodiversity values and ecosystem services at the landscape level, nor in terms of planning interventions that take biodiversity into account.
108. In the baseline scenario, physical development in the Atsimo Andrefana Landscape will accelerate in the upcoming years without any significant measures to safeguard biodiversity, nor avoid and mitigate threats. Some threat mitigation measures will be carried out by industry, but they will not prevent loss of biodiversity and will likely not tackle secondary impacts. Investment in conservation will continue to be limited, focusing solely on PAs, and missing an opportunity to engage the investment-heavy private sector to address management needs.
109. Key ecosystems and relict forest patches will remain unprotected. The management of existing PAs (e.g. Mikea Forest, Onilahy Beza-Mahafaly, and Tsimanampetsoa) may continue to be carried out in isolation, without their integration into local development processes and policies or without the full involvement of local communities.
110. If not addressed at the landscape level, the various threats will result in a further degradation of the dry and spiny forest ecosystems, reinforcing the trend of biodiversity loss.

1.4.2 The project’s financial baseline

111. The baseline investment for this project in the target landscape may be sub-divided into three main groups of programmes, namely: (1) land use planning and management; (2) protected areas management; and (3) sustainable livelihoods. These investments refer both to Components 1 and 2 of the project on a pro-rata basis, as shown in Table 1 and were based on PPG baseline studies.

²⁷ Refer to the ICCA Registry website [[Link](#)].

112. **First group of baseline investments.** A new land use planning programme is particularly relevant to this mainstreaming project, because spatial planning is a key tool to be applied under Component 1. An overhaul in the SNAT/SRAT system is being piloted by Ministry in charge of Land Use Planning and presidential project (MEPATE) with the aim of preparing the first geographically-based SNAT. At the regional level, SRATs will also be prepared and on finer scale GIS. The process is supported by a consortium of donors, UN agencies and non-governmental partners (UN Habitat, WWF, GIZ, Swiss Cooperation, Tany Meva, MNP, plus the ministries in charge of agriculture, decentralisation and environment). Together with annual budgets for land use planning from of the concerned communes in the Atsimo Andrefana Region, the baseline contribution of programmes under this category is estimated at \$9.1 million for the duration of the project. This amount includes co-financing from GIZ to the project at \$1.1 million, which is allocated to land use management support in the region.
113. In turn, UN-HABITAT provides support to communes to improve land security issues, relating to Component 2 and it is estimated at \$2.0 million for the duration of the project.
114. **Second group of baseline investments.** MEEMF is the prime governmental agencies responsible for PA management in Madagascar. As ‘storehouses’ for biodiversity, PAs are an important part of the landscape. Furthermore, as another result of long-term international engagement, a national conservation trust fund was established in 2005, the Fondation pour les Aires Protégées et la Biodiversité de Madagascar (FAPBM). It currently generates an income stream, some of which is dedicated to PAs in the target landscape. For the duration of the project, the applicable governmental investments, alongside with the relevant financial baseline from bilateral and multilateral partners and FAPBM dedicated to PAs in the Atsimo Andrefana Region has been estimated at \$5 million for the duration of the project, contributing to Component 1 of the project, as it relates to the management of PAs across the landscape.
115. Also, environmental NGOs are very active in PA management in Madagascar. Several of them, primarily international NGOs, mobilise significant PA finance every year and implement various programmes. Among them are WWF, Conservation International (CI), Missouri Botanical Gardens (MDGs), the Wildlife Conservation Society (WCS), Kew Garden, Fanamby and many others. Parks and reserves such as Beza-Mahafaly, Tsimanampetsoa and Mikea in Atsimo Andrefana have benefitted considerably from the support provided by these NGOs. WCS, Blue Ventures and SAGE are active in supporting the various community managed marine areas within the Atsimo Andrefana Landscape (see map). The baseline investment associated with these NGO driven programmes at the landscape level has been estimated at \$3 million for the duration of the project and it relates to Component 2 of the project.
116. **Third group of baseline programmes.** The focus is on the sustainable energy (energy access and sustainability), food security, and integrated water resources management and local area development. These livelihoods programmes are important for the project because, without fulfilling basic needs and providing economic benefits to local communities, it is unlikely that conservation friendly development can be fostered. Sustainable livelihoods will therefore help address the threats to biodiversity that emanate from communities.
117. Various entities contribute to six major programmes active in the Atsimo Andrefana Spiny and Dry Forest Landscape. Two of them are jointly financed by the African Development Bank (AfDB) and the Ministry of Agriculture (MINAGRI), and focus on ‘agriculture & agro-industries’ and ‘water supply & sanitation’.²⁸ The third programme is the country-wide rural electrification programme implemented by Agence de Développement de l'Électrification Rurale (ADER) and partners; it receives EU funding.
118. The project PIC-2 (*Pôle Intégré de Croissance*), implemented by the MINAGRI, promotes ecotourism and agri-business development, and it is estimated at \$6.0 million for the Region. The PRIASO project, is

²⁸ These include the following AfDB projects: (P-MG-AAB-002 and AAC-004) *Projet de réhabilitation du périmètre du Bas Mangoky I et II*; (P-MG-A00-001) *Projet de réhabilitation du périmètre de Manombo*.

also implemented by the MINAGRI and contributes to the region's development through capacity building for agricultural extension services with respect to three intervention topics: (i) strengthening the capacity of water users' association, estimated at \$6.0 million and relating to Components 1 and 2 on an equal manner; (ii) support towards land tenure security, estimated at \$3.0 million and relating to Component 2 of the project; and (iii) strengthening of agricultural value chains, estimated at \$30.0 million and relating to Components 1 and 2 on a two-thirds / one-third manner. The total co-financing by the MINAGRI for the three above-mentioned topics amounts to \$38.0 million and is also part of the project's co-financing. Both the PIC-2 and the PRIASO projects promote good governance and infrastructure development for the region.

119. With respect to investments in energy through rural electrification, the contribution from the ADER's as a baseline investment will cover 2014 and 2020 and represent \$0.9 million, which also contributes to co-financing the project under Component 2.
120. In addition, two CSOs, WHH (Welt Hunger Hilfe) and HELVETAS Swiss Intercooperation, promote the development of agriculture through agro-ecological approaches, in areas adjacent to PAs. The latter organisation provides support to BioCoton development in the areas surrounding the Mikea Forest. Their baseline investments represent respectively \$1.8 million and \$1.6 million and contribute also respectively to Components 1 and 2 of the project. This amount also contributes to co-financing the project.
121. **Total.** In total, the amount of baseline investments represents \$67.4 million for all three groups mentioned further up and estimated for the duration of the project. Of the co-financing mobilised, amounting to \$43.8 million (see Annex 1), only \$350K from Tany Meva does not come from the baseline. Regardless, all contributions are a strong token of commitment from project partners. The apportionment of baseline investments described above can be thus summarised:

Table 1: Baseline overview

Baseline investment group and description	Comp 1	Comp 2	TOTAL	<i>Also co-financing?</i>
<i>1st Group: Land use planning and management</i>	<i>9.1</i>	<i>2.0</i>	<i>11.1</i>	<i>(as below)</i>
Overhaul of the SNAT/SRAT system, contributions from WWF, Swiss Cooperation, Tany Meva, MNP, plus the ministries in charge of agriculture, decentralisation and environment (GIZ excluded)	8.0	0.0	8.0	<i>no</i>
Overhaul of the SNAT/SRAT system, GIZ contribution only	1.1	0.0	1.1	<i>yes</i>
UN Habitat support to communes to improve land security issues	0	2.0	2.0	<i>no</i>
<i>2nd Group: PA management</i>	<i>5.0</i>	<i>3.0</i>	<i>8.0</i>	<i>(as below)</i>
Investment in formal PA mgt across the landscape: Governmental investments, alongside with the relevant financial baseline from bilateral and multilateral partners and FAPBM	5.0	0.0	5.0	<i>no</i>
CSO investments in PA mgt: WWF, Conservation International (CI), Missouri Botanical Gardens (MDGs), the Wildlife Conservation Society (WCS), Kew Garden, Fanamby and many others	0.0	3.0	3.0	<i>no</i>
<i>3rd Group: Sustainable livelihoods</i>	<i>28.7</i>	<i>19.6</i>	<i>48.3</i>	<i>(as below)</i>
Pôle Intégré de Croissance - PIC 2	3.0	3.0	6.0	<i>no</i>
PRIASO: strengthening the capacity of water users' associations	3.0	3.0	6.0	<i>yes</i>
PRIASO: support towards land tenure security	0.0	2.0	2.0	<i>yes</i>
PRIASO: strengthening of agricultural value chains	20.0	10.0	30.0	<i>yes</i>
ADER - investments in energy through rural electrification	0.9	0.0	0.9	<i>yes</i>

Baseline investment group and description	Comp 1	Comp 2	TOTAL	Also co-financing?
WHH (Welt Hunger Hilfe) and HELVETAS Suisse Intercooperation	1.8	1.6	3.4	yes
Total baseline	42.8	24.6	67.4	<i>(as above)</i>
<i>Total baseline that contributes to project co-financing (with mgt costs incorporated)*</i>	26.7	16.6	43.3	<i>(as above)</i>

* Refer to Annex 1: Co-Finance Letters.

1.5 Stakeholder Analysis

122. The following table provides the list of stakeholders and their role within the project.

Table 2: Stakeholder Matrix

Stakeholder	Relevant Role
MEEFM	<p>The Ministry of the Environment, Ecology, Sea and Forests (Le ministère de l'Environnement, de l'Ecologie, de la Mer et des Forêts, MEEMF) is responsible for conducting the country's environmental policies, ensuring their implementation and effectiveness.</p> <p>Under the coordination of the project management unit, some departments of the Ministry will be involved in the project providing expertise and monitoring. Mentioned below are some of the units (not exhaustive):</p> <ul style="list-style-type: none"> - The Directorate for the Environmental Dimension Mainstreaming that will ensure the implementation of mainstreaming activities with IEC Environmental activities - The Directorate of Environmental Assessment can provide knowledge in environmental impacts assessment, monitoring of specifications requirements and environmental control - The Directorate of Forest Resources Promotion will bring its proficiency in management plan - The Directorate of Terrestrial Protected Areas System can provide expertise about PAs creation and management. <p>The Directorate for Planning, Programming, Monitoring and Evaluation will ensure the project's monitoring and evaluation</p>
DREEMF/ RDEESF	<p>The Regional Directorate of Environment, Ecology, Sea and Forests (Direction Régionale de l'Environnement, de l'Ecologie, de la Mer et des Forêts, DREEMF) is the MEEMF's decentralized service. The directorate for the Atsimo Andrefana Region, is a key stakeholder for project's component 1. It will house the BD LUP system, and will lead the process to integrate the Recommendation Plan for Land-Use and Biodiversity Conservation (RPLUBC) within the Regional Land-Use Plan (SRAT), and the Regional Development Plan (PRD), currently being developed by the Region.</p> <p>Once the Regional Environmental Unit (EU) is set up within the DREEMF, this agency will lead the inter-sector and multi-stakeholder dialogues which will enable to set up plans and agreements and improve biodiversity management within development planning at the landscape level for the Region.</p>
ONE/NEB	<p>The National Environment Board (NEB) or Office National pour l'Environnement (ONE) is an agency under the administrative and technical supervision of the MEEMF. It was created to regulate the environmental impact of economic investments and development activities, conduct and coordinate the monitoring of environment quality and facilitate the implementation of the</p>

Stakeholder	Relevant Role
	<p>environmental impact assessment (EIA) process by investment projects, following the regulations contained within the MECIE decree. Support will be provided to this unit by the Project and this service will itself provide support to the DREEMF to help strengthen their capacity to conduct monitoring of environmental measures contained in the EIA of development investments in the Region.</p> <p>In addition, the ONE will provide support to the DREEMF to manage the ORBE (Observatory for Regional Biodiversity), a capacity that is currently developed within the ONE who currently manages a data base on which the Project will capitalize to build the ORBE.</p> <p>This unit will also provide support to the Environmental Units within the Region and the DREEMF, and sector ministries to manage EIA, ECC, PGEP and ESMP.</p> <p>It will be a key player in engaging with the private sector, negotiating collaborative agreements, and the applying the mitigation hierarchy in the programs signed between the private sector, the government and local communities that the project aims to facilitate.</p>
MNP	<p>Madagascar National Parks was created in 1990 as an independent non-profit organization to manage the PA Network. It is under the administrative and technical supervision of MEEMF. It is in charge of managing PA categories IUCN I, II and IV.</p> <p>It is the main stakeholder for the management of Bezaha Mahafaly, Tsimanampetsotsa and Mikea protected areas targeted by the project.</p> <p>MNP will work closely with the DREEMF and the project teams (i.e. the Core Team and Component 2 Team) to complete the process of legally defining PAs and in strengthening PA management.</p>
Local communities of targeted districts	<p>This group is a key stakeholder in the project. Their involvement and action will be determinant of the project's success. Component 1 of the project will mobilize communities to raise their awareness on their rights to a safe environment and to public consultation during the EIA process, and the role of the State in protecting these rights.</p> <p>The role of local communities will also be to articulate their aspirations vis-a-vis the process of TDG and realise their responsibilities in it. Through facilitation availed by the project, local communities will be involved in biodiversity & livelihoods spatial assessments and planning, and thereafter, with adequate resources, in the management of their terroir and its zone of influence. They will also lead the CCA proclamation process as well as the management of these areas.</p>
Land use regulating agencies	<p>The national entity in charge of land use planning (<i>Ministere de la planification et aménagement du territoire</i> – currently MPATE) and agencies such as ONE, BDDP, OMNIS, the <i>Guichets Fonciers</i> and the <i>Observatoire du Foncier</i>, have a key role to play in supporting and adopting the BD LUP and mainstreaming activities and with respect to communities' own spatial planning and tenure security issues.</p>
Sub-national government	<p>The decentralized administration at regional, district and municipalities has an important role in the SRAT process.</p> <p>Regional (decentralized authority) are accountable for this process by establishing a Regional Planning Committee (CRAT) composed of all Regional development sectors and all government entities present in the Region. The various inputs from districts and municipalities are integrated.</p> <p>Through Component 1, the project will provide support to the DREEMF and actors within multi-stakeholder platform, in the Environmental Unit.</p> <p>Decentralised government at the regional, district and commune levels also will play a key role in supporting NRM across the landscape, mainly for the TDG schemes. They will be among the beneficiaries of capacity building activities under Component 2.</p>

Stakeholder	Relevant Role
Ministry of Agriculture (MINAGRI)	The Ministry is a key co-financier in the project, leveraging AfDB programmes that will co-support the implementation of livelihoods activities under Output 2.4. It will play a key role in the provision of agricultural extension services (or facilitating those). MINAGRI staff will also benefit from capacity building activities under Component 1.
ADER	ADER is a key co-financier in the project, leveraging funds for energy access programmes at the site level. Their involvement is crucial, as some of the forest degradation is directly driven by demand for energy in rural areas.
CSOs, universities, research centres and partners	Several CSOs operating in the Region are key partners: WWF, Blue Ventures, and WCS - particularly in marine sites - TAFO MIHAAVO, community organizations network involved in NRM, will also be involved. Yale University, in partnership with ESSA-Forets, intervened actively in Bezaha Mahafaly, with local community organizations. Other associations such as FAMARI and FIMAMI are very active in environment issues. The participation of CSOs, universities and research centers will be important partners in promoting the SRAT, especially for the implementation of BD LUP and related activities.
Private sector	Components 1 and 2 of the project will actively involve the private sector in the integrating environmental measures within their activities. Output 1.3 will also include a dialogue with extractive industries' stakeholders active in the landscape. The project will engage with potentially active private companies in the Region, to develop collaboration agreements. An objective of Component 1 is to create a pilot program with a private company to negotiate the activities to be undertaken by the company in accordance with the mitigation hierarchy, negotiating environmental and social safeguards plans that are more favourable for the biodiversity conservation.

1.6 Site Selection

123. During the PPG phase a spatial planning study was carried out with the dual aim of prioritising the sites within the project intervention zone and of scoping out the outputs and activities linked to the establishment of a geo-based spatial planning system, as it had been foreseen at PIF stage.
124. The project intervention zone comprises three adjacent administrative districts: Morombe, Toliara II, and Betioky. Extending over a total of 2.4 million hectares, they are home to a population of approximately 800,000 people. Numerous conservation interventions have taken place which now harbours many protected areas, as well as key biodiversity areas (KBA) that are identified as priority conservation sites but are not yet under protection.²⁹ In addition, the area is home to numerous ecosystems that are critically endangered that are essential to preserving the integrity of the biodiversity sites and to providing ecosystem services to the Region.
125. Currently, thirty-seven potential terrestrial biodiversity conservation sites have been identified, extending over a surface area of approximately 361,940 hectares.³⁰ Six priority sites are already included in the

²⁹ Razafimphanana, A. et al. 2012. Priorisation : une approche pour l'identification des zones importantes pour la conservation à Madagascar.

³⁰ MEEMF (2015) et www.atlas.rebioma.net. Potential sites are those that contain key biodiversity areas following further precision in the identification of conservation sites. These sites were identified as a result of in-depth studies conducted by the University of Berkeley in

Protected Area System of Madagascar (SAPM): the New Protected Area of the Mangoky-Ihotry Wetland Complex (Category V of IUCN); the Mikea National Park (Cat. II); the New Protected Area of KP 32 Ranobe (Cat. V); the Tsinjoriake New Protected Area (Cat. V); the Amoron'i Onilahy New Protected Area (Cat. V); the Tsimanampesotse National Park (Cat. II).

126. **Key protected areas** are by default sites for this project, to the extent that certain activities under output 1.4 are aimed at integrating their management within the overall management of the landscape. This will imply supporting critical management measures to help PA manager face threats to the sites' integrity. This is because formal protection through proclamation gazettal is not enough to avert threats, even though formal PAs present a lower 'human pressure indicator score' (see e.g. Figure 18). Management is obviously needed for averting threats. This is being provided in part by baseline investments. The project will complement these investments.
127. **Across the landscape**, and outside of PAs, the PPG spatial planning study has identified a number of areas of high biodiversity value where threat management will likely yield good results. This implies actions both in terms of sectoral mainstreaming (the subject matter of Component 1) and at the level of communities (the subject matter of Component 2), the latter through co-management approaches. Using a step-wise methodology for spatial analysis sites have been prioritised, as it is explained further down.
128. **At community level**. Concerning community-based management, the project's three target districts contain forty or so management transfer contracts (TDG). The implementation of these transfers is promoted by various organizations such as SAGE, WWF, MNP, and GIZ. Community-based management enables conservation and sustainable use of natural resources, and transfers the right of use and management to communities. A few TDG in the district of Betioky have been implemented for the purpose of commercial production. These community-managed areas are not protected from mining operations, either small or large-scale mining.
129. **The step-wise methodology**. In order to implement conservation measures in these priority sites, the *fokontany* was considered an useful administrative boundary³¹. A total of 138 fokontanys out of a total of nearly 800 within the project zone would classify under 'conservation priority' sites. Yet, due the practicalities of implementation, and in order to keep a good balance between project scope and the feasibility limitations imposed by its budget, the goal has been ideally select approximately 12-15 sites at the level of *fokontanys* for intervention. Therefore, qualitative criteria (i.e. non-systematic) applied in the final selection, citing the following in order of importance:
- **Importance of the sites (notwithstanding the importance for biodiversity) for ecosystem services.**
 - **Sites close to protected areas of category II where a threat on the integrity of the protected area exists, sites allowing more connectivity between protected areas or between protected areas and unprotected untamed lands.**
 - **Results of community consultations performed by the national team consultants who scouted the study area.**
 - **Willingness of locals to get involved in community conservation as indicated by the presence or proximity of management transfers (TDG) or other probing elements.**
130. A total of 17 sites were then identified, as below and grouped according to level of human pressure and geographically through zones, tallying five, whereas the first is sub-divided in two sectors:

collaboration with WCS. These sites are mainly fragments of natural habitats identified recently and difficult to convert into PAs, but that will be taken into consideration by the project, during the different planning processes.

³¹ Délimitation cartographique des Fokontany, Madagascar BNGRC, National Disaster Management Office, 2011.

- Zone 1) Lake Ihotry watershed: (a) East Sector corridor and (b) North West Sector**
- Zone 2) East Mikea**
- Zone 3) Southwest corridor of Mikea**
- Zone 4) Ranobe Sector**
- Zone 5) Betioky Sector**

See **Table 3** further down for the list of sites.

131. In particular, refer to **Annex 6: Description of selected Sites** for a detailed description of (i) the methodology behind the site selection and threat identification; (ii) key features for each of the sites; and their precise location on the landscape.
132. Refer also to [PPG Study #3](#) for yet more details potential CCA sites.

Table 3: Proposed project sites for community co-management at fokontany level

Zone and District	Comunne	Fokontany (colour denotes level of human pressure)	Approximate location of zones within the landscape
Zone 1a) Lake Ihotry watershed, East Sector Corridor			
Morombe District	Nosy Ambositra Commune	Nosy Ambositra	
	Befandriana Sud Commune	Ampilokely	
	Antanimieva Commune	Andranovorindregataka	
	Antanimieva Commune	Analato Sud	
Zone 1b) Lake Ihotry watershed, West Corridor			
Morombe District	Basibasy Commune	Maharihy	
	Nosy Ambositra Commune	Ankatsankatsa Sud	
	Nosy Ambositra Commune	Tantalavalo	
Zone 2) East Mikea			
Toliary-II District	Analamisampy Commune	Analodolo	
	Ankililoaka Commune	Ankiliabo	
	Analamisampy Commune	Anjabetrongo	
Morombe District	Basibasy Commune	Iaborao	
Zone 3) Southwest corridor of Mikea			
Toliary-II District	Manombo Sud Commune	Ambohimandroso	
	Manombo Sud Commune	Fiherenamasay	
	Manombo Sud Commune	Karimela Mamiratra	
Zone 4) Ranobe Sector			
Toliary-II District	Maromiandra Commune	Mamery	
	Ankililoaka Commune	Antanimena Maikandro	
Zone 5) Betioky Sector			
Betioky Atsimo District	Ankazombalala Commune	Miary	

Refer also to Table 14 in Annex 6 where sites are ordered by intensity of pressure.

2 Project Strategy

2.1 Project Goals, Outcomes, Outputs and Activities

133. **The Project's Development Goal** is to contribute to integrating biodiversity and ecosystem management into development planning and production sector activities to safeguard biodiversity and maintain ecosystem services that sustain human wellbeing.
134. **The Project's (immediate) Objective** is to protect biodiversity within the Atsimo Andrefana Landscape from current and emerging threats, and to use it sustainably, by developing a collaborative governance framework for sectoral mainstreaming and devolved natural resource management.

2.1.1 Project Outcomes

135. In order to achieve this objective, and based on the project's barrier analysis—which identified: (i) the problem being addressed by the project; (ii) its root causes; and (iii) the barriers that need to be overcome to actually address the problem (see previous section and relevant annexes), the project's intervention has been organized in two components, producing two key Outcomes.

Component 1. Effective Landscape-level Conservation Mainstreaming

Outcome 1: Landscape level planning and economic analysis support the mainstreaming of biodiversity into management of the Atsimo Andrefana Landscape, covering three districts and totalling ~2.4 million hectares

136. Under this component the project will strengthen resource use governance at the landscape level by developing and implementing a Landscape Level Land-Use Plan that explicitly incorporates biodiversity conservation needs and prescribes land uses with a view to mitigating threats—the Biodiversity Land-Use Planning Tool (BD LUP Tool) and the Plan of Recommendations for Land-Use with a Biodiversity Component (PRLUBC) respectively. It will work with national and sub-national level stakeholders to engage economic sectors, and negotiate the application of biodiversity conservation and sustainable land-use measures.
137. The development and adoption of key tools to BD mainstreaming will include: (i) landscape level planning (SEA; biodiversity concerns integrated into the SNAT / SRAT); (ii) EIA and key sectoral permitting systems for project affecting biodiversity at the landscape level; (iii) addressing the 'park edge' effect in critical PAs and improving the management of ecologically sensitive areas.
138. The approach under this component can be summarized as follows:
 - Integrate ecosystem conservation and biodiversity mainstreaming within regional land-use and development plans (SRAT and PRD);
 - Ensure information is available and accessible to key stakeholders to allow them to assess environmental mitigation measures linked to large scale private investments (e.g. mining, oil, commercial agriculture and infrastructure investments) with potential impacts on ecosystems and biodiversity, in order to enable the government to make informed decisions on land-use planning, and where the BD LUP Tool will play a pivotal role in collecting data and providing analysis;

- Set up a platform to enable dialogue and negotiations between environmental stakeholders (including government at the national and regional levels, but also CSOs), private sector representatives (in this case, from the emerging economic sectors) and local community stakeholders (including local government);
 - Encourage the participation of civil society in decision making processes concerning land-use planning, through a bi-directional communication and monitoring system on the environment state
 - Obtain the engagement of emerging economic sectors in the negotiation processes concerning trade-offs between conservation and development benefits;
 - Achieve agreements based on inter-sector collaboration to put in place environmental mitigation measures (e.g. mirroring those proposed by BBOP and the CBD, and those reflecting local perceptions) to safeguard biodiversity based on negotiated trade-offs;
 - Raise awareness of economic sectors and local communities on the links between ecosystem functions, services, biodiversity and the derived social and economic benefits. Demonstrate the negative consequences on local benefits if environmental mitigation measures are not duly applied
 - Promote the implementation of development micro-projects contained in the Communal Development Plan (PCD) and the Regional Development Plans (PRD) that are environmentally sound;
 - Reinforce the capacity of local and regional institutions to ensure that they may integrate biodiversity within development investments effectively and sustainably.
 - Sensitize local communities on their rights and on the obligations that private investors have in terms of prior informed consent and consultations contained in legislation (EIA, mining and oil codes, COAP, other);
 - Consolidate landscape governance by reinforcing legislative frameworks and their application, concerning respect of PA, environmental measures contained in EIA and, ultimately, ensure a much more systematic application of the mitigation hierarchy across the landscape for minimising harm to biodiversity; and
 - Lastly, prioritise the role played by PAs within the landscape as ‘storehouses’ of biodiversity, but strengthening their management with the most pressing needs, but without losing the mainstreaming focus of the project.
139. All of the measure are expected to positively impact biodiversity management at the landscape level and result in a reduction of threats to targeted PAs (covering an area of ~240,000 hectares), as well as improved management in surrounding landscapes, in particular in zones 1b, 2, 3 and 4, where pressure from emerging economic sectors is high (see map in Table 3 and Figure 18 for a proxy geographical reference).

Component 2. Community-based conservation and sustainable use operationalised

Outcome 2: Community-based production and resource use activities incorporate the conservation and sustainable use of biodiversity into management practice, into at least 100,000 ha of new CCAs

140. Work under this Component will ensure the incorporation of conservation and sustainable use of biodiversity into local communities’ productive activities and in land and resource management practices at the local level.
141. There are two key aspects. One is linked to peoples’ own livelihoods, where food security and income generation are essential. The second aspect is linked to need to change predominant land use practices – from itinerant slash-and-burn agriculture and charcoal production, based on unregulated access to forest resources, to practices that do not require land clearing and make a more rational use of land and forest.

Both need to be pursued, but noting that the project strategy recognises that there are a number of baseline activities that are already addressing food security and income generation issues. These have been taken into account in the choice of sites and in the development of project activities. GEF support will influence that land-uses towards making them more compatible with conservation.

142. A key focus is on how a network of CCAs, strategically located across the landscape, can contribute to reducing habitat loss. These CCAs will also serve as a key vehicle for governing communities' *terroirs* and their zone of influence.
143. As a result, at least 100,000 ha of new CCAs and *transfert de gestion* (TDG) areas with sanctioned *Dinas* are expected to be proclaimed across the Atsimo-Andrefana landscape in sensitive areas. Focus sites will be sought within the selected *fokontany* listed in Table 3, many of which are near existing PAs and within ecological corridors. Within the selected *terroirs* and in CCAs, the conversion of natural habitats for agriculture is expected significantly reduced. In addition, sustainable use management practices in agriculture, forestry, non-timber forest products (NTFP) exploitation and freshwater fisheries will also established and respected in these sites with the full support and engagement of local communities.
144. The approach under this component can be summarized as follows:
 - Establish CCAs by identifying potential sites, and by promoting on-going creation processes and ensuring their operationalization
 - Provide support to traditional institutions and norms, namely to enable their legal recognition by the Malagasy State
 - Conduct ecological and socio-economic studies and community consultations to identify economic needs and subsistence activities and their compatibility with environmental sustainability of target communities
 - Facilitate negotiations to identify trade-offs and agreements on socio-economic activities to be developed and reinforced, and integrate them within community land-use plans (PAG-T), and traditional norms (DINA) and legislative texts (TDG, GELOSE, GCF)
 - Integrate agreed upon trade-offs within higher level land-use plans (PCD, PRD, and SRAT)
 - Identify and enhance the knowledge on the value of key biodiversity and ecosystem functions and their benefits to local communities
 - Reinforce local economies

2.1.3 Activities and outputs by component

Component 1: Effective Landscape-level Conservation Mainstreaming

145. The core of this Component is mainstreaming or an integrated approach to landscape and sectoral governance, which seeks to improve the management of biodiversity within the landscape at large. In order to produce the desired ecological, economic and social benefits that biodiversity provides, a landscape level-mainstreaming approach must take into consideration the multiplicity of land uses required to secure local development implemented by diverse productive sectors (including extractive, industrial, agricultural and subsistence economies and sectors), as well as the role of PA sites within the landscape in averting threats to biodiversity. These productive land uses, are prioritized in land-use plans and programs – the spatial planning aspect is therefore important for landscape level governance. So is the institutional strengthening and regulation. Sectoral mainstreaming, in turn, focuses on working directly with sectoral stakeholders towards changing various aspects of production so that threats to and impacts on biodiversity are at best avoided, if not then, mitigated, and, where needed, compensated upon.
146. Targeting the Atsimo Andrefana Spiny and Dry Forest Landscape through a mainstreaming approach, four outputs are planned.

Output 1.1 Spatial Planning and land-use management

Biodiversity management integrated and operationalized in the Regional Land-Use Plan (SRAT) and the Regional Development Plan (PRD) of the Atsimo Andrefana Region

147. The mainstreaming approach of this project requires the application of participatory ecological and economic assessments at the landscape level in order to collect and analyse state-of-the-art information on ecosystems and biodiversity at the landscape level. It will make use of mapping tools and other effective spatial planning technologies. The approach also implies availing this information to all stakeholders concerned, in a manner that is open, accessible and user-friendly, including at the local level, where community members may have limited access to modern technologies.
148. The main product resulting from this output will be a **Biodiversity Land-Use Planning Tool (or the “BD LUP Tool”)**. This interactive tool is contained with an online portal regrouping a variety of functionalities serving previously mentioned objectives. It was conceived by the project during project preparation (PPG phase) and it will be developed and deployed during the first year of project implementation.
149. **An Observatory for Regional Biodiversity and Ecosystems (ORBE)** will be established as a small office in regional capital Toliara (also known as Tulear) and it will rely on the information produced by the BD LUP Tool to formulate recommendations on land-uses. Quasi-real-time and up to date data will e.g. allow the ORBE to perform monitoring and surveillance of PAs, will emit alerts for violation perpetrated on PAs and assess emerging threats to biodiversity at the landscape at large. The ORBE will work in sync with existing data bases and country based observatories currently set up within the MEEMF departments, in order to capitalize on efforts and experience.
150. The BD LUP Tool main spatial information layer will consist of a **Plan of Recommendations on Land-Uses based on a Biodiversity Component (PRLUBC)** that will be a specific product enabling users to operationalize support to the Region for managing land-use at the full extension of the landscape and at fine scale. The PRLUBC will synthesize information on ecosystems and biodiversity and prescribe land-uses that are compatible with landscape-level biodiversity conservation, aimed at integrating this guidance into the Regional Land-Use Plan (the SRAT). The PRLUBC will also define the spatial domains of **key biodiversity areas (KBA)** and **Ecological Support Area** within the Region. It will be backed by economic assessments, and will be freely accessed by the public, through an on-line portal offering web-mapping technology.
151. In this manner, the project will provide support to the regional government to undertake the SRAT planning process with the necessary information for ensuring the mainstreaming of biodiversity concerns into a key planning process. This is also expected to be done in collaboration with key partners such as the GIZ, and integrate on-going activities of the CRAT to the full national territory.
152. In addition, specifically for the three target districts of the project: Tulear II, Morombe and Betioky, the project will provide on the ground technical and financial support for the SRAT planning process. This will include conducting the processes necessary for local land-use planning. This support will be provided in partnerships with the GIZ and other development partners engaged in these activities in support to the Region.
153. This output will be achieved by implementing the following activities:

Activity 1.1.1) The BD LUP Tool

The BD LUP Tool (Biodiversity Land Use Planning Tool) developed by the project seeks to facilitate the operationalization of the landscape approach with full participation by stakeholders across sectors (government decision makers, NGOs, private sector investors, civil society). The BD LUP will supply geo

referenced spatial information that will be accessible on-line and open to public access. This will enable informed decision making on land-use planning, help monitor the state of the environment, and ensure a warning system on violation of natural resource and forest regulations. This will enable to address threats to biodiversity in real time (also refer to Output 1.2). The BD LUP Tool will rely on the PRLUBC, an end-product in itself consisting of a systematic biodiversity plan associated with compatible land use guidelines. The BD LUP relying on the PRLUBC will allow to issue advice on the projects footprints and assess impacts on biodiversity.

Assessments of the existing national land-use management systems in Madagascar showed that baseline geo-referenced spatial data exists but are scattered within several organisations in various formats and are often unreferenced. Data search and access is therefore difficult. During realization of the BDLUP Baseline data and digital documents will be gathered and new data will be produced. The BDLUP will harbour centralize and give access to this data within an online data catalogue along with a document management system that may easily be consulted by different government, non-government, private sector and civil society actors.

The BD LUP will facilitate:

- Both wider-scale and fine-scale land-use planning at the landscape level, taking into consideration the impacts that productive activities have on biodiversity, and where maps and plans at different resolutions can be navigated and compiled according to the needs, audience and context, but where the background data will always be collected and stored at the finest scale possible;
- The zoning/demarcation of the limits of PAs in the project zone;
- Identifying KBA's that need to be accorded higher protection status, e.g. as a New Protected Areas or a Community Conservation Areas;
- Recommendations on land-uses and environmental management measures that are appropriate and compatible with the ecological sensitivity of certain areas (such as rare habitats, including those that harbour populations of threatened species, buffer zones surrounding core PAs, riparian areas that are key to the maintenance watersheds, important support areas that provide ecosystem services etc.).
- Monitoring and control, thanks to a warning system, based on near real time remote sensing data acquisition and treatment, where the focus will be on forest loss, fires, violations...)

Detailed specification for the BD LUP Tool are described in [Study #2](#)³² referred to in Annex 7.

In sum, the overall BD LUP system includes thematic, technical and organizational aspects:

- 1- Structured geo-spatial baseline and synthetic thematic data layers** providing relevant information on Biodiversity and other thematic data allowing to develop a Plan with Recommendations on Land-Uses that are Biodiversity Compatible (PRLUBC).
- 2- An Online Geographic Information System** providing a variety of tools to support decision making:
 - a. Standard data querying tools;
 - b. A Land Use Planning Toolbox which allows to assess and measure the impact of projects footprint on specific areas of the landscape, based on the PRLUBC; and
 - c. A geo-catalogue and a digital document management system;
- 3- Observatory of Regional Biodiversity and Ecosystems (ORBE)**, in charge of maintaining and updating data, formulating guidelines and recommendation for land-use planning, also responsible for monitoring, surveillance and warnings relying on real time data acquisition and treatment

The dynamic and interactive aspects of the tool enable users to rapidly obtain information on potential impacts, and develop strategies to mitigate these impacts on biodiversity and ecosystem services, by testing different potential footprints interactively, and modifying or shifting footprints elsewhere when possible. Additionally, the system will enable users to assess the potential for impact off-setting, e.g. by allowing

³² PPG Report Activities, BDLUP technical functional and organisational requirements, Djoan Bonfils (September 2015)

users to establish scores that represent the level of intactness of ecosystems, including at habitat level, and thereby assessing the implications of ecosystem degradation and loss of biodiversity, not just at the locality, but at the wider landscape level.

Activity 1.1.2) Plan of Recommendations on Land-Uses based on a Biodiversity Component (PRLUBC)

The PRLUBC plan is a systematic biodiversity sectoral mainstreaming plan that contains a suite of recommendations on compatible land-use activities. It relies on spatial information layers and other contextual analysis from the BD LUP Tool for issuing advice on potential land uses. The PRLUBC in itself is an end product resulting of systematic analysis and research studies to characterize importance of areas for biodiversity conservation at landscape level. The aim of this activity is to ensure that the PRLUBC, including its spatial information layer, will be annexed to the regional land-use plan (SRAT) and the regional development plan (PRD), where and will be considered for their implementation.

The Charter for Engagement signed by partners working in the CRAT committee, in charge of the regional land-use planning process (refer to the section on [Land-use planning at the regional level](#) for more information) will be pivotal in negotiating the process of integrating these recommendations. The SRAT is latter made official by the regional government through a decree giving this document the force of law.

The technical content of the PRLUBC will be a geospatial data layer showing, among other features, critical and key biodiversity areas, support areas for ecosystem services and other natural or already degraded areas. It will then prescribe the classes and types of land-uses possible to enable the safeguarding biodiversity. It will indicate the main lines of action and management measures to be followed, integrating the needs of different development and conservation sectors.

The SRAT process is currently underway in the Region of Atsimo Andrefana, with local authorities setting up the CRAT committee and other requirements to carry out the planning process. The GIZ is the technical partner engaged with the Region providing financial and technical support for this process for community level planning (PAG-T) in the surrounding of PAs targeted by the project. During the PPG phase, the project mobilised a partnership with the latter institution, in the form of co-financing (refer to Annex 1) and collaboration, in an effort to provided concerted support to the Region in the same project sites. Collaboration and synergies will be developed by the project teams (i.e. Core and Component 2's) during work planning. The partnership will enable to coordinate field activities, cut costs, and share technical approaches and best practices.

The SRATs that have been completed up to date—and only a few regions have actually completed this plan—are useful and official planning documents, but compared to the project is proposing, it can be considered a 'static' land-use planning tool. It lacks 'land-use management' elements to guarantee safeguarding biodiversity, and does not provide in-depth analysis to the SRAT or the PRD planning processes. This gap will be filled by addressing through the PRLUBC emerging and historical threats in real time. The BD LUP and the PRLUBC are both dynamic and responsive tools, based on state of the art technology that is expected to considerably improve biodiversity management in the Region.

The national land-use plan (SNAT) and the regional plan (SRAT) contain information elements required to develop the national development plan (PND) and the regional plan (PRD) that are management tools. The recommendations emanating from the SNAT/SRAT are essential and must be up to date. The PND/PRD are key elements in biodiversity conservation, because they prescribe the development investments that will be carried out, based on information provided in the two latter documents.

Consequently, the project will work both in land-use planning (SRAT) and development planning (PRD) at the regional level, reinforcing the biodiversity and ecosystem conservation elements and proposing environment management plans and recommendations for both processes through the PRLUBC.

Activity 1.1.3) The Observatory of Regional Biodiversity and Ecosystems (ORBE)

This structure will allow stakeholders to observe, inform, and liaise among them on important biodiversity management aspects pertaining to the Atismo Adrefana region. It will be the organisational unit that hosts and manages the data developed by the BD LUP system. It will be housed in the DREEMF.³³

This tool will be developed and refined during the implementation phase of the project, based on identified needs. It is meant to be a flexible and dynamic tool that allows to update information on a frequent basis. Above all, it will be openly available to any interested stakeholder.

Information provided by the ORBE will focus on the state of biodiversity, development sectors and human settlements. It will produce geo-referenced maps, and develop different types of analysis and projections on the potential impacts that large-scale investments may have on biodiversity. This system will also enable to monitor the violations on forest regulations, through a warning system in quasi-real-time. By providing local authorities with this information, the impacts on biodiversity caused by illicit activities may be better managed.

A network of multi-disciplinary experts will be in charge of the ORBE, providing the required information and conduct analyses. Although it will be housed by the DREEMF, the ORBE will conserve its independence, so as to separate the roles of control and enforcement (exercised by the Ministry) to those of monitoring and information sharing (by ORBE).

One of ORBE's main functions will also be to broadcast information and create synergies among stakeholders through its monitoring functions.

Output 1.2 Capacity for Threat Management

Land use allocation practices and applicable regulations and means of enforcement at the regional, district and commune levels are strengthened, in light of new mainstreamed planning instruments

154. Through this output the project will operationalise a transparency system and to foster stakeholder capacity at various levels to apply a legal and enforcement framework at the regional level that favour biodiversity mainstreaming. In other words, it will focus on the management, monitoring, control and application of environmental norms and regulations on land use allocation practises through systemic, institutional and even individual capacity development. It will build on the results from Output 1.1 and it is closely related to activities under Output 1.3. The expected results from this Output are improved law enforcement capabilities by relevant stakeholders to effectively reduce pressures on biodiversity resources across the landscape.
155. New threats resulting from large scale productive investments, in addition to the historical threats linked to forest encroachment will be object to stricter controls. Violations of norms will be identified through a monitoring system and authorities will be alerted in real time.
156. The ORBE will serve as a two-way information and communication facility. By enabling access to information at the field level, it will allow authorities to react to encroachments on PAs in almost real time. Inversely, information made available from top levels to communities, will feed back to ORBE to improve the quality of its products and thereby also contribute to the application of environmental measures contained in legal texts and agreements through its monitoring function.
157. Local populations are often not aware of the rights they have to free access to public information. Local authorities do not necessarily share nor communicate legal texts and regulations (e.g. those contained in EIAs), and are often ill informed themselves. The ORBE system will improve communication to inform communities.

³³ Refer to [PPG Study #2](#) for more on specific recommendations on data hosting and management.

158. Moreover, the law does not contain an effective complaint system. Nor does it foresee adequate conflict resolution mechanisms. Law enforcement authorities, such as forest agents, do not have the means or the capacity required to maintain control systems. By informing local communities of their rights to information, to being consulted on investments, and their role in alerting authorities, in addition to building the capacity of forest agents, the control systems may be improved and reinforced.
159. The project will also **build the capacity** of the DREEMF to duly monitor the mitigation measures established during multi-stakeholder negotiations on new investments, and where the ORBE and BD LUP Tool will play a key role. (see [Output 1.3](#)).
160. By developing tools such as the BD LUP and the ORBE two-way communication facility, and by enabling their application, the project aims to promote a **Transparency System for Biodiversity Management**. The warning systems, enabled by the ORBE will also help to conduct oversight of the application of regulations by local authorities reducing potential wrong-doing in the control and enforcement functions exercised by authorities (as a ‘checks and balances’ system). The improved control system will enable stakeholders to identify if commercial wood producers have the required permits and warn authorities on illegal logging (police, MNP, DREEMF). The project may e.g. conduct studies to trace the origin of various types of wood products under activity 1.2.3, and in this manner reduce loss of precious resources because of flaws in information systems and data.
161. The DREEMF, the ONE, Regional authorities and sectoral ministries, local association and NGO’s will have the tools to exercise control over the application the environment mitigation measures contained in different texts and control illegal use of biological resources. Free access to information on violations to applicable regulations on biodiversity management, including on PA management, will enable both local authorities and the society at large to provide support to the control system.
162. Additionally, **community based control systems** contained in TDG contracts (e.g. COBA control groups and other), will be reinforced to support the system mentioned above, by providing tools and materials used in control and monitoring (e.g. Bicycles, lamps, books, digital cameras, smart phones, etc.) (Refer to [Output 2.3](#)).

Activity 1.2.1) Capacity building

The capacities of personnel in charge of the Regional Environment Units, the DREEMF, and those who function within the sector ministry Environment Units, will be built through project support. Capacity building will be essential to enable monitoring the application of mitigation measures (contained in EIA and PRLUBC) (Refer to Output 1.3). Training within the DREEMF and the Region, will focus on building the following competencies:

- Implementation of the environmental mitigation hierarchy (see Box 2 and Box 3 for more explanations)
- To make use of spatial data and analysis, where direct experience with the BD LUP Tool and products prepared by ORBE, among them the PRLUBC, will be crucial
- Technical knowledge on potential environmental impacts concerning the types of large scale investments currently in the Region (ORBE can e.g. work on building an extensive, annotated and searchable e-bibliography on the matter)
- Training in monitoring and evaluation, warning systems, surveillance of law enforcement and implementation of applicable regulations and environmental governance tools with respect to biodiversity management at the landscape level

The stakeholders and institutions participating in Environmental Units of region based sector ministry’s will also benefit from periodic training on diverse environment related themes.

Box 2: Mitigation Hierarchy

Why offset threats to biodiversity, when they can be avoided altogether?

The idea of biodiversity offsets is controversial to some in the conservation community. The fear is that the use of offsets could encourage regulators to allow projects with severe impacts on biodiversity to go ahead as long as they offered offsets to compensate, allowing companies to leave significant impacts in areas affected by projects as long as they undertook conservation work elsewhere.

BBOP addresses this concern by advocating for strict adherence to the "mitigation hierarchy", which views the role of biodiversity offsets as a "last resort", after all reasonable measures have been taken first to avoid and minimize the impact of a development project and then to restore biodiversity on-site. Conformance to the mitigation hierarchy is the first of the ten best practice Principles established by BBOP, and a fundamental part of the [Standard on Biodiversity Offsets](#).

"Biodiversity offsets only come into play once rigorous steps have been taken first to avoid and minimize impacts. Far better to avoid harm to vulnerable and irreplaceable biodiversity to the extent possible, than to make good on damage later." (Kerry ten Kate, BBOP Director)

This simple graphic below depicts the steps of the mitigation hierarchy, (avoid, mitigate, restore or rehabilitate and offset). This approach enables an infrastructure development project to work towards "no net loss" of biodiversity, and ideally, a net gain. The application of the mitigation hierarchy, and how far each step should be pursued before turning to the next, is one of the key issues for consideration in biodiversity offset design.

The mitigation hierarchy is defined as:

- **Avoidance:** measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of elements of infrastructure, in order to completely avoid impacts on certain components of biodiversity.
- **Minimisation:** measures taken to reduce the duration, intensity and / or extent of impacts (including direct, indirect and cumulative impacts, as appropriate) that cannot be completely avoided, as far as is practically feasible.
- **Rehabilitation/restoration:** measures taken to rehabilitate degraded ecosystems or restore cleared ecosystems following exposure to impacts that cannot be completely avoided and/ or minimised.
- **Offset:** measures taken to compensate for any residual significant, adverse impacts that cannot be avoided, minimised and / or rehabilitated or restored, in order to achieve no net loss or a net gain of biodiversity. Offsets can take the form of positive management interventions such as restoration of degraded habitat, arrested degradation or averted risk, protecting areas where there is imminent or projected loss of biodiversity.

Source: www.bbop.net

Activity 1.2.2) Develop guidance documents on environmental threats and management

To ensure on-going training and promote good practice within the DREEMF and the Environment Units of different sector ministries, the project will develop two 'Guidance Documents' (still to be named and properly scoped) related to how to manage environmental threats and how to integrate mitigation measures within the project cycle of high impact sectors – in particular extractive industries and large-scale commercial agriculture projects.

Guidance will draw from international standards and good practices on the matter (e.g. ISO 14001, CBD, USAID Guide, ICMM, DFID, WHO, BBOP, FAO, CGIAR among others). The Guidance Documents will help users conduct oversight of mitigation measures implied in the different phases of a project cycle, either of private productive investments, enabling to apply corrective and adaptive measures before further potential environmental impacts occur.

The Guidance Documents will be used in several training contexts but also as everyday use literature on key threat management processes. The Guidance Documents should be owned by the public sector – DREEFM, ONE and ORBE – but they should also be publicly available online.

Although building on international best practices, the Guidance Documents will be unique to the extent that they will bring the mainstreaming experience in the Atsimo Andrefana Region to other parts of the country and also to the international level.

Activity 1.2.3) Develop a pilot program for improved threat management at the landscape level as a public private partnership

A **pilot program** for improved threat management at the landscape level will be developed. It will engage DREEMF and a private company to be defined in applying appropriate threat mitigation strategies based on the hierarchy of environmental measures (refer to Box 2) with a particular focus on biodiversity and by building on key information provided by the BD LUP Tool. The choice of company should tend towards company that plans to invest in a high impact productive project in Atsimo Andrefana (it may be in extractives or large-scale commercial agriculture), but where the actual detailed scoping and planning processes are yet to start. This should serve as a model and provide experience and training to personnel of the public environment sector on the practice of mainstreaming.

To date, the ‘Ambatovy off-setting project’ is seen as the most thorough example for the application of the Mitigation Hierarchy in Madagascar (refer to Box 3 for more information). This GEF project proposes to expand this experience, by showing e.g. that, by intervening early in the project cycle, the opportunities for threat avoidance and minimisation can in fact pay-off in certain circumstances, in particular depending on how trade-offs are negotiated.

By implementing a pilot project, regional stakeholders in Atsimo Andrefana (government in particular) will have first-hand experience, on how the mitigation hierarchy is actually applied, how to integrate context specific environmental measures within the project cycle of extractive industry projects, and how to negotiate and sign agreements containing trade-offs that will benefit both the environment and the economy of the region.

Taking into account that private companies must comply with the EIA process, which is supervised and managed by the ONE, the pilot project that will be developed by the DREEMF authorities, following the EIA, will build the capacity of the DREEMF. The pilot program, through in-depth studies conducted by the DREEMF with support from the project, will facilitate a greater collaboration, enable to review mitigation measures contained in the EIA and identify in-depth context specific measures, complementing in this way the EIA measures.

The process of developing a pilot programme will serve the government to engage with the private sector in a proactive manner, attempting to set up a dynamic work culture between sectors. Inter-sector negotiations will create awareness within the private sector on environmental needs, and may result in promoting further technical and financial support for biodiversity and ecosystem protection.

A policy white paper, analysing and documenting the experience of the public-private partnership will enable to draw lessons and communicate these best practices, to different government sectors, that are responsible for decision making concerning productive investments.

Box 3: Case Study: Ambatovy: Mitigation Hierarchy and Off-set program

As the cobalt and nickel mining investment project Ambatovy, owned by the Sheritt International Company, went ahead in the East of Madagascar, it became clear that it would cause damage to the area's biodiversity through progressive forest clearing (see mention on Ambatovy in Box 4 for more detail on the Environmental Footprint).

In light of these sensitivities, the project developed a biodiversity management program including a **biodiversity-offset initiative** with projected conservation outcomes leading to **no net loss** to biodiversity.

The onsite biodiversity program includes **impact avoidance, minimization, and reclamation** measures. Impact avoidance was achieved by creating a forest conservation zone that includes two tracts of distinctive azonal forests overlying the ore body. Impact minimization was attained through paced and directional forest clearing associated with taxa-specific salvaging and monitoring activities. For that effect, specific management programs for plants, lemurs, frogs, and fish were designed and implemented.

In parallel, the multifaceted **biodiversity offset program** is being developed with the establishment of a large conservation zone with biodiversity components similar to the impacted site. Other offset components include buffer zone protection with joint Ambatovy community management of forest corridor linkages, wetland protection, and re-vegetation activities. The mine closure plan is based on a progressive revegetation process, which will re-establish a multi- functional replacement forest with restored biodiversity values to be accounted for in the offset calculations.

Developing a project biodiversity vision and policy. Due to its setting and magnitude, the Ambatovy project elaborated a vision. The vision states that the project will develop and operate a sustainable mining and processing enterprise that significantly contributes to Madagascar, while delivering outstanding safety, environmental and social records, and generating attractive economic returns. The environmental strategy designed to honour the project's vision to deliver outstanding environmental records consists of:

- 1) Ensuring full regulatory compliance and conformity with international loan agreements;
- 2) Minimizing residual impacts through the stringent application of the mitigation hierarchy;
- 3) Reducing environmental risks through dynamic management guided by Malagasy know-how and stakeholder consultation; and
- 4) Producing positive conservation outcomes on biodiversity through the offset program that aims at achieving no net loss on biodiversity, and possibly net gain, in order to sustain 'a good citizen project' status in a host country recognized as constituting an internationally important biodiversity hotspot.

The Ambatovy project's actions with respect to biodiversity are guided by a project-specific biodiversity policy (Ambatovy Project, 2007). The vision of the policy is that responsible attention to the maintenance of biodiversity is in the best interest of the Ambatovy project, the human communities in which the project operates, and the world at large. The biodiversity policy sets the projects biodiversity end goals and the approach to achieve them, namely through a biodiversity management plan.

Source: Steven Dickinson1 & Pierre O. Berner, Ambatovy Project, Golder Associates Pty Ltd.

Output 1.3 Landscape Governance

Collaborative landscape and sectoral governance framework is developed and provides a platform for monitoring and ensuring compliance with prescribed land-uses

163. Through this output the project seeks to make landscape management effective and operationalise it by reinforcing the institutional and legislative frameworks, by applying the environmental measures contained in legal texts. It will capitalise on the capacity development efforts from Output 1.2 and the tools availed by work under Output 1.1, but it will focus more on action-oriented landscape level governance.
164. The project proposes to operationalise this output by setting up an Environment Unit for inter-sector dialogue that will function as a multi-stakeholder platform. The MEEMF is currently setting up this unit at the Regional Level, and the project will provide support to strengthen its operations and enable its functioning.

165. The Platform will host debates, negotiations, and encourage dialogues on biodiversity and ecosystem conservation and mitigation measures. It will act as monitoring and control unit, of the application of measures prescribed within the SRAT and the PRD, as described in the PRLUBC.
166. The concrete results of the work within the Platform will be: collaborative inter-sector agreements; proposals to revise the content of norms, regulations, laws; clear roles and responsibilities by stakeholders in monitoring the application of the measures contained in agreements, contracts and regulations; inter-sector collaboration.
167. This outcome aims to reinforce the institutional and legislative frameworks, and promote effective law enforcement. The tools will enable transparency in biodiversity and ecosystem management with due capacity for it developed (with reference to previous outputs).
168. Thanks to a concrete experience resulting from the implementation of a Pilot Project ([Activity 1.2.3](#)), and to information collected and analysed through the ORBE and the BD LUP Tool, the multi-stakeholder debate will be better informed and shed light on the needs of the environment sector in Atsimo Andrefana and the links to production sectors, enabling an informed dialogue among sectors and stakeholders.
169. The conclusions reached through debates will also serve to inform the process of developing a Strategic Environmental Assessment (SEA) that will be coordinated by the ONE.

Activity 1.3.1) Regional Environmental Unit and the multi-sector Platform

Providing support to set up an Environmental Unit at the Regional Level, currently under development, will enable to operationalize a collaborative governance framework. This Unit is formally presided by the regional authorities, with the DREEMF, having an executive role ensuring the management and technical coordination of a ‘platform’.

The Regional Environmental Units of Atsimo Andrefana will extend its work through a multi-sector platform with same name (see section on [Institutional Frameworks](#) for more background). The Platform will harbour a variety of thematic working groups, that will give voice to a wider variety of stakeholders and discuss sector specific needs. Some of biodiversity specific themes that will be treated by the working groups are: “how to mainstream biodiversity within private sector projects”, “how to mainstream BD within land use planning”, “how to establish equitable trade-offs between sectors” etc. Other related themes will be: civil society rights to public consultation; sustainable development, livelihoods and ecosystem benefits to local communities; monitoring environmental measures; etc.

Dialogues held through the Environmental Units’ Platform will assemble key development actors of the Region, such as: the regional, district, commune and *fokontany* level authorities; decentralized technical ministries (Regional Direction of Agriculture, Energy, Tourism, Livestock, etc.); conservation constituents (e.g. MNP, WWF, Blue Ventures, etc.) and engage actively with the private sector.

The DREEMF will coordinate the Environmental Units’ Platform, and will set up an management council formed by actors from different sectors, who will be made responsible for the implementation of different activities (e.g. launching and communicating ideas for debates, drafting inter-sector collaborative agreements, etc.) gaining participation and continued support by different sector ministries.

The Environmental Units’ Platform will play a pivotal role in EIA and their monitoring, through the Technical Committee for Environmental Evaluation and Monitoring, set up for each individual EIA process, by the Region with support from the ONE.

On-going dialogues will enable the DREEMF and key stakeholders to:

- Obtain technical information from the private sector to better understand the potential impacts of their activities on PAs and fragile ecosystems within the context of the exposure to their productive activities;

- Raise awareness of private sector actors on the dire consequences of their activities on the environment;
- Assess the variety of measures contained within the « environmental mitigation hierarchy » and the feasibility of their application in the local context;
- Avoid signing contracts and agreements based uniquely on off-setting measures that may lead to permanent damage on the environment;
- Assess the trade-offs between conservation and development, allowing to reduce the impacts on biodiversity and provide long term benefits to local communities.

Activity 1.3.2) Initiate partnerships between conservation and development sectors

Negotiations taking place within the Environmental Units' Platform will enable to develop concerted actions, plans, recommendations and partnerships between sectors. By exposing sector needs in an open dialogue the details on context specific environment measures and management needs for each sector will be available. Agreements to work in partnership to build in biodiversity measures may be developed thanks to these negotiations.

The project can support by carrying our key sectoral studies aimed at informing the processes. These are still to be defined and scoped, but would cover e.g. ecological, social and economic aspects of the region, needs assessments on biodiversity and ecosystem management, law enforcement, etc. They could also focus on specific sites targeted by the project and may include PAs, potential CCAs, and on ecosystems adjacent these, where large scale investments are currently taking place or bound to. These studies will provide in-depth information to put on the negotiating table and inform each sector from a scientific point of view how biodiversity conservation may benefit local development and how productive investments may integrate conservation measures within their projects.

Activity 1.3.3) Review relevant legislation and policies

In the coming months and into 2016 the Environmental Units' Platform, along with collaborating stakeholders, are expected to dedicate time to draft analyse and propose contents for revising a number of environmental regulations, norms, decrees and codes concerning environment and land use management (such as the Mining and Oil Codes, other) that will be submitted by the DREEMF to Parliamentary committees. There is a general understanding that this is needed for improved environmental governance in Madagascar, and the process is expected to be a multi-donor and multi-stakeholder effort, piloted by government. It could take time and the goals are yet to be set. This project is but a co-adjutant in the process.

Also, until now, the process of developing sectoral policies has remained enclosed within their sector-based priorities, making it is difficult to negotiate conservation and development trade-offs. Yet, this can change in light of the role to be played by Environmental Units' Platform.

The project will contribute to the process of reviewing and revising legislation and policies through specialised mainstreaming consultancies³⁴ and by engaging on regular basis with Environment Units to show the advantages and achievements of the BD LUP, the ORBE and the PRLUBC. The project's Chief Technical is expected to contribute significantly to it from a technical input point of view. The specialised inputs and the project's engagement will allow the Environmental Units and associated stakeholders to gain a greater understanding and coherence among sector policies, and legal frameworks by conducting sectoral and legal studies, making presentations to high-level audiences and directly contributing to the processes of policy and legislation review. The likely targets of legislation/policy review and mainstreaming includes legal packages on land property, mining, forest legislation and EIA.

³⁴ To be planned in more detail during the project inception.

Activity 1.3.4) Regional Strategic Environmental Assessment

Debates held between sectors, hosted by the Environmental Units' Platform, will aim to develop a common vision for the Region's economic development and environment conservation. Thematic working groups may debate and propose draft content for a regional Strategic Environmental Assessment (SEA) for the Atsimo Andrefana Spiny and Dry Forest Landscape.

Although there is a Strategic Environmental Assessment Service, under the General Direction for the Environment within the MEEMF, a SEA does not yet exist for the Atsimo Andrefana Region.

In support to the ONE, which is the institution mandated by the MEEMF to coordinate this process, for the Region, the project will contribute by reinforcing capacities and providing expertise for its elaboration.

The SEA development process will be participatory and consultative. Hence, it must result from a multi-sectoral dialogue. Work within the Environmental Units' Platform will enable the DREEMF to produce a SEA document that is regionally owned, and also owned across sectors, thanks to their active participation.

Activity 1.3.5) Communication strategy and awareness raising plan

A key role that the DREEMF will play is to promote and engage the private sector and line ministries through the discussions within the Environmental Units' Platform. A communication strategy and awareness raising plan, containing a detailed work plan, in order to enhance and promote participation, will be developed and implemented by the DREEMF with support from the project (e.g. Proposing theme based meetings, information sharing between sectors, organizing events, etc.).

Through communication, awareness will be raised among local communities and civil society, key players in the inter-sector dialogues, on the rights they have to be consulted during EIA processes and their roles and responsibilities in land use planning. Environmental education, land degradation, climate change adaptation awareness will be some of the themes addressed in communication plans and campaigns. Messages will be transmitted through information tools such as brochures, radio, documentaries, and tools such as learning manuals. Crowd sourcing and identifying "champions" among community actors (e.g. those managing TDG contracts) will be sought to collaborate with mobilisation, community awareness raising, and monitoring (also see [Activity 2.3.1](#)).

The project's communication strategy is directly linked to the BD LUP Tool and the ORBE and will enable information to circulate two ways, both from the bottom up and from top down sources. To facilitate communication with community level actors the project will provide the necessary means of communication and awareness (e.g. access to internet at the DREEMF and at the community level). This will enable the DREEMF to acquire information to feed into the BD LUP Tool portal in real time and alert authorities when conservation laws are infringed; while also enabling local leaders to disseminate information passed down from the DREEMF.

This activity will help implement the country's education policy and the National Strategy for Environmental Information and Communication for Sustainable Development.

Output 1.4 Protected Areas integrated into Landscape Management

Critical measures for completing pending PA proclamation processes and boundary demarcation are supported

170. This output is concerned with further integrating PAs within land-use planning of the regional landscape governance and threat management frameworks through strengthening. The aim is enable better conditions for partners and PA managers to fulfil the most pressing gaps in PA management so that these sites can better fulfil their essential role of 'biodiversity storehouses' within the wider landscape.

171. In terms of financial resources, the project has limited funding for a more thorough PA strengthening work, especially because its main focus is on mainstreaming. However, the project will have the human capacity within its Core Team to leverage additional funding for PA management and strengthening on behalf of PA managers, and it can even assume technical advisory tasks, if needed or requested. Work under this output will therefore focus on enabling studies and on availing state-of-the art spatial information to key PAs stakeholders through a variety of tools.

Activity 1.4.1) Strengthen PA Management where it is urgent and needed

METT scores for the four sites where it was applied were high: respectively 71%, 73%, 70% and 80% for Mikea, Onilahy, Beza Mahafaly and Tsimanampesotse. This is because these sites have been established for quite a while, even though some are tagged “new” (e.g. for Onilahy, it is a result of re-gazettal). Hence, for the most, these sites have and have had management interventions for a few years, which explains the high METT scores. Yet, the METT results for the four assessed sites point out to glaring gaps in PA management:³⁵

- Mikea scored low on law enforcement and on community welfare programmes.
- Beza Mahafaly and Amoron'i Onilahy scored low on equipment for PA management, and the latter also on the collaboration with commercial neighbours on water use.
- With the exception of Tsimanampesotse, all other three PAs that scored METT reported on inadequate visitors' facilities.

Under this activity, and as a result of a more careful needs assessment (to be done under [Activity 1.4.4](#)), the work will aim to help operationalise the PA management, where it is urgent and mostly needed. This will be done with the support of PA authorities, such as the MNP, private sector operators and cooperation partners already investing and working on core site management.

Activity 1.4.2) Zoning

In order to proclaim an area as a PA, a variety of preceding steps must be finalized. A key element is the demarcation and zoning of the area. Initially conducted at the community level, zoning frequently lacks spatial mapping technology based support. To reinforce initial community zoning, the project will provide spatial geo-referenced technology through the BD LUP Tool, (refer to Component 2, support to the PAG-T process), for each target site to reinforce the mapping and spatial zoning processes that are conducted at the local level.

Activity 1.4.3) Integrate PA in land-use planning

The project will help integrate all target PAs within landscape planning, within the SRAT, PCD and PRD. Information provided through the BD LUP Tool will be made available to the different sector authorities involved in the different planning processes, working within the CRAT committee.

Activity 1.4.4) Multi-disciplinary studies and needs assessments

The project will conduct needs assessments to determine the type of support required for each specific PA.

³⁵ This gave rise to the proposal of one high-level logframe indicator (#4) that focuses not on the overall METT scores, but on specific METT questions.

Studies will highlight the cost of PA management and the value of ecosystem services for local development. Studies will be composed of multi-disciplinary research teams, and include the perception of stakeholders. Where recent and relevant studies exist, this will not apply.

Results will shed light on:

- Economic value of ecosystem services and natural capital;
- Social and cultural benefits of ecosystem services as perceived by communities;
- Threats on PAs and natural capital (biodiversity and ecosystem functions) ecological footprint of different productive investments (e.g. mining, oil, large scale agriculture, land conversion, slash and burn agriculture, charcoal production, etc.);
- Assess cost of PA management (annual budget, human resources, etc.)

Study results will shed light on the value of PAs for local development, mobilise resources for their maintenance and identify gaps in management capacities. Information will enable the DREEMF to propose working agreements to private companies (refer to activity 1.3.1) to develop partnerships and request technical and financial support. The DREEMF will be in a better position to negotiate environment mitigation measures thanks to a deeper understanding of PAs and their needs³⁶.

An example of a need identified by the Madagascar Protected Areas System (MPAS/SAPM) is the lack of sustainable financing sources for PA management. The systems created through the project (refer to outcomes 1.1 to 1.3) by aiming to sensitize and create interest among the private sector to provide support to PAs, may help encourage support by the private sector.

Additionally, support will be provided to MNP and other PA operators in threat management (refer to output 1.2) and build their knowledge to apply the GEF METT tool where it is relevant, starting with the two NAPs within the landscape, where this remained to be done.

Component 2: Community-based conservation and sustainable use operationalised

172. The mainstreaming goal is to incorporate the conservation and sustainable use of biodiversity into management practice through community-based production and resource use activities.
173. Activities under this component will ensure conservation and sustainable development are mainstreamed in productive economic practises of local communities and land-use and natural resource management. The project will both work on the communities' livelihood aspect of local populations, and on the need to change predominated land-use practices that are unsustainable. Support by the GEF will promote land-uses that are compatible with conservation, effectively establishing a positive correlation between these two aspects. Additionally, the project will work towards the establishment of a network of strategically situated Community Conservation Areas (CCAs) within the landscape, thereby contributing to reducing habitat loss in selected local areas. CCAs and their buffers will equally play a key role in community land-use management. Overall, the project will simultaneously promote the mainstreaming of conservation and sustainable biodiversity use in local practices.
174. This component of the project aims to establish Community Conservation Areas (CCA). The ICCA³⁷ defined these areas as territories that have been conserved voluntarily, by traditional communities (or

³⁶ International companies have internal environmental principles and policies that they respect, and they cannot ignore the scrutiny from their clients and share-holders, and NGOs, and public opinion from their country of origin. Such oversight may be an opportunity to develop a new type of environment partnership model to encourage future investors and demonstrate the environment and mining sectors do not necessarily have opposing interests in the country. CEA, Banque Mondiale (2015).

³⁷ Legal and institutional aspects of recognizing and supporting conservation by indigenous peoples and local communities, an analysis of international law, national legislation, judgements, and institutions as they interrelate with territories and areas conserved by indigenous peoples and local communities, Jonas, Harry, et al., ICCA (2012)

indigenous communities). The types of subsistence activities conducted are sustainable and enabled to conserve the ecosystems, maintaining resilience and diversity. This conception of community areas highlights the importance of maintaining tradition and culture as a strategy for biodiversity conservation (see [Annex 5-F](#) for further explanation on [CCAs in Madagascar](#) and for an analysis of the relevant [legal and policy frameworks](#) for environmental management more generally; see also [Section 1.2.3](#) for a summary).

175. To establish CCAs, the project will need to take into consideration the current context, practices and legal frameworks in Madagascar. The legal and institutional system for PA management values traditional norms (such as *Dina*), which contain elements that help regulate natural resource management by communities. These norms are capitalized and valued within the formal legal framework for community natural resource management (GELOSE/GCF) by their recognition (homologation) and the integration of these within the TDG contracts.
176. The revised PA Code (COAP) has opened a new path that enables the legal recognition of community co-management of PAs. It also gives new PAs (NAPs) of IUCN Categories V and IV a guiding framework for their development. This is an addition to the existing community management system in the buffer zones of PAs categories I, II, and IV, where several communities are already managing TDG contracts in support of the PAs.
177. The two types of community co-management of PAs value the DINA norms, and hence they value the traditional norms which guide community practice. Both systems may be considered as a type of CCA system specific to the local context of Madagascar, even though the project will be seeking a CCA recognition that has an international equivalent.
178. Four outputs are planned: (1) CA Establishment; (2) Codifying Local-level Resource Use Governance; (3) Local Capacity for BD Management; and finally (4) Local Economy and Benefits. The project's Component 2 Team will be composed by the CSO(s) responsible for the implementation of the bulk of Component 2 activities. Specific support for biodiversity management, use of the BD LUP and mainstreaming, as well as M&E will come from the project's Core Team.

Output 2.1 CCA Establishment

Selected habitats with high conservation value in target communes are set-aside through formal proclamation as 'Community Conservation Areas' (CCAs) and their management is operationalised

179. This will be achieved through a two-pronged approach: (1) local-level spatial planning (applying the *PAG terroir*) and (2) community-based resource use monitoring and enforcement mechanisms.
180. During the PPG a site selection exercise enabled to make a selection of CCA sites, and where the specific identification of key biodiversity areas (KBA) was part of the step-wise methodology. (Refer to Section 1.6 on site selection, in particular to Table 3 to the site list at *fokontany* level, and to Annex 6 for a wealth of details).
181. Future CCAs, will be constituted by a KBA (an area within in with high value for conservation) and the agro-pastoral zones surrounding these areas. The KBAs will be constituted by two physical limits: the first frontier will be formed by the limits of the forest formation identified as a KBA (established in the intersection of the polygon which resulted from research conducted on ecosystems and biodiversity), and the second frontier constituted by the limits of the CCA. The latter frontier will be set up through community consultations. Zones that are currently inhabited and industrial production zones (including industrial farming areas) will be excluded from the CCAs.
182. Two steps are involved in the formal creation of CCAs: (1) acquiring formal status for KBA protection, and (2) acquiring the formal status of the CCA as a whole.

- (1) The first step will be achieved through a *transfer de gestion contract* (TDG), transferring forest management to communities (GELOSE or GCF type contracts). The administrative steps involved will be provided project support, including: identifying forest formations of KBA, formalizing a TDG vis-a-vis the authorities, developing an inventory of existing biological inventory (identifying endemic species, and those under threat), developing a land-use plan and ritualising support to the TDG by communities.
 - (2) Formalizing the CCA status in the Region follows the same process conducted in creating PAs. This includes: conducting environmental and social impact assessments, public consultation, and zoning, developing a management plan and acquiring an official creation decree. A CCA may contain more than one KBA.
183. Establishing and managing CCAs and managing KBAs is a long-term progressive activity, and will require adequate financial resources. A large portion of the GEF Component 2 budget will go to this aspect.
 184. Spatially, it is assumed that any CCA is to be fully comprehended within a single community's territory (i.e. the *fokonolona*, which is basically synonymous with community at the very local level). To strengthen the sense of "ownership" towards the CCA and for allowing a smooth operationalisation of TDG contracts, it should be avoided that more than one community is responsible for the same CCA.
 185. Through the site selection process, the project has already ensured that the 13 proposed *fokontany* are those where community leaders manifested a willingness of locals to get involved in community conservation (see more on the criteria in paragraph 129). At the same time, the project should also strike a good balance between the surface of CCAs—and especially of their KBAs—and the community's ability and capacity to play the role of "biodiversity custodians" vis-à-vis the sites.
 186. CCAs and KBAs should therefore neither be "too big", so the *fokonolona* cannot fulfil its responsibilities under the TDG, or has it difficulties in managing both internal external resource use conflicts; neither should CCAs and KBAs be "too small". The latter would mean that key habitats become fragmented and the value added to conservation of these CCAs and KBAs is diminished. There is no "magic number" that infers the ideal ratio between the number of community inhabitants and the surface of a CCA or KBA. It all depends on a number of variables, so this needs to be assessed spatially and at fine scale. The **BD LUP Tool** will be brought to use for this purpose.
 187. Also, when more than one *fokonolona* has an interest in the same piece of forest that can be potentially proclaimed as CCA, the project should consider artificially dividing the CCA, and even demarcating it on the ground, while maintaining the contiguity of KBAs within them. This should avoid resource use conflicts. If needed, conflict resolution mechanisms may also be brought to bear (this is foreseen under [Activity 2.2.1](#)).
 188. Finally, the community's land-use management plan (PAG-T) and the land-use management plan to be developed for the CCA with support from the project will be combined with the aim of simplifying processes and using formalised templates with good acceptance among the authorities.
 189. With the exception of aspects where the project's Core Team will provide specific technical and monitoring inputs, all other activities under this output will be piloted by the project's Component 2 Team and are within the scope of the project grants, as follows:

Activity 2.1.1) Identify KBA's in the target landscape

During the PPG phase KBAs were identified, where fine-scale data were used (as opposed to global data sets). Some KBAs had been previously identified by conservation specialists and taken into account during

the project identification exercise. They were then validated as potential KBA's to be targeted by the project.

For some KBA's to be identified, further to the PPG exercise, biological inventories will need to be conducted to confirm their key biodiversity status. Target KBAs are located outside the larger forest blocks, the bulk of which is currently under protection status as formal PAs. These KBAs are therefore smaller and spatially restricted areas, although they are assumed to represent rare habitats where unique fauna and flora species still survive. It is hence urgent and worth it to provide protection to these areas.

The BD LUP Tool provides the satellite imagery required to establish an objective zoning and delimitation for KBA's to back the identification exercise.

Activity 2.1.2) Provide support to communities to implement TDG contracts in KBAs

Management transfer of KBAs to communities is a key step, which precedes the establishment of a CCA. The process is initiated by communities. The actual request for a TDG contract requires a KBA resource inventory, which will be the object of the management transfer contract, and detail the management roles and responsibilities by communities to manage the contracts. Support from the project will be provided for all these steps. Specific support will also be provided to develop the KBAs a land-use management plan which will contain detailed list of management activities required to include in the contracts.

Another step required to set up KBA and CCA is for communities to develop a social contract (DINA) with biodiversity components, granting the conservation status for the KBA at the local level and setting up the access rights to the perimeters of the CCA. The process is concluded through a ritual ceremony that ensures the cultural acceptance of the transfer contract by communities and their engagement in implementing the DINA.

Activity 2.1.3) Establish CCAs based on resource transfer contracts of KBAs

Establishing a CCA is essentially a community based process, more so than the preceding steps.

This process consists of establishing limits to the territories, well defining different land-uses such as agriculture use lands, horticulture and pastoral lands with respect of the KBA. In these adjacent lands to the KBA, resource sustainability is key to maintaining the KBAs. These areas were previously forest covered areas, later transformed into productive zones for community subsistence activities.

This land zoning process will be participatory, strongly supported by public consultation and participatory exchanges with relevant communities. Special consideration needs to be made, considering that these areas should not encroach the KBAs. Zoning and land-use types will be completed and formalized when the KBA protection status is granted. A CCA may contain one or more KBAs under a resource transfer contract.

Activity 2.1.4) A land-use and management plan that integrates community resource management will be developed with local communities (fokonolona)

The PAG-T is a land-use management plan developed by local populations with support from environment institutions. Tany Meva is one of the promoters of the PAG-T in the region of Atsimo Andrefana. This plan spatially defines the different land-uses of community lands.

The territory of traditional populations is traditionally defined, and it is important that the areas that are slated to become a CCA in this territory be identified initially with local populations. This reinforces the social acceptance of the resource transfer contracts for KBAs and the establishment of a CCA, across the full population of the community.

A CCA may have more than one resource transfer contract, hence the management structure of the CCA will be set up accordingly.

Activity 2.1.5) Provide support to KBA and CCA management operations

Community management of CCAs requires standard activities specific to conservation, such as patrolling, monitoring pressures on resources and biological monitoring. These activities will be carried out with the communities that have signed the resource transfer contracts. Communities will receive training and required material (bicycles, camping materials, smartphones, IT equipment, applications, GPS, etc.).

Output 2.2 Codifying Local-level Resource Use Governance

Local governments (commune, fokontany) and participating local communities collaborate to sanction into by-laws (Dinas) the proclamation and sustainable management of CCAs

190. This output will reinforce the actions taken through the preceding outputs, by codifying the sustainable land and resource use measures at the community level that will later be integrated within legal texts at a higher administrative level, such as the SRAT and PRD.
191. With the exception of aspects where the project's Core Team will provide specific technical and monitoring inputs, all other activities under this output will be piloted by the project's Component 2 Team and are within the scope of the project grants, as follows:

Activity 2.2.1) Integrate CCAs within the PAG-T and the regional land-use plan (SRAT)

A PAG-T is a management instrument which regulates sustainable land and resource use on the long term. Essentially, it provides an inventory of lands uses at the territory in question and the actors involved. Consequently, from a spatial planning point of view, CCAs are an element contained within the PAG-T. Given that land management plans of the CCAs are constituted by elements that pertain not only to CCAs (e.g. impact compensation measures or mitigation hierarchy measures for the CCA), operationalising a CCA will also be a central focus of the PAG-T and the SRAT. The project will make sure the land-uses defined in the CCA land-management plans are duly integrated within the PAG-T and the SRAT.

Activity 2.2.2) Codify biodiversity and sustainable development measures within the DINA, the PAG-T and legal texts

The project will facilitate the legal recognition of DINA, as part of the resource transfer contract and PAG-T process to enable communities to propose a site as a CCA.

The project will help integrate sustainable economic activities and biodiversity conservation measures that have been identified by communities. These activities will be integrated within the DINA before communities seek legal status of this customary law, before commune authorities.

Activity 2.2.3) A framework to negotiate trade-offs

The project's Component 2 Team will facilitate community level negotiations of trade-offs between conservation, sustainable natural resource use and community economic benefits to establish the content of the land-use plan for CCAs, and the TDG. The results of these negotiations will be included in community land-use plans and ensure that CCAs obtain legitimate recognition by all stakeholders (communities and local authorities).

Negotiations will take place between local actors and the public authorities responsible for developing the resource transfer contracts, in the target communities.

Facilitation by the project will focus on helping stakeholders expose sector needs and enable a more equitable balance of power between community level stakeholders and more powerful actors, such as authorities or private sector actors. Stakeholders may draw information from scientific research and community consultations to strengthen negotiations.

In this manner a framework for public, participatory and transparent negotiations will be set up and enable to establish trade-offs that better reflect the local context. By promoting the involvement of communities in defending their rights to social and environmental benefits, and raising their awareness, communities will be capable of negotiating and engaging in an open dialogue about the environment, their economic needs, and the benefits derived from ecosystem services that they require to sustain their livelihoods³⁸.

The latter activities are directly in sync with the **Transparency System** promoted by the project to manage biodiversity developed through Component 1 (see Outputs [1.2](#) and [1.3](#)), and the open communication system that underpins the consultative and participatory CCA establishment and KBA custodianship (refer to [Activity 2.1.3](#)).

The trade-offs resulting from public negotiations will be considered and integrated within the different legal texts and plans (*Dina*, TDG, and PAG-T). They will be recorded in and communicated through the BD LUP System to different decision making levels, so that key stakeholders are able to access this information freely allowing them to be integrate the results within higher level planning processes (SRAT, PCD et PRD).

The project will also provide support to finalise the process to obtain legal protection status of the CCA, including: validating management documents; the legal recognition of the DINA; the integration within the BD LUP information system and the PRLUBC; and annexing the PRLUBC within the SRAT and the PRD.

As described above, the project aims to mainstream biodiversity within regional land-use planning, starting with community level planning processes, followed by the integration into communal and regional planning. As a result, CCA will have legal recognition and implementing force ensuring, in this way, the respect of the limits set to the CCA within land-use planning.

Output 2.3 Local Capacity for BD Management

Strengthened and functional CBOs in targeted local communities establishing CCAs provide a vehicle for building community capacities to manage biodiversity sustainably

192. This output focuses on building the capacity of local communities and community based organizations for biodiversity and ecosystem management, to operationalize and implement sustainable development activities that have been negotiated and agreed upon through agreements, plans and contracts mentioned above.
193. With the exception of Activity 2.3.3 below and aspects where the project's Core Team will provide specific technical and monitoring inputs, all other activities under this output will be piloted by the project's Component 2 Team and are within the scope of the project grants, as follows:

Activity 2.3.1) Technical and organizational capacities of community based organizations (CBO's/COBA, other)

The main actors who are in charge of implementing the local management plans (regulations stipulated in the resource transfer contracts/TDG, TOR of the COBA) are community members that were elected by their own community as representatives and TDG managers, who are in charge of the CSO/COBA that

³⁸ This project is based on a Human Rights Based Approach.

were set up to implement the TDG contracts. They are responsible for applying biodiversity management measures, monitoring and applying control mechanisms, contained within the TDG. Community managers often lack the full competencies required to implement the TDG, consequently the project will need to build their capacities and provide on-going support during project implementation.

Workshops, working sessions with the project, exchange visits to share good practises and experiences between community managers of different target communities enabling managers to work in a network of COBA's, are some of the capacity building activities that the project will carry out.

A competition based system will be set up between communities and managers. Those who successfully implement regulations will be considered the "champions" and their communities as a model. By involving the community as a whole in competition based social events, awareness will be raised throughout the communities, not just among those involved directly in implementing TDG, enabling to mobilise respect for the biodiversity component of the DINA's and the TDG by the whole population. Community mobilisation will be part of the responsibility and a formal activity of the COBA managers.

Workshops will focus on training community managers in management of CCAs and PAG-T, planning, identifying socio-economic community needs, biological monitoring, and control and monitoring of violations on forest and natural resource regulations. Special focus will be put on building the capacity to manage the flow of information required to inform the BD LUP system by communities (such as use of smart phones and other means) in real time.

Additional thematic trainings on relevant issues, such as resource-use conflict resolution, managing forest fires, sustainable natural resource practises, public health issues, and equitable sharing of benefits, will also be provided. Trained community managers will be trained to facilitate training in their communities (training-of-trainers). Additionally, by working with the project's Component 2 Team in the field, capacities will be reinforce on a day-to-day basis.

Activity 2.3.2) Systems and structures for community biodiversity management

This activity refers to support by the project in setting up the required systems and organizational structures for biodiversity management by communities contained in the PAG-T, in CCA plans and the measures defined for KBA management. By accompanying communities during the set up phase of management structures, the project will be able to monitor the competencies of trained COBA managers in applying the knowledge acquired through trainings and their management capacities, and subsequently reinforce their capacities where needed.

Material support to this activity will be provided as part of the project grant to the CSO(s) responsible for Component 2, but specific technical support on biodiversity management aspects will be provided by the project's Core Team.

The project will have a specific focus on enhancing the participation of women in: biodiversity management, in public consultations and decision making regarding natural resource management.

Activity 2.3.3) Build the capacity of the Regional Forest Administration

The project will provide support to civil servants involved in community management of natural resources, principally the regional forest administration based on a needs assessment, to enable forest agents to provide support to communities in applying the measures contained in the DINA; ecological monitoring; organizational requirements; and capacity building among others.

This activity falls outside the scope of the project grants to the CSO(s) responsible for Component 2

Output 2.4 Local Economy and Benefits

Livelihood activities carried out by targeted local communities are managed sustainably, ensuring conservation of biodiversity and its use within sustainability thresholds, but equally the generation of socio-economic benefits

194. The project will promote local livelihoods and subsistence production activities of target communities and ensure that they are compatible with biodiversity. The rotating funds provided by Tany Meva, and small grants programs implemented by other development partners (non-GEF) for agriculture activities, food security and energy provision are part of the project's baseline and co-financing—activities that reinforce local development³⁹. Agriculture, horticulture and pastoral activities, small scale plants for distilling of essential oils, production of cash crops such as rice, maize, and green pea production are some of the activities that will be promoted and for which social and environmental safeguards will apply and will be monitored. If required, the project will build basic infrastructure, such as water irrigation systems (small scale dams, irrigated perimeters etc.) to improve agriculture and food security, even though co-financiers such as MINAGRI have a strong interest in working on the same sites as this project for activities already identified (see [baseline investment descriptions](#)).
195. If needed, the project's Component 2 Team will carry out market analysis out and support in identification of both traditional and new markets, where the GEF increment and the pursuit of global biodiversity benefits can be maximised.
196. As seen in the [Situation Analysis](#), the high prevalence of poverty is considered one of the drivers of overexploitation on forests and of habitat loss in the target areas, in particular due to fuel wood production and prevailing land-use practices linked to subsistence agriculture. In recent years, large-scale commercial agriculture is emerging as a threat factor vis-à-vis biodiversity and ecosystem services.
197. In order to enhance development of local economies, it is essential to create food security, revenue sources for women and women's groups, and progressively insert household economies within the market economy. The Project has a gender approach and will focus on promoting access to credit, producing added value and inserting products in high value market chains, developing community ecotourism, and promoting sustainable agriculture, to enhance local economies, and consider the role of women in local economies.
198. Many development partners currently work in the project's target community sites, enhancing local economies. The aim of this activity is to work with these partners to ensure that biodiversity and ecosystems sustainability are integrated within these activities.
199. All activities proposed under this output will be piloted by the project's Component 2 Team and are 100% within the scope of the project grants. They are as follows:

Activity 2.4.1) Promote sustainable agriculture in CCA multi-use zones

Activities that will be promoted in CCAs will be based on agro-forestry techniques, which ensure that soil and water resources are sustainably maintained and that the choice of crops, cultivars and agricultural techniques are in line to the best biodiversity and ecosystem services friendly ones given the specific context in each of the project sites. Avoiding threats from IAS will also be pursued. Species like igname and sorgho will be promoted to enhance food security, and high value agriculture products will be promoted for commercial use. Initially one farmers' group per CCA will be set up and trained in the use of agro-forestry techniques, if none are pre-existing. Farmers will then train other farmers and extend the knowledge among other community members (farmer-to-farmer training system).

³⁹ Refer to [Annex 1](#) for the co-financing table.

Activity 2.4.2) Enhance access to micro-finance

The micro-finance institution *Volamahasoa* works in the Region. The project will work with this institution to develop credit lines that respond to the needs of local farmers who are adopting sustainable techniques. In addition, a solidarity guarantee system, will be set up to grant micro-credit to women's groups. Depending on a number of conditions, a protocol is envisaged signed between the project's Component 2 Team and the latter institution. A small amount of project funding can be set aside for the start-up of the solidarity guarantee, if other funding cannot be leveraged otherwise.

Activity 2.4.3) Community ecotourism

This is a modest and exploratory activity at this early stage.

Some CCAs have a great tourist potential that should be valued and heightened. To provide support the project will develop basic infrastructure, and promote tourist operators, and build the capacity of local communities to manage tourism. Site selection for tourism sites will be conducted as part of the CCA and KBA site selection process, which is programmed to be finalised at the outset of the project and within the socio-economic studies linked to the development of the land management plans for CCAs.

All the above mentioned activities will draw from the technical knowledge of specialized professionals, with whom the project will partner in order to guarantee:

- Sustainability: ensure that local communities may develop techniques and set up structures with support while progressively taking full ownership and responsibility over the activities before the end of the project;
- Economic inclusion: ensure that community based economies are fully integrated within the real economy of the region, with minimum subsidies provided by the project, and community actors interacting independently with other economic actors and competitors. The project seeks to avoid distorting the perception of community households and their economic behaviour, to ensure that they make the correct economic choices and are able to carry them out without project support.

Activity 2.4.4) Women's participation and integration into development

The project will enhance the role of women in natural resource management. Socio-economic baseline studies, conducted at the outset of the project, will contain disaggregated data by gender. Information will be collected through focus group discussions with women's groups. This information will enable the project to understand and promote those activities that women conduct, the capacities of women's associations, the potential to create new groups, and the technical weaknesses and strengths of women in their social and economic activities, to then provide adequate training.

Studies will also inform on the situation of children and girls, in order to promote and enhance people's skills and capacities from an early age.

2.2 Gender Considerations and Other Project Benefits, including Innovativeness, Sustainability and Replicability

2.2.1 Gender Considerations

200. The project is guided by the UNDP Gender Equality Strategy, 2014-2017. The UNDP's vision states that gender equality is grounded in international human rights, norms and standards.
201. The overarching goal is to contribute to building the resilience of poverty stricken women and men, in order to achieve sustainable development. By conducting gender disaggregated research and capacity assessments, the project will develop knowledge on how gender relations are reflected in natural resource management; be able to develop gender sensitive project activities; develop government capacity to address gender issues; encourage governments to take action to integrate gender perspectives within natural resource management legislation, policies and programmes in the project target region of Atsimo Andrefana. The latter will also enable to institutionalize the use of these tools within the government structures that the project will work with and reinforce at the regional project site level.
202. The project's strategy is to mainstream gender considerations as a means to achieving gender equality. Challenges in promoting gender equality and women's empowerment may be faced in any stage of the project cycle. The project will aim to integrate gender sensitive considerations and activities to counterbalance these inequalities.
203. The gender mainstreaming approach is dual: 1. supporting the empowerment of women and girls through gender-specific targeted interventions, and; 2. addressing gender concerns in the developing, planning, implementing and evaluating of all project activities.
204. The project will ensure that in all stages of the project cycle, starting from the design phase, gender concerns are integrated.
205. Clear guidance for gender mainstreaming in the project cycle will be included in the UNDP quality assurance tool. In addition, the UNDP environmental and social screening procedure which is a mandatory project level screening requirement that aims to minimize or offset the potentially adverse environmental and social impacts of UNDP development work, contains a screening checklist that includes specific questions related to the project's gender equality impact and engagement with women⁴⁰.

2.2.2 Global Environmental Benefits

206. The highly threatened dry deciduous forest and spiny thickets totalling 2.4 million ha will enjoy increased conservation security and, at the wider landscape level, biological resources will be used more sustainably and essential ecosystem services maintained. Adverse land-use change will be stabilised in the fringes of core PAs (existing and new terrestrial PAs sum 240,000 ha), thereby reducing the level of threats to biodiversity in PAs that emanates from their periphery.
207. Forest fragments and extensive areas of high biodiversity value outside PAs (minimal estimated surface is 100,000 ha) will be brought under conservation management and will function as connectivity corridors.
208. Threatened species found within the landscape will enjoy improved chances of survival among them emblematic species of lemur (*Propithecus verreauxi*, *Lemur catta* and *Cheirogaleus medius*), red-listed

⁴⁰ Refer to Annex 8 for the SESF.

birds (*Monias benschi* and *Uratelornis chimaera* among others), as well as reptiles and amphibians (e.g. *Furcifer antimena* and *Ptychadena madagascariensis*).

209. The current and emerging negative impacts on biodiversity from production sectors will be more effectively avoided, and managed at the landscape level, in particular within the agriculture, forestry, extractive industries, energy production and transport sectors.
210. Protected areas combined with Community Conservation Areas will be reinforced and secured, and enhanced within the landscape land use management and planning processes. Traditionally one of the most widely used and, arguably, most effective tools for achieving conservation goals are protected areas which play a significant role in supporting local, national, and international biodiversity policies. They also serve as places for scientific research, wilderness protection, maintenance of environmental services, education, tourism and recreation, protection of specific natural and cultural features, and sustainable use of biological resources.

2.2.3 Development Benefits

211. With the project, Madagascar will implement concrete measures for conserving, sustainably using and safeguarding biodiversity in the Atsimo Andrefana Landscape covering three contiguous districts (Morombe, Tulear II and Betioky).
212. In terms of response to the current, and emerging threats to biodiversity, the project promotes a paradigm shift from site based work to a landscape approach. The project will develop a collaborative governance framework for sectoral biodiversity mainstreaming involving public, private, CSO and CBO actors. Biodiversity considerations will be integrated into the development of economically relevant sectors across the landscape, in particular agriculture, forestry, extractive industries, and energy production, but also in the livelihoods and land use patterns of local communities.
213. A two-pronged approach will apply: First, it will strengthen resource use governance at the landscape level by developing and implementing the BD LUP. It will work with national and sub-national level stakeholders to engage economic sectors, and negotiate the application of biodiversity conservation and sustainable use measures, and bring about necessary policy change. Second, the project will work with local communities to strengthen conservation on communal lands by establishing and managing multi use CCAs. It will put in place measures to ensure the sustainable utilisation of wild resources and conservation-friendly farming through a focused sustainable livelihoods and capacity building programme.
214. The project will enhance the knowledge and understanding of the role of ecological processes and the services that Biodiversity provides in benefit of local development. The project will engage with sector ministries (e.g. Agriculture, energy, infrastructure, land use planning, etc.) and the private sector, in discussions and negotiations, where biodiversity and ecosystem conservation will be presented as an essential part of development planning, introducing a long term and sustainable development vision. In this respect, the project will promote the negotiation of trade-offs between conservation and development partners, with the aim to enhance environmental considerations within development planning; and will provide guidance and information to the government on the Mitigation Hierarchy which can be applied when negotiating with large scale investment projects.
215. The project will promote a multi-sector landscape governance structure enhancing the negotiating capacity of local stakeholders, such as community members living in and around PA, hence building their knowledge and capacity to defend their rights to a safe environment and strengthening their ability to monitor potential violations on PAs. Communities will be able to participate actively in decision making regarding land use planning, and safeguard their environment and their livelihood base.

2.2.4 Innovativeness, Sustainability and Replicability

216. **Innovation** is embedded in the novelty of the project's landscape approach and the move away from site based work to addressing diffuse and indirect threats to biodiversity from both the economically emerging sectors in Madagascar and from communities' subsistence activities. In the current setting, there is a need to do both.
217. Another innovation aspect pertains to the PA approach to community conservation and its link to the internationally recognised ICCAs. Demonstrating constructive ways of involving local stakeholders in the conservation and sustainable use of biodiversity in and around protected areas remains one of the most important challenges and priorities for nature conservation. Although Madagascar has a long history of Community Based Natural Resource Management (CBNRM), and its PA system has benefited with a significant increase in the protected area surface, thanks to innovative CBNRM models, many communities which are targeted by the project, in the Atsimo Andrefana Region, which have participated in integrated conservation and development initiatives, continue to show weaknesses in capacities to sustainably manage community conservation sites. Findings from previous projects (i.e. EP III Final Evaluation), show that CBNRM models in and around PAs remains a challenge. The project will work by learning on past experience, identifying gaps and strengths, and creating an enabling environment both for the social and economic benefit of local communities and for biodiversity conservation. The project will introduce best practices and guidance provided by ICCA experiences worldwide, and enhance the current CBNRM practices in Madagascar.
218. The project will introduce tools and technologies (BD LUP) and build government capacities to integrate PAs within land use management and development planning. This has been tried previously in Madagascar, but due to the lack of suitable access to information, full understanding of the role and importance of PAs for local development, and non-inclusive consultation processes, land use management has proven not to be comprehensive of biodiversity conservation.
219. The project will innovate by providing tools that will counterbalance previous experience and build the capacity civil society to play a more significant role, by raising their awareness on their right to participate and be consulted prior to decision making regarding private and public sector investments. The use of georeferenced spatial planning, will enhance current community based land use planning (PAG terroir approach) bringing innovation in terms of how they intertwine the spatial, socio-economic and ecological dimensions, while fostering participation, both remotely and on the ground.
220. By working both at the government (regional, municipal) land use planning, and the community level land use planning levels (local community level: *fokontany*, *fokonola*), the project will aim to tackle threats to biodiversity conservation in a comprehensive manner. By enabling informed decision making and promoting an inclusive negotiation based land use and development planning and decision making, the project aims to set the stage for the long term sustainable development of the region.
221. **Sustainability and replicability of the project.** The sustainability elements of the project derive from two aspects. First, the concerted landscape governance approach, involving public, private and CSO actors in biodiversity mainstreaming. Second, the socio-economic benefits that the project is expected to generate through livelihoods activities.
222. The project will work with the Ministry of Environment (MEEMF), specifically with the regional department (DREEMF), where guidance, technical assistance and tools will be provided and built. The aim of the project is to convey experience and knowledge on how to dynamically work among different sector ministries involved in land use planning; and how to engage with the private sector, in benefit both of biodiversity conservation and development planning. By working within a government structure, such

as the DREEMF, the project expects that products and know-how passed on during project implementation will be perennial.

223. On the latter, *Fondation TANY MEVA*'s revolving Fund is a key instrument in securing financial sustainably and encouraging communities to establish community funds.
224. The second component of the project is dedicated to the support and building of CCAs. This approach combines sustainable development, in the form of introducing economic activities that are respectful of conservation needs, within community livelihood enhancement activities. The CCAs that have been identified as target sites of the project, are areas where local communities have voluntarily requested resource transfer contracts and require support for CBNRM.
225. The project has a participatory approach to development. All stakeholders are involved in the design, development and will be integrated in the implementation of its activities. This is key to generating ownership, cooperation and active engagement, all elements which are crucial to the sustainability of the project.
226. During PPG development stage a thorough consultation process took place in the target Region, both at the community and the higher governmental levels. In the target project sites⁴¹ local municipal authorities, community members, and women and men's groups, were duly consulted enabling to identify areas where communities are willing and eager to create community conservation areas in the surroundings of key biodiversity areas. Involvement of local stakeholders in identifying the future CCAs and those in progress, was considered key, and taken into account as a site selection criteria. This demonstrates the willingness of local communities to work with the project and their commitment to investing in environmentally sound economic activities in the CCAs, hence cooperating and complying with the project approach.
227. Additionally, key government authorities with a role in decision making (local, regional and national), and technical and financial partners actively working in the region, both from the environment sector and sector ministries relevant to the project (e.g. NGO's, Ministry of Agriculture, Ministry in charge of Land Use Management, etc.), were consulted and involved in the design phase of the project.
228. Two workshops were conducted in the region, one at the project launching stage, and one at the validation of the revised PRODOC, both hosted by the regional authorities. Both were headed by the regional authorities and benefitted from the presence of the vast variety of stakeholders⁴². The national PPG team conducted further consultations both in the region and at the national level, through interviews and group discussions, with key stakeholders to acquire insight and involve all entities and actors concerned with the project.
229. This participatory approach reinforces community and national ownership, and is at the essence of the sustainability strategy of the project.
230. Furthermore, the project is designed to build on existing intuitions, capitalizing existing competences, and avoiding replicating existing structures, reinforcing know-how that will stay in country once the project ends. As mentioned above, the project will be implemented by the DREEMF through the UNDP NIM modality, who will outsource component 2 to local civil society associations (SAGE and Tany Meva). Both types of entities are perennial structures that will ensure the sustainability of project after closure.
231. The project proposes new and innovative tools and ways of working, it does however have a strong anchor within national and regional development strategies and policies. This respect for local development contexts and processes is essential to ensuring coherence of the project and its sustainability.

⁴¹ During the PPG phase two community consultants were hired to conduct consultations two sets of consultations, one in the north and another in the south of the region of Atsimo Andrefana. Refer to [Study #4](#) in Annex 7.

⁴² As per PPG workshop reports (available upon request to UNDP Madagascar).

232. On the replication potential of the project, it should be noted that the land use governance challenges faced by the Atsimo Andrefana landscape are also seen elsewhere in the country. While the project needs a scope that is compatible with the funding available, its approach is highly replicable and should also be applied elsewhere in the country.
233. Currently, only 4 of the regions of Madagascar have finalized the land use management plan (SRAT). The government has recently launched this process throughout the country, but is highly dependent on the donor support given the magnitude of consultations and studies that it requires. The Region of Atsimo Andrefana is engaged with government donor support, and is currently launching the Land Use Planning process (SRAT). The project will work alongside government partners, to pilot the integration of a BD LUP within this plan. The product of the project, the SRAT with a Biodiversity component, in addition to the Observatory and the products and tools that the project will build and develop, will inform decision making regarding development planning for the region (PRD). This pilot experience will be unique to the Atsimo Andrefana Region and will serve as an example that may be replicated in other regions of Madagascar.

2.3 Risks and Safeguards

2.3.1 Risk Analysis

Table 4: Risk Matrix

#	Description	Date Identified	Type	Impact, Probability and Risk Assessment	Countermeasures / Management response
1	<u>Political</u> Political instability may ensue, in spite of the on-going democratisation process. <u>LEVEL:</u> <i>HIGH</i>		Political	I = High P = High R = High	UNDP has played a key role in brokering the transition process out of the political crisis and elections are due soon. UN Security monitors country and project risk on a rolling basis and adapts strategies accordingly. Currently, the approach is to continue to invest in the success of the elections and then engage with the elected government after the ballot and through renewed dialogue.
2	<u>Organisational</u> Difficulties in reconciling institutional mandates and conflicts in administrative jurisdiction <u>Level</u> High		Organisational	I = Medium P = Low R = Low	Through Output 1.3, the project will create a platform for collaborative landscape and sectoral governance. All the relevant administrative levels of government will be engaged in the process and represented in the platform. UNDP has previous and useful experience with developing such platforms, e.g. from the UNDP-GEF EP3 project but also from its governance programme (Decentralisation Project) and Joint-UN programme with UNICEF and others (<i>Gouvernance par le mobil</i> Project). Conflict resolution techniques and facilitation will apply to make all processes smoother. In addition, the process of landscape level planning (BD LUP) and at the level of <i>terroirs</i> , plus the coordination with DCPSAP and MNP, will together ensure coordination and harmonisation between these plans with PA planning. All partners will have a voice and will be given a chance to present their stakes. Where possible, formal agreements/MOUs will be used to better define roles and

#	Description	Date Identified	Type	Impact, Probability and Risk Assessment	Countermeasures / Management response
					responsibilities.
3	<p><u>Operational</u> The landscape mainstreaming approach is proven overly ambitious for the prevailing managing capacities in Madagascar.</p> <p><u>Level</u> Medium</p>		Operational	I = High P = Low R = Medium	With adequate scoping, the landscape approach is feasible in Madagascar. Capacity building is threaded through every activity foreseen under Component 1. Specifically, Outputs 1.1 and 1.2 are tailored to address regional and district level capacity gaps to make use of tools and systems generated by the project, including the BD LUP. In addition, Madagascar can draw inspiration from tested models for the application of the landscape mainstreaming approach in neighbouring countries. The Grasslands' project in South Africa and other examples have proven that 'biodiversity spatial planning' is a powerful tool for mainstreaming and that it is not difficult to be mastered and applied. With the right balance between planning and enforcement, and by explicitly targeting key decision-making processes, the approach has good chances of success. The threats' and baseline analyses in this project have explicitly focused on the relevant sectors and the decisions-making processes and the interventions have been planned accordingly.
4	<p><u>Strategic</u> Some investment-heavy private sector stakeholders will not collaborate with the project as certain recommendations in the BD-LUP may go against their short-term interests.</p> <p><u>Level</u> Medium</p>		Strategic	I = High P = Medium R = Medium	In spite of the difficulties in the governance terrain faced by Madagascar in the last few years, there is a framework in place for EIA that has many strengths. Any corporation involved large-scale developments within the Atsimo Andrefana Landscape will need to abide by the rules set by this framework for obtaining due permits to their projects. This is the minimum baseline. The project obviously introduces a strengthening of the application of this framework through spatial planning and enforcement. The leverage for applying them comes from the regional and local level. The both the regional government and directly affected communes have in various occasions manifested an interest in fully gauging the impacts of these large scale projects at the landscape level and are therefore fully supportive of the project. This will oblige private sector stakeholder to seek compromise and collaborate with the project. Also, many of these corporations respond to a board of investors and need to safeguard their reputation, as part of their long-term interests. In this light, the project will engage the private sector within extractive industries, transport and agri-business. With support from specialised technical assistance, the project will offer them opportunities to develop and implement actions within their CSR programmes that are in line with the BD-LUP. This is bound to create a win-win situation for both project and corporate stakeholders, thereby reducing the risk of non-collaboration.
5	<p><u>Environmental</u> Limited acceptance of sustainable use models by local communities lead to continued encroachment into PAs, resource pillage and further</p>		Environmental	I = Medium P = Medium R = Medium	The TdG approaches from Tany Meva and Sage with respect to the involvement of local communities and in the realisation of their aspirations have been demonstrated, including in terms of producing results in the sustainable management of natural resources. Compliance and enforcement measures will be community-based. The project will define and monitor key ecological indicators as a means of monitoring this risk. An adaptive management approach will also apply, so will lessons from EP3.

#	Description	Date Identified	Type	Impact, Probability and Risk Assessment	Countermeasures / Management response
	degradation and fragmentation of habitats. <u>Level</u> Medium				
6	<u>Organisational</u> Consultations at sub-national level with respect to investment decisions that favour high-impact physical development projects in the Atsimo Andrefana Landscape remain limited. <u>Level</u> Low		Organisational	I = Medium P = Medium R = Medium	The involvement of key policy-making players at both the national and regional levels will ensure that opportunities and benefits from biodiversity mainstreaming will be duly understood and used accordingly. Until now, the buy-in has been high. Furthermore, the BD LUP will be designed to be availed openly with full disclosure. The project will apply a pro-active approach to the engagement of high-impact physical sectors and conduct an informed dialogue with them, in particular with extractive industries. The collaborative governance framework for sectoral mainstreaming proposed by the project will provide the best changes to promote consultations and disseminate key information that affects biodiversity across the landscape.
7	<u>Climatic and natural</u> Climate change and natural hazards may have a devastating impact on PA and the livelihoods of the communities living in the surrounding who are stakeholders and beneficiaries of the project. <u>Level</u> Medium		Climatic	I = Medium P = High R = Medium	Natural hazards potentially impact the region of Atsimo Andrefana, on yearly basis (cyclones, flooding, prolonged dry season are some common risks). Additionally, studies show that climate change will have serious consequences on the region, increasing the frequency and intensity of cyclones and torrential rains, affecting biodiversity and PAs; and the livelihoods of local communities. In response to this risk, the project will work with CSO partners in the region, who are currently working in the field, and with the local and regional authorities, who are building the resilience of local communities through climate change adaptation strategies; and those working on food security and disaster risk management and reduction programs, by building partnerships and synergies. The projet in itself will have a climate change adaptation approach, mainstreaming climate change within the design and implementation of project activities on the ground. It is hence expected that the resilience of PAs and of people will be built through project activities.
Summary		TOTAL: 7 risks			
Overall assessment of risk level = Moderate		Organisational =2 Political = 1 Operational = 1 Strategic = 1 Environmental = 1 Financial = 0 Climatic = 1 Other = 0		Critical = 0 High = 2 Medium = 6 Low = 1	

Table 5: Guiding Risk Assessment Matrix

Risk Typology:						
Environmental		Organizational		Strategic		
Financial		Political		Other		
Operational		Regulatory				
Impact						
		CRITICAL	HIGH	MEDIUM	LOW	NEGLIGIBLE
Probability	CERTAIN / IMMINENT	Critical	Critical	High	Medium	Low
	VERY LIKELY	Critical	High	High	Medium	Low
	LIKELY	High	High	Medium	Low	Negligible
	MODERATELY LIKELY	Medium	Medium	Low	Low	Negligible
	UNLIKELY	Low	Low	Negligible	Negligible	Considered to pose no determinable risk

2.3.2 UNDP Social and Environmental Screening (SESP) Results / Safeguards

234. Based on the application of the screening checklist, the overall project risk categorization of the potential social and environmental risks of the project is *low risk*.
235. A few potential risks of *low significance* received a positive answer and are listed below:
- 1- A risk that duty-bearers do not have the capacity to meet their obligations in the Project
 - 2- A risk that rights-holders do not have the capacity to claim their rights
 - 3- Are any project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?
 - 4- Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?
236. Due to the *low risk rating*, it is not required to provide further information. However, a description of the assessment and management measures as reflected in the Project design was provided in brief (refer to [Annex 8](#) for the **Social and Environmental Screening Checklist and Template**). The *low risk* categorization does not require further SES actions.
237. The risks identified through the UNDP SESP is in sync with the risks identified in the PRODOC section [2.3.1 Risk Analysis](#) (above) where management measures which enable to mitigate such risks are described.

2.4 Cost-Effectiveness

238. The project will seek to achieve a long term solution to biodiversity protection in the Region of Atsimo Andrefana, by providing support to the Regional government, the DREEMF, and the local communities who live in lands adjacent to PAs.

239. The project's resources will be dedicated to developing a comprehensive land use management plan that is respectful of biodiversity. The latter is reflected in the landscape level approach to PA conservation of the project. This approach will be implemented by providing support to the Regional government to develop a land use plan, that takes into consideration the value of the ecosystems and unique biodiversity contained in PAs, both being key elements for sustainable economic and social development.
240. The project will also dedicate over half of its resources to promoting new CCAs and sustainable social and economic activities by communities that manage them.
241. The project is considered cost-effective for the following primary reasons:
- i. By using project resources, to act on a larger scale, such as on land use planning processes, that are conducted at all levels (from community to the Regional and National), the project's investment and outreach will considerably multiply, rendering the project considerably cost-effective.
 - ii. By providing direct support to PAs for the implementation of PA management plans that include including finding ways of strengthening financial independence.
 - iii. By enhancing economic activities of local communities that will enable communities to be self-sufficient (e.g. through micro-finance activities that will enhance local economies).
242. The project will complement and build upon the extensive baseline activities already underway in the sector (e.g. land use policies and planning processes currently underway; community based natural resources management legislation; build on community conservation areas; etc.). Wherever possible, the project will use the competencies and technical skills within the mandated Government and public institutions to implement project activities. Where applicable, project resources will also be deployed to strengthen and expand existing initiatives and programs to avoid duplication of effort.
243. Increased co-financing commitments will continue to be targeted by the project during the project implementation (e.g. co-financing of the private sector, co-financing of the NGOs involved in PA management, etc.). The project will seek to engage actively with the mining, oil and large scale agriculture sectors to promote partnerships and seek potential funding for the regional PA system.
244. Project funding will build the capacity of the Regional and National Government, to integrate comprehensive biodiversity information, analyses, impact projections and sustainable management considerations within regional Land Use Plans. This will serve as a pilot project that will create the in country capacity, allowing to replicate such approaches in other regions of the country.
245. Additionally, the project will enable the government to advance legislation concerning community conservation areas and the management of key biodiversity areas by communities, by promoting such sites in the region. This will lead to multiplying CCAs and the protection of KBA's. In this light, the project will enable to cost-effectively multiply this type of conservation model throughout the country and expand the protected area surface of the country.
246. Much of the projects resources and support will be dedicated to building local capacity within the region; providing biodiversity land use planning tools; promoting dialogue and interactions among productive sectors, the government and civil society. This investment in institutions and local work dynamics, is considered key to the sustainability of the project's results beyond the duration of the project. The regional government will gain autonomy throughout the project and key work processes will be incorporated within the institutional structures of the Region and the DREEMF. In the long term this will save costs for future investments in PA protection in the Region, and guarantee the achievement of long term results of the project.

3 Project Results Framework

3.1 Programmatic Links

<p>This project will contribute to achieving the following Country Program Outcome as defined in CPAP: <i>[From UNDAF, Outcome #1]:</i> Vulnerable populations, living in the project intervention zones, have improved opportunities to access to income generating activities and jobs, improve their resilience, contributing to inclusive and equitable growth for sustainable development.</p>
<p>Country Program Outcome Indicator: Indicator # 4.2: Number of green jobs created for vulnerable people through sustainable management of natural resources, renewable energy, sustainable agriculture, ecotourism, ecosystem services, treatment chemicals and waste disaggregated by gender and by age.</p>
<p>Primary Applicable Key Environment and Sustainable Development Key Result Area (from the UNDP Strategic Plan): Output 1.3: Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste</p>
<p>Applicable GEF Strategic Objective and Program: BD 2: Mainstream Biodiversity Conservation and Sustainable Use into Production Landscapes, Seascapes and Sectors</p>
<p>Applicable GEF Expected Outcomes: Outcome 2.1: Increase in sustainably managed landscapes and seascapes that integrate biodiversity conservation. Outcome 2.2: Measures to conserve and sustainably use biodiversity incorporated in policy and regulatory frameworks.</p>
<p>Relevant GEF Outputs: Output 2.1.1: Policies and regulatory frameworks for production sectors Output 2.2.1: National and sub-national land-use plans that incorporate biodiversity and ecosystem services valuation</p>
<p>Applicable GEF Outcome Indicators: Indicator 2.2: Policies and regulations governing sectoral activities that integrate biodiversity conservation as recorded by the GEF tracking tool as a score.</p>
<p>Gender Marking: Data to be recorded in UNDP's Atlas system by the project's year 2 and by its end:</p> <ul style="list-style-type: none"> - Total number of full-time project staff that are women - Total number of full-time project staff that are men - Total number of Project Board members that are women - Total number of project Board members that are men - The number jobs created by the project that are held by women - The number jobs created by the project that are held by men

3.2 Logframe

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
Project Objective: Protect landscape biodiversity Atsimo Andrefana to address current and emerging threats, and use it sustainably by implementing a collaborative governance framework for sectorial mainstreaming and decentralized management of natural resources					
1	<p>Use of a spatial planning tool for BD mainstreaming:</p> <p>(a) Implementation of recommendations prescribed in PRLUBC -through analysis performed by the BD LUP at the landscape level</p> <p>(b) PA Management Plan, zoning, maps (set up by BD LUP - PRLUBC component) are mainstreamed into the SRAT and the PRD</p>	<p>(a) BD LUP system is not developed yet. Monitoring the implementation of the PRLUBC will take place from the second year of the project when the BD LUP system is operating and defines recommendations for SRAT and the PRD</p> <p>(b) SRAT without PRLUBC (BD LUP) and PRD without PRLUBC (BD LUP)</p>	<p>(a) SRAT with annex PRLUBC (BD LUP)</p> <p>(b) 100% of the content on the Planning PRD are in accordance with guidance from the PRLUBC (BD LUP) annexed to the SRAT</p>	<p>Project's periodic reports, validated by independent evaluations and reviews</p>	<p><u>Assumptions:</u> The various productive sectors in the Atsimo Andrefana region, stakeholders members of the CRAT and local communities adopt the land-use management system (SRAT with PRLUBC/BD LUP)</p>
2	<p>SO2 TT Responses from Part III, on "Management Practices" (refer to PRODOC Table 8 in Annex 3):</p> <p>(a) Landscape surface with improved biodiversity management as a result of mainstreaming efforts</p> <p>(b) Status of application of the 'mitigation hierarchy' at the landscape level (under SO2 TT, Part III, "Management Practices")</p>	<p>(a) 0 ha</p> <p>(b) The application of the 'mitigation hierarchy' has not been systematically tried in Atsimo Andrefana as a biodiversity management practice</p>	<p>(a) 2,400,000 ha</p> <p>(b) A more systematic application of the mitigation hierarchy takes place at the landscape level, whenever there are important decisions on extractive and large-scale agriculture which potentially affect biodiversity are to be made (target achievement to be independently validated)</p>	<p>Project's periodic application of the focal area TT, validated by independent evaluations and reviews</p>	<p>mainstreaming biodiversity component in productive activities and reduce the stress on PA and CCAs within the landscape</p> <p><u>Risk:</u> Political instability may create uncertainty and affect decision making at national and regional</p>
3	<p>Beneficiaries from project Component 2 activities, support and funding:</p>	<p>(a) 0</p>	<p>(a) At least 12</p>	<p>Project's periodic reports, validated by</p>	

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
	(a) Number of <i>fokontanys</i> (b) Population in these <i>fokontanys</i>	(b) 0	(b) [to be calculated of the basis of the final site list to be compiled during project appraisal]	independent evaluations and reviews	levels and may lead to uncontrolled exploitation of natural resources.
4	SO2 TT Scores from Part IV, on “Policy and Regulatory frameworks”, regarding questions on ‘ <i>Agriculture</i> ’ and ‘ <i>Mining</i> ’ respectively (refer to PRODOC Table 9 in Annex 3)	Total Score = 12 out of 24 possible points	Total score = 15 out of 24 possible points	Project’s periodic application of the focal area TT, validated by independent evaluations and reviews	
5	Sum of low scores (<2) for the “30 Key METT Questions” relating to PA management for the four PAs assessed (refer to PRODOC Table 11 in Annex 3) [Note: SO1 TT is not a GEF requirement under this project, so scores are monitored for PA managers’ benefit only and for monitoring indicators 5 and 10.]	Sum = 19	Sum for same questions = at least 24	Project’s periodic application of the focal area TT, validated by independent evaluations and reviews	

Outcome 1: Landscape level planning and economic analysis support the mainstreaming of biodiversity into management of the Atsimo Andrefana Landscape, covering three districts and totalling approximately 2.4 million hectares

Outputs:

- 1.1. Spatial Planning: Participatory landscape-level economic assessments, ecological assessments, open access mapping, and management planning generate a Landscape Level Land-Use Plan (BD LUP)
- 1.2. Threat Management: Land use allocation practices and applicable regulations at the regional, district and commune levels are revised, in light of the BD LUP, and contribute to enforcing it
- 1.3. Landscape Governance: Collaborative landscape and sectoral governance framework is developed and provides a platform for monitoring and ensuring compliance with prescribed land-uses
- 1.4. Protected Areas integrated into Landscape Management: Critical measures for completing pending PA proclamation processes and boundary demarcation are supported and PAs Mikea Onilahy, Bezaha-Mahafaly, Tsimanampetsotse and Tsinjoriake are integrated in the management of the landscape

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
6	BD LUP system developed, available for territorial planning	BD LUP System is not developed yet	BD LUP system available <ul style="list-style-type: none"> - Synthetic geospatial layers are available for the compilation of PRLUBC and duly incorporated in it - Geospatial-Portal BD LUP is online and open access - Observatory of Regional Biodiversity and Ecosystems (ORBE) is operating; and - Warning system is functional and widely used 	Use of information for the development of PRLUBC (verified by independent evaluators), detailed site analytics (reports are pulled periodically) and reports from ORBE	<u>Assumptions:</u> The SRAT which is under development will be completed and adopted with PRLUBC <u>Risk:</u> Private companies and government sectors with large projects, will not be willing to negotiate cooperation agreements which may have financial and technical constraints to their projects, and does not take into account the mitigation hierarchy in their project cycle
7	The component PRLUBC of BD LUP is included in the SRAT and adopted with charter for commitment of SRAT	Currently, SRAT doesn't have yet the PRLUBC	BD LUP / PRLUBC annexed to SRAT BD LUP / PRLUBC registered in the Charter for adoption of the SRAT	SRAT and Charter for adoption of the SRAT (commitment charter)	
8	The potential and existing negative impacts of large-scale production activities (mining, petroleum, infrastructure, energy, agriculture) on PA and vulnerable ecosystems, are mastered and mitigated: [Broken down below]	[Broken down below]	[Broken down below]	EIA reports and PGESS of new investments, plus project's periodic reports, validated by independent evaluations and reviews	
8a	Monitoring and application of content of the requirement specifications	Monitoring and analysis of the activities given in the EIA will be conducted for ongoing activities	100% of prescriptions in PGESS are implemented	As above.	

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
8b	Productive investment rate public mainstreaming the mitigation hierarchy in their project cycle (beyond EIA content)	A survey to analyse the environmental content in the cycles of investment projects of ministries will be completed at project start	70% of public investments in different have a mitigation program mainstreamed in their project cycle	As above.	
8c	Number of cooperation agreements signed between private companies and the DREEMF/ONE, containing programs for the implementation of the mitigation hierarchy in the productive project cycle (beyond EIA content)	No collaboration agreements signed (private companies - DREEMF/ONE)	50% of productive investments sign a collaboration agreement and incorporate environmental mitigation process in their project cycle	As above.	
9	SEA is developed and approved	No SEA for the targeted landscape (except for Mahafaly Landscape)	Strategic Environmental Assessment of the targeted landscape completed	SEA regulations	
10	METT tracking tools are applied annually for each PA [Note: SO1 TT is not a GEF requirement under this project, so scores are monitored for PA managers' benefit only and for monitoring indicators 5 and 10.]	METT applied on 4 PAs during the PPG stage	METT applied to all seven PAs within the landscape on a periodic basis	Project's periodic application of the focal area TT, validated by independent evaluations and reviews	

Outcome 2: Community-based production and resource use activities incorporate the conservation and sustainable use of biodiversity into management practice into at least 100,000 ha of new CCAs

Outputs:

- 2.1 CCAs Establishment: Selected habitats with high conservation value in target communes are set-aside through formal proclamation as 'Community Conservation Areas' (CCAs) and their management is operationalise
- 2.2 Codifying Local-level Resource Use Governance: Local governments (commune, fokontany) and participating local communities collaborate to sanction into by-laws (Dinas) the proclamation and sustainable management of CCAs
- 2.3 Local Capacity for BD Management: Strengthened and functional CBOs in targeted local communities establishing CCAs provide a vehicle for building community capacities to manage biodiversity sustainably
- 2.4 Local Economy and Benefits: Livelihood activities carried out by targeted local communities are managed sustainably, ensuring conservation of biodiversity and its use within sustainability thresholds, but equally the generation of socio-economic benefits

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
11	<p>(a) CCA strengthened or created within vulnerable ecosystems (around AP, within NPA or forest corridors)</p> <p>(b) Management transfer contracts (TDG) and <i>Dina's</i> (with biodiversity component) acquire legal status</p>	<p>(a) Identification of potential sites with TDG's will be completed at the project start – (number tbc)</p> <p>(b) TDG and Dina approved and signed by relevant stakeholders and government authorities</p>	<p>(a) 12 new CCA with at least 100.000 hectares protected</p> <p>(b) 12 management transfer contracts approved and signed (i.e. have updated <i>Dina</i> and PAG-T / community <i>Dina</i> and <i>Dinas</i> have legal status)</p>	Project's periodic reports, validated by independent evaluations and reviews	<p><u>Assumptions:</u> The PAG-T prescribes the creation of the CCA through a participatory process and enables the social acceptance of the TDG</p>
12	<p><i>[Proposed sub-indicators – may be revised upon inception:]</i></p> <p>Areas/territories designated by local communities to be protected are included in the PAG-T</p> <p>Existence of community norms and regulations for sustainable use of natural resource within community territories and TDG</p> <p><i>Dinas</i> acquire legal status, containing measures on natural resource use</p>	<p><i>[Current baseline – to be updated upon inception:]</i></p> <p>Currently some community territories contain conservation areas which have not yet acquired official recognition.</p> <p>Following site selection and identifying CCAs, an assessment will be conducted to evaluate the status of regulations for natural resources on each site</p>	<i>[To be determined upon inception]</i>	<i>Dinas'</i> texts/regulations PAG-T's texts/regulations	<p><u>Risk:</u> The risk which could hinder the objective is the potential of growing insecurity in rural areas of the region.</p>

#	Indicator*	Baseline	Targets by End of Project	Source of verification	Risks and Assumptions
13	(a) Monitoring implementation of community management plans contained in the TDG (b) Conflict resolution rate Participatory Ecological Monitoring Application	(a) A capacity assessment of the communities and COBA will be conducted (b) Assessment management of existing TDG and Dina's with biodiversity components launched at the beginning of the project	(a) 90% of TDG contracts are managed effectively (b) 100% of community ecological monitoring is functional	Monitoring implementation of community management plans contained in the TDG Conflict resolution rate Participatory Ecological Monitoring Application	
15	Improving the standard of living of the rural population <i>[Exact livelihoods indicators to be monitored will be determined at project inception]</i>	<i>[Baseline value(s) be determined at project inception]</i>	<i>[Indicatively proposed]</i> 15% growth on key livelihoods indicators, such as real income, household purchasing power or specific household consumption patterns that are proxies of standard of living	Annual socio-economic studies	

4 Total Budget and Workplan

Atlas Award and Project ID	00080514 / 00090153	Atlas Project Title	PIMS 5263 FSP Madagascar Landscapes
Atlas Business Unit	MDG10	Implementing Partner(s)	Ministry of Ecology, the Environment, the Sea and Forests (MEEMF) in collaboration with 'Fondation TANY MEVA' and 'SAGE'

Project Comp. / Atlas Activities	Impl. Agent	Fund ID	Donor Name	Atlas. Code	ATLAS Budget Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Total (USD)	Notes	
1. Landscape Mainstream	MEEMF	62000	GEF	71200	International Consultants	30,000	30,000	70,200	30,000	0	160,200	1	a, b
	MEEMF	62000	GEF	71400	Contractual Services – individ	284,787	514,572	261,428	188,333	103,333	1,352,453	2	c to i, x
	MEEMF	62000	GEF	71600	Travel	28,000	28,000	28,000	28,000	28,000	140,000	3	k
	MEEMF	62000	GEF	72100	Contractual Services – companies	15,000	60,000	50,000	20,000	0	145,000	4	l
	MEEMF	62000	GEF	72200	Equipment and Furniture	80,000	0	0	0	0	80,000	5	m, n
	MEEMF	62000	GEF	72800	IT equipment	40,000	40,000	0	0	0	80,000	6	o
	MEEMF	62000	GEF	73100	Rental & maintenance premises	4,000	4,000	4,000	4,000	4,000	20,000	7	p
	MEEMF	62000	GEF	73400	Rental & Maint of Other Equip	2,400	2,400	2,400	2,400	2,400	12,000	8	q
	MEEMF	62000	GEF	74200	Audio Visual & Print Costs	5,000	5,000	5,000	5,000	0	20,000	9	r
	MEEMF	62000	GEF	74500	Miscellaneous Expenses	530	530	530	530	527	2,647	10	s
					Training, workshops & conferences	40,000	25,000	25,000	22,000	28,000	140,000	11	t
					sub-total GEF	529,717	709,502	446,558	300,263	166,260	2,152,300		
2. CCA Dev	MEEMF	62000	GEF	71200	International Consultants	0	0	0	0	40,200	40,200	1	b
	MEEMF	62000	GEF	71400	Contractual Services – individ	1,944	23,889	53,889	63,889	23,889	167,500	2	c, e, g
	MEEMF	62000	GEF	72100	Contractual Services – companies	432,000	648,000	648,000	540,000	432,000	2,700,000	12	u, v
	MEEMF	62000	GEF	74100	Professional service	5,000	2,500	5,000	2,500	5,000	20,000	13	w
						Sub-total GEF	438,944	674,389	706,889	606,389	501,089	2,927,700	
3. Project Mgt	MEEMF	62000	GEF	71400	Contractual Services – individ	53,388	57,278	57,278	7,778	7,778	183,500	1	c, x
	MEEMF	62000	GEF	71600	Travel	4,000	4,000	4,000	4,000	4,000	20,000	14	y
	MEEMF	62000	GEF	72800	IT equipment	20,000	0	0	0	0	20,000	15	z
	MEEMF	62000	GEF	74100	Professional service	2,000	2,000	2,000	2,000	2,000	10,000	16	aa
	MEEMF	62000	GEF	74200	Audio Visual & Print Costs	1,000	1,000	1,000	1,000	1,000	5,000	17	bb
	MEEMF	62000	GEF	74500	Miscellaneous Expenses	2,190	2,190	2,190	2,190	2,192	10,952	18	s
					Sub-total GEF	82,578	66,468	66,468	16,968	16,970	249,452		
TOTAL						1,051,239	1,450,359	1,219,915	923,620	684,319	5,329,452		

Note ref.		Note Description
1	a	Int. Consultants (indicatively extractives and agri-business): BD Mainstreaming experts, for assisting with compilation of Mainstreaming Guidance Documents and the SEA, plus other key activities under Outputs 1.1, 1.2 and 1.3 (at approx. \$3K/week). See brief TOR in Annex 2.
	b	Two (x2) consultancies with standard ToR for UNDP-GEF evaluations: Mid-term Review and Project Terminal evaluation. Lump-sum amount for budgeting purposes is \$40.2K for each consultancy, divided between Components 1 and 2
2	c	National Project Manager: 4.5-year assignment (project duration less recruitment time), at \$35K per year indicatively and for budgeting purposes. Tasks are managerial at roughly 10-15% and 85-90% technical. Hence, the budget was thus allocated: 3 years under Component 1, ½ year under Component 2, and 1 year under Project Management Costs (PMC). See TOR in Annex 2.
	d	Int. Chief Technical Advisor on BD Mainstreaming and M&E, also the Project Deputy Coordinator while on FTA: as a P4 position for 2 years, at \$226K per year, based on 2015 applicable proforma costs, spread across years 1 and 2. See TOR in Annex 2.
	e	Int. Chief Technical Advisor on BD Mainstreaming and M&E: as an IC position for 2.5 years, at \$100K per year (bulk costs), spread across years 3 and 4, and with 0.5 years under Component 2. See TOR in Annex 2.
	f	Int. GIS specialist for 1.5 years, at \$190K per year, based on 2015 applicable proforma costs, spread across years 1 and 2. See TOR in Annex 2.
	g	Int. GIS specialist, as an IC position for 2 years, at \$100K per year (bulk costs), spread across years 3 and 4, and with 0.5 years under Component 2. See TOR in Annex 2.
	h	Nat. Project Database, IT and Digital Inclusion expert: to provide critical inputs to the establishment of key e-tools and the planning on-time basis for 4.5 years at \$30K per year, indicatively and for budgeting purposes. See TOR in Annex 2.
	i	Nat. Training, Stakeholder Engagement, Gender and Communications expert: to provide critical inputs on training aspects and facilitate liaison with the project partners and stakeholders (years 1 through 5) on a 50% part-time basis at \$15K per year, indicatively for a part-time input, and for budgeting purposes. Main contribution will be to outputs 1.2 and 1.3. See TOR in Annex 2.
	j	Nat. BD and PA expert: to provide critical inputs on national BD aspects and facilitate liaison with the authorities (years 1 through 5) on a 50% part-time basis at \$15K per year, indicatively for a part-time input, and for budgeting purposes. Main contribution will be to all outputs under Component 1 and specific BD and PA aspects under Component 2. See TOR in Annex 2.
	x (under PMC)	Nat. Planning, Procurement and Accounting Manager: a 4.5-year assignment (project duration less recruitment time), at \$30K per year indicatively and for budgeting purposes. Tasks are managerial, hence the budget amount and note for this post applies only to project management costs, rather than the components. See TOR in Annex 2.
3	k	Travel costs in connection with project activities under this Component, incl. PSC meetings and site visits.
4	l	Service provision contract (international procurement, with consortia national-international are encouraged) to establish and provide technical and equipment support to ORBE: will include premises alterations, IT equipment, organisational support to ORBE. The envelope is indicatively \$145K.
5	m	Office furniture and office equipment to the project Core Team at large.
	n	Project all-terrain vehicles (x1) - includes for now a budget reserve for a driver to be later detached, if IP cannot provide driver, plus fuel costs (to be better detailed later through budget revisions).
6	o	IT and comms equipment to key stakeholders (community members, especially youth and women, regional and communal governments, local governments) in connection with key project activities involving access to the BD LUP.

Note ref.		Note Description
7	p	Utility bills in offices provided by the State/lessor. Rental of external rooms as needed to accommodate service providers in the field or other needs.
8	q	Maintenance of vehicles and project machinery.
9	r	Videos, blogs, radio programmes and other outreach products applying storytelling approach, but also recurrent communication costs, including cell phone contracts or airtime and internet connectivity.
10	s	Miscellaneous costs: insurance, bank charges, security and other blended costs.
11	t	Workshop and meeting costs (bulk) under this component for supporting various activities, including the support to the Environmental Units Platform, as well as training sessions, the inception and end-of-project national workshop.
1	b	Two (x2) consultancies with standard ToR for UNDP-GEF evaluations: Mid-term Review and Project Terminal evaluation. Lump-sum amount for budgeting purposes is \$40.2K for each consultancy, divided between Components 1 and 2
12	u	CSO #1 allocation (9 sites* max. \$1,620,000 in total over 5 years) aiming CCA and KBA development at community level. Budget reserve for the engagement of a specialised CSO service provider, with a proven anchoring on the ground and capable of carrying out key community development activities as thoroughly described in the Project Strategy, under Component 2. The key focus is on the livelihoods and social organization aspects (referred to in the text as activities under the remit of the project's "Component 2 Team". UNDP will follow due process, as per the POPP, for CSO selection. During the appraisal phase, UNDP will request, in collaboration with the project's national implementing partner, MEEMF, that candidate CSOs submit detailed proposals on how they envisage the implementation of relevant Component 2 activities, mentioning their comparative advantage, the sites where they propose to work and providing an all-inclusive but detailed budget for the use of funds with a five-year duration. It is envisaged that a contracting (or cooperation) agreement will be signed between MEEMF. and the selected CSO. The awarding of contract will follow UNDP's rules procedures under NIM. Expenditure and the use of funds are subject to regular audit. Technical implementation is subject to monitoring visits by both MEEMF. <u>Note on # of sites:</u> [*] This budget line refers to working in 9 out of a likely total of 15 retained fonkontany sites , from those listed in Table 3.
	v	CSO #2 allocation (6 sites* max. \$1,080,000 in total over 5 years) aiming CCA and KBA development at community level. The rest is exactly as above. <u>Note on # of sites</u> [*] This budget line refers to working in 6 out of a likely total of 15 retained fonkontany sites , from those listed in Table 3.
13	w	Superintendent services in rural areas (i.e. delivery, inventory and implementation verification in support of audit), also audit as needed.
14	y	Travel costs in connection with project monitoring activities, incl. PSC meetings and site visits.
15	z	IT equipment to the project Core Team, plus peripherals and supplies.
16	aa	Project annual audit and translations.
17	bb	Report writing, KM, publications, etc.

5 Management Arrangements

5.1 General Project Implementation Arrangements

247. The project will be implemented over a period of 5 years by the **Ministry of Environment, Ecology, the Sea and Forests of Madagascar (MEEMF)**, applying UNDP's **National Implementation Modality (NIM)**, and taking into consideration the results of recent capacity assessments of government entities.
248. In its role as **Implementing Party (IP)** for the project, the MEEMF is accountable to UNDP for the government's participation in the project and for ensuring the effective, efficient and timely execution of both components of the project.
249. Through the Internal Unit for the Environmental Mainstreaming (*Direction de l'intégration de la dimension environnementale*, DIDE), the MEEMF will provide overall guidance and support to implementation of all project activities for Component 1 and technical / contractual oversight and support for Component 2 activities. It will facilitate project implementation and ensure that internal monitoring and review systems are in place with support from UNDP.
250. The MEEMF intends to soon set up specialised unit that will coordinate the entire GEF portfolio in Madagascar (GEF Coordination Unit), to be presided by the GEF Operational Focal Point. This project may then be assigned to the mentioned unit.
251. Given that activities under Component 2 had been slated since PIF stage to be carried out by national CSOs⁴³, it is expected that after GEF approval, and with a full PRODOC completed in French⁴⁴, a process for the final selection of CSO entities to play the envisaged role will ensue. Two CSOs, **Tany Meva and Sage**, have since PIF stage manifested an interest in the implementation of Component 2.
252. In accordance with **UNDP's Programme and Operations Policies and Procedures (POPP)**, the capacity of candidate CSOs to play the role of Responsible Parties is to be duly analysed, on the basis of appropriate assessments and proposals. Decision can then be made, after due diligence, during the **Local Project Appraisal Committee (LPAC)** meeting. Refer to section 5.3 on Specific Implementation Arrangements further down for procedural matters on CSO selection.
253. It is envisaged that a **management agreement** will be signed between MEEMF and each of the selected CSOs, which will play the role of '**Responsible Party**' as described in the POPP. The awarding of contract will follow UNDP's rules and procedures under NIM. The contracts will contain details on disbursement, rules, rights and responsibilities for each of the signing parties.
254. The **UNDP Country Office** will monitor the implementation of the project, review progress in the realization of the project outputs, and ensure the proper use of UNDP-GEF funds. Working in close cooperation with MEEMF, the UNDP Country Office (CO) will provide support services to the project - including procurement, contracting of service providers, human resources management and financial services - in accordance with the relevant UNDP Rules and Procedures and Results-Based Management (RBM) guidelines, as well as the applicable NIM modality for this project. Specifically, the UNDP CO will be responsible for: (i) providing financial and audit services to the project; (ii) recruitment and contracting of project staff that does not fall under MEEMF; (iii) overseeing financial expenditures against project budgets; (iv) appointment of independent financial auditors and evaluators; and (v)

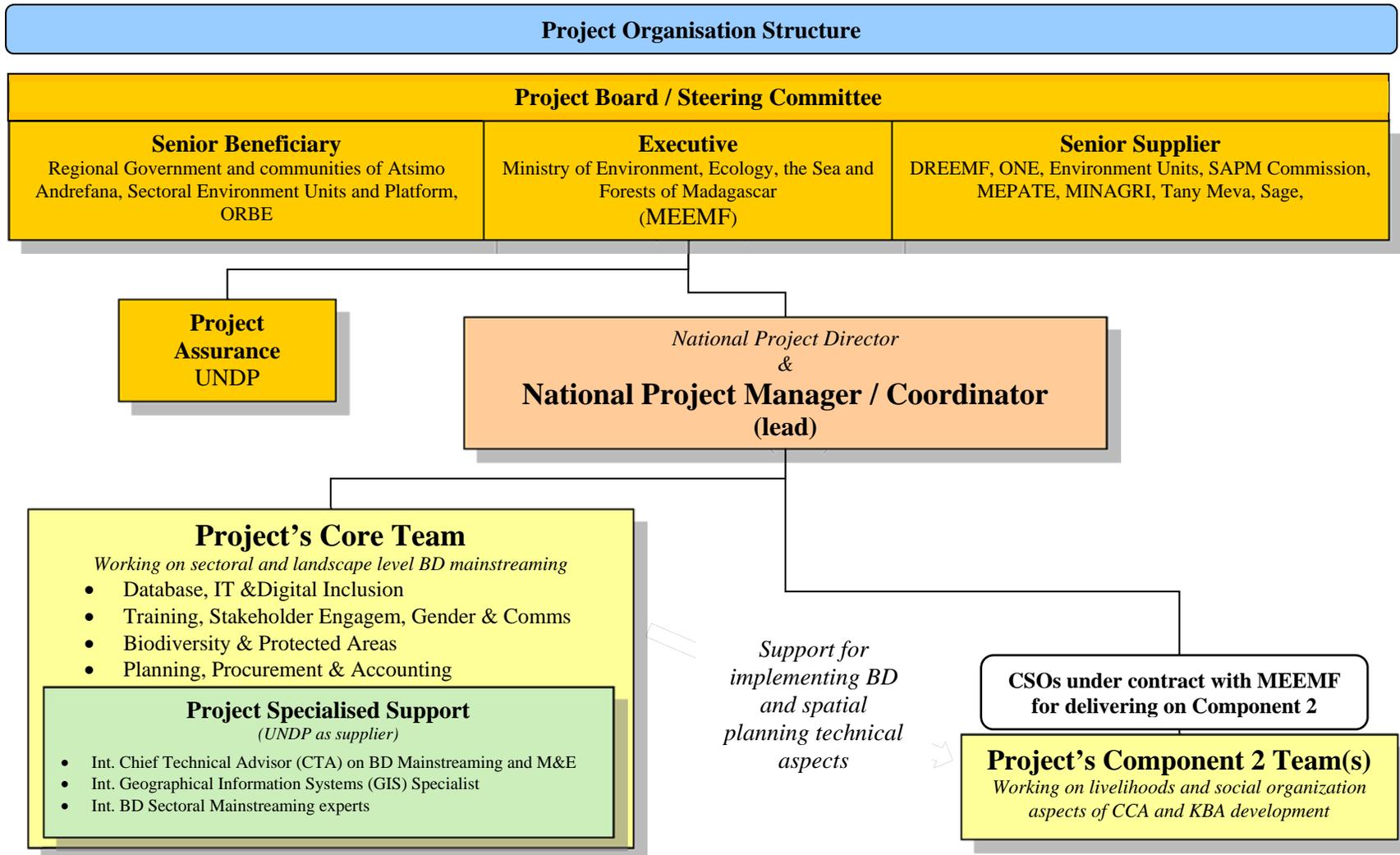
⁴³ Refer to GEF Operational Focal Point letter of endorsement to the PIF, dated 25 July 2013.

⁴⁴ The French PRODOC will need to be fully harmonised with the English version approved by the GEF.

ensuring that all activities, including procurement and financial services, are carried out in strict compliance with UNDP and GEF procedures. Strategic oversight and technical support to the project will be provided by the UNDP-GEF Regional Technical Advisor (RTA) responsible for the project.

255. The MEEMF will implement the project, in line with the **Standard Basic Assistance Agreement (SBAA)** between the UNDP and the Government of Madagascar. This role includes coordinating action on the ground and in the capital, engaging partners and service provider, including those that will be directly tasked with implementation (e.g. specific MEEMF units) or with task execution (e.g. service providers, contractors), while also closely monitoring the project and reporting according to procedures. The MEEMF will have the overall responsibility for achieving the project goal and objectives. It will be directly responsible for creating the enabling conditions for implementation of all project activities. It will designate a senior official to act as the **National Project Director** who will assist with the anchoring of project activities within MEEMF, as well as liaison. Project implementation will be overseen by a **Project Steering Committee (PSC)** described below.
256. The day-to-day administration of the project will be carried out by a **National Project Manager (NPM)**. The NPM will be recruited using the applicable procedures under NIM. The NPM has the authority to administer the project on a day-to-day basis on behalf of MEEMF, within the constraints laid down by the PSC. The NPM's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The NPM will prepare Annual Work Plans (AWP) in advance of each successive year and submit them to the PSC for approval. The NPM will liaise and work closely with all partner institutions to link the project with complementary national programs and initiatives. The NPM is accountable to the Project Director for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds.
257. The NPM will be technically supported by contracted national and international consultants and service providers, among them two international project staff, the Chief Technical Advisor (CTA) and the GIS Specialist, slated to be under UNDP international contracts. They will compose the Project's Core Team along with other national consultants and will also work in close collaboration with counterpart conservation agencies and institutions. (Refer to the [Overview table of human resource inputs](#) in Annex 2.)
258. An overview of the **project's organizational structure** is provided in further down.

Project implementation organigram



5.2 Project Oversight

259. The **Project Board** is responsible for making management decisions for a project in particular when guidance is required by the Project Manager. The Project Board plays a critical role in project monitoring and evaluations by quality assuring these processes and products, and using evaluations for performance improvement, accountability and learning. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems with external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities. Based on the approved Annual Work Plan, the Project Board can also consider and approve the quarterly plans (if applicable) and also approve any essential deviations from the original plans.
260. In order to ensure UNDP's ultimate accountability for the project results, Project Board decisions will be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case consensus cannot be reached within the Board, the final decision shall rest with the UNDP Project Manager.
261. Potential members of the Project Board are reviewed and recommended for approval during the PAC meeting. Representatives of other stakeholders can be included in the Board as appropriate. The Board contains three distinct roles, including: (1) **An Executive**: the individual representing the project ownership to chair the group, which will be the MEEMF. (2) The **Senior Supplier**: individual or group representing the interests of the parties concerned which provide funding for specific cost sharing projects and/or technical expertise to the project. The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. In the case of this project this will be UNDP. (3) The **Senior Beneficiary**: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.
262. The **Project Assurance** role supports the Project Board Executive by carrying out objective and independent project oversight and monitoring functions. The Project Manager and Project Assurance roles should never be held by the same individual for the same project. UNDP fulfills the Project Assurance role.
263. UNDP will monitor the project's implementation and achievement of the project outputs, and ensure the proper use of UNDP-GEF funds. Day-to-day operational oversight will be ensured by the UNDP Country Office (CO) for Madagascar, and strategic oversight by the UNDP-GEF Regional Technical Advisor (RTA) responsible for the project. The UNDP CO will be responsible for: (i) providing financial and audit services to the project; (ii) recruitment and contracting of project staff; (iii) overseeing financial expenditures against project budgets; (iv) appointment of independent financial auditors and evaluators; and (v) ensuring that all activities, including procurement and financial services, are carried out in strict compliance with UNDP and GEF procedures.
264. A *Project Steering Committee (PSC)* will provide oversight to project activities and it will promote operational coordination among different government agencies, industry players, NGOs, communities and donors working in environment. It may be the same as the Project Board.
265. The major functions of this thematic [environment] steering committee are to revise and approve the project work plans, assess the reported projects progress, conduct annual review of projects, assess eventual implementation problems and guide necessary adjustments and approve any strategic changes including budgets. This body meets twice a year or whenever extraordinary meetings are deemed

necessary. Membership of this PSC should be multi-disciplinary and multi-sectoral related to the implementation of this project and should include: UNDP-Madagascar, MEEMF, Ministry in charge of Land Use Management, the Ministry in Charge of Mining and Petroleum Resources⁴⁵, Ministry of Agriculture; a Mining and Oil Company representative, Environment NGO's working in the Region of Atsimo Andrefana. The NPC will support the Secretariat of the PSC.

266. A *Project Executive Committee (PEC)* may also be formed to provide day-to-day operational project supervision. It will be composed of UNDP-Madagascar, the National Project Director (NPD), the NPC, and the CTA. The Ministry of Land Use Management, the Ministry in charge of Mining and Oil, and the Ministry of Agriculture of Madagascar may be called to join the PEC.
267. A *Consultative Group of sector specialists* may also be formed on an *ad hoc* basis and consulted by the PSC on specific issues. The group will enable a broader representation than just the PSC at a high level of influence for the project. This group should include: experts in law, in EIA process, in biodiversity, in mining, petroleum, and agriculture and work processes in Madagascar, key NGOs operating in the Region of Atsimo Andrefana, private sector representatives, and media people. A series of consultative workshops will be organized to present project strategies, obtain technical reviews and promote information sharing between these participants.
268. Finally, the project will work in close collaboration with related initiatives funded by the Government of Madagascar and several donors in the region (see the section on the project's [baseline analysis](#))⁴⁶.
269. All entities that are co-financers to this project, will be called to join the PSC. These entities have projects in the districts that are target sites of this project. They are partners of the MEEMF. Some of the partner projects are directly linked to technical activities carried out by this project. Their input to the project's planning and implementation will be key to coordinating project interventions, identifying complementarities, synergies and exchanging technical approaches and insight.

5.3 Specific Implementation Arrangements

270. **Component 1** of the project focuses on landscape and sectoral mainstreaming. It will be under the remit of the MEEMF's Directorate in charge of Mainstreaming Environmental Measures (DIDE) to seek the necessary synergies with and engagement of project beneficiaries and suppliers.
271. **Component 2** of the project aims at CCA and KBA development at community level. Budgetary provisions were made for the engagement of at least two specialised CSO service provider, with a proven anchoring on the ground and capable of carrying out key community development activities. These activities have been thoroughly described in the Project Strategy, under [Component 2](#). The key focus will be on the livelihoods and social organization aspects, referred to in the Project Strategy text as activities under the remit of the project's "Component 2 Team".
272. During the project appraisal phase, and prior to the LPAC meeting, the MEEMF will request, in collaboration with UNDP, that **candidate CSOs** submit detailed proposals on how they envisage the implementation of relevant Component 2 activities, presenting the entity's comparative advantage, track record and core human resources, and indicating also the exact sites where they propose to implement these activities. The minimal target is 15 *fokontanys* in total for all candidate CSOs, out of the 17

⁴⁵ Currently governed by the Minister at the Presidency in charge of Mines and Petroleum, along with the line Ministry for Energy and Hydrocarbons.

⁴⁶ Refer to Section [1.4 Baseline Analysis](#).

fokontanys mentioned in Table 3. Candidate CSOs may also propose implementation through association with other government and non-government entities, through which advantages and efficiencies can be presented.

273. In connection with each proposal, candidate CSOs are expected to provide an **all-inclusive but detailed budget** for the use of funds with a five-year duration. Candidate CSOs are also expected to indicate the composition of the “Component 2 Team” (or “Teams”) as a way to showing the strength of their respective proposals, in response to the content of Component 2 activities in the PRODOC, and of the PRODOC as a whole.
274. **Overall**, the project will be managed using the UNDP tested adaptive management approach for the implementation of UNDP and GEF funded projects. This approach translates into the ability of the project management team to anticipate challenges through well-established risk monitoring system and respond to challenges and opportunities in a flexible, positive and optimizing manner. It is grounded on a set of simple rules:
- a. Government of Madagascar and UNDP/GEF approved the project document, which included the Goal, Objective and (3) Outcomes. Any change to these expected results would necessitate their formal approval, including the endorsement of these changes by the GEF CEO;
 - b. Project inputs and outputs may be adapted, dropped or added in response to current reality (after approval by the PSC and UNDP/GEF);
 - c. Interactive decision-making is encouraged;
 - d. Risk monitoring should contribute to feedback and learning and it should improve decisions;
 - e. Embracing risk/uncertainty is also to build understanding.

6 Monitoring Framework and Evaluation

275. **Monitoring and reporting.** The project will be monitored through the following M&E activities. The M&E budget is provided in the table below. The M&E framework set out in the Project Results Framework (Part 3 of this project document) is aligned with the Focal Area Tracking Tool (SO2) and UNDP's M&E frameworks.
276. **Project start:** A Project Inception Workshop will be held within the first 2 months of project start with those with assigned roles in the project organization structure, UNDP country office and where appropriate/feasible regional technical policy and program advisors as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan. The **Inception Workshop** should address a number of key issues including:
- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and Regional Coordinating Unit (RCU) staff (i.e. UNDP-GEF Regional Technical Advisor) vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
 - Based on the project results framework and the GEF BD SO2 TT⁴⁷ set out in the Project Results Framework (Part 3 of this project document), and finalize the first annual work plan. Review and agree on the indicators, targets and their means of verification, and recheck assumptions and risks.
 - Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
 - Discuss financial reporting procedures and obligations, and arrangements for annual audit.
 - Plan and schedule Steering Committee meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first Steering Committee meeting should be held within the first 12 months following the inception workshop.
277. An **Inception Workshop report** is a key reference document and must be prepared and shared with participants to formalize various agreements and plans decided during the meeting.
278. **Quarterly:**
- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
 - Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS.
 - Risks become critical when the impact and probability are high. Note that for UNDP/GEF projects, all financial risks associated with financial instruments such as revolving funds, microfinance schemes, or capitalization of ESCOs are automatically classified as critical on the basis of their innovative nature (high impact and uncertainty due to no previous experience justifies classification as critical).
 - Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.

⁴⁷ SO2 refers to the mainstreaming outcome under the GEF5 Strategy for Biodiversity.

- Other ATLAS logs will be used to monitor issues, lessons learned. The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.
279. **Annually:** Annual Project Review/Project Implementation Reports (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements. The APR/PIR includes, but is not limited to, reporting on the following:
- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
 - Project outputs delivered per project outcome (annual).
 - Lesson learned/good practice.
 - AWP and other expenditure reports
 - Risk and adaptive management
 - ATLAS QPR
280. **Periodic Monitoring** through site visits: UNDP CO and the UNDP-GEF region-based staff will conduct visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress. Other members of the Project Board may also join these visits. A Field Visit Report/BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Board members.
281. **Mid-term of project cycle:** The project will undergo an independent Mid-Term Review at the mid-point of project implementation (expected to be in July 2017). The Mid-Term Review will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term review will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term review will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit (RCU) and UNDP-GEF. The GEF BD SO2 TT as set out in the Project Results Framework (Part 3 of this project document) will also be completed during the mid-term evaluation cycle.
282. **End of Project:** An independent Terminal Evaluation will take place three months prior to the final PB meeting and will be undertaken in accordance with UNDP-GEF guidance. The terminal evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term review, if any such correction took place). The terminal evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The GEF BD SO2 TT as set out in the Project Results Framework in Section III of this project document) will also be completed during the terminal evaluation cycle. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response, which should be uploaded to PIMS and to the UNDP Evaluation Office Evaluation Resource Center (ERC).
283. **Learning and knowledge sharing:** Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.
284. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects.

285. There will be a **two-way flow** of information between this project and other projects of a similar focus.

Table 6: Project Monitoring and Evaluation workplan and budget

Type of M&E activity	Responsible Parties	Budget US\$ Excluding project team staff time	Time frame
Inception Workshop and Report	Project Manager, Project Team, Government and associated CSOs UNDP CO, UNDP GEF	Indicative cost: \$20,000	Within first two months of project start up with the full team on board
Measurement of Means of Verification of project results.	Project Manager and CTA will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members/consultants UNDP-GEF RTA advises	To be finalized in Inception Phase and Workshop.	Start, mid and end of project (during evaluation cycle) and annually when required.
Measurement of Means of Verification for Project Progress on output and implementation	Oversight by Project Manager and CTA Implementation teams	To be determined as part of the Annual Work Plan's preparation. Indicative cost is \$40,000	Annually prior to ARR/PIR and to the definition of annual work plans
ARR/PIR	Project manager and CTA UNDP CO UNDP RTA UNDP GEF	None	Annually
Periodic status/ progress reports	Project manager and team	None	Quarterly
Mid-term Review	Project manager and CTA UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost: \$ 40,200	At the mid-point of project implementation.
Terminal Evaluation	Project manager and CTA UNDP CO UNDP RCU External Consultants (i.e. evaluation team)	Indicative cost: \$40,200	At least three months before the end of project implementation
Audit	UNDP CO Project manager PCU	Indicative cost per year: \$2,000 (\$10,000 total)	Yearly
Visits to field sites	UNDP CO UNDP RCU (as appropriate) Government representatives	For GEF supported projects, paid from IA fees and operational budget	Yearly for UNDP CO, as required by UNDP RCU
TOTAL indicative COST Excluding project team staff time and UNDP staff and travel expenses		US\$ 115,400 (+/- 2.5% of total GEF budget)	

7 Project Fit

7.1 Project consistency with national strategies

286. This project is country-driven and consistent with, and supportive of, national development strategies and plans that relate to green growth and sustainable development, with focus on MDGs and the Post-2015 development goals.
287. It is supportive of the 1990 National Environment Charter (PNAE), the National Biodiversity Strategy and Action Plan (from 1997 and currently being update/revised to incorporate the Aichi Targets), and the principles of the Environment Programme III (2005), which are still valid. Together, they outline the basis and strategic axes for environmental governance and sustainable development in Madagascar.
288. Specifically as the decentralised NRM policies, the project is in line with the general developmental principles enshrined in various sectoral policies related to agriculture, oil & gas, mining, energy provision, and infrastructural development. Much of the project's effort will though focus on ensuring that biodiversity considerations are more actively taken into account in those sectoral frameworks

7.2 GEF conformity and Country eligibility

289. This project will help Madagascar achieve its set objective vis-à-vis relevant conventions, in this case, the Convention on Biological Diversity (CBD), plus the various CBD related conventions.
290. More specifically, this project is fully consistent and will contribute to Madagascar's achievement of the Aichi Targets as follows: Target 5, to the extent that the project will contribute to stabilising land-use in the fringes of core protected areas thereby reducing threats to PAs biodiversity; Target 11, to the extent that (i) the project will contribute to making the protected areas system more effective in conserving biodiversity within the surrounding landscapes; and (ii) it includes other area-based conservation measures that are not just than formal PAs, in particular through the incorporation of CCAs into the system; Target 12, as it contributes to reducing the loss of known threatened species, possibly preventing their extinction across the landscape; Targets 14 and 15, as it relates to the enhancement of ecosystems' functions, their structure and resilience, including in the face of climate change, through a landscape mainstreaming approach.

7.3 Main synergies with Related Projects and Programs

Table 7: Matrix of collaboration

Programmes, and Initiatives	Proposed collaboration
On-going and recently closed UNDP-GEF BD	During the PPG, the project worked with the SGP to scope the relevance of past and prospective SGP projects in the Atsimo Andrefana Landscape. As for FSPs, two projects are worth mentioning: PIMS 2762 "Madagascar EPIII Third

Programmes, and Initiatives	Proposed collaboration
projects and SGP	<p>Environment Programme” (or EP3) and PIMS 4172 “Madagascar Network of Managed Resource PAs” (or MRPA).</p> <p><u>EP3</u>: The UNDP-GEF EP3 project ended in 2012 and revolved around the development of ‘sustainable natural resource management’ practices with communities within Protected Areas Support Zones. The WP-GEF EP3 project complemented it, by focusing on operationalising the core PAs. Mikea Forest was one of the Southern sites that benefitted from both EP3 projects. This project will build from the positive legacy of EP3.</p> <p><u>MRPA</u>: There is significant scope for learning, collaboration and cross fertilisation with respect to TdG, but equally in the dialogue with extractive industries and product certification. There are no site overlaps.</p>
Recently submitted UNEP-GEF national BD projects	<p>Two FSPs were recently submitted to the GEF by UNEP but the PIFs await clearance: (1) “<i>Strengthening the Network of ‘New Protected Areas’ in Madagascar</i>” (or NAP Strengthening) and (2) “<i>Conservation of Key Threatened, Endemic and Economically Valuable Species in Madagascar</i>” (Threatened Species). The NAP Strengthening project will work in core sites, one of which (Ranobe PK 32 NPA) is within the Atsimo Andrefana Landscape. A third MSP PIF on SLM was recently cleared and may be relevant with respect for ecosystem services. The FSP have been approved by the Council and collaboration will be sought with UNEP.</p> <p>There are no risks of overlap, only opportunities for synergies. The current project focuses on terrestrial ecosystems within the landscape and adopts a mainstreaming approach. The UNEP NAP Strengthening project adopts a PA approach and Ranobe is a MPA (incidentally also the site of the Tar Sands mining project). As for the Threatened Species Project, there is significant potential for collaboration with respect to the BD LUP and the community-based biodiversity & livelihoods spatial assessments and planning.</p>
Conservation initiatives in core PAs	<p>Besides the above cited NAP Strengthening project, partner organisations are implementing a suite of activities in core PA sites within the Atsimo Andrefana Landscape. Currently, knowledge of their concrete activities is limited, but sufficient to indicate that there are no potential overlaps. During the PPG phase, it will be important to chart the work of these partners, engage with them and find concrete collaboration areas.</p> <p>During PPG phase consultation took place with GIZ, USAID, WCS, BV as well as with other partners working in the target areas, in order to integrate them within the preparation phase of the project. Consequently, synergies were found with on-going projects and those that are in the planning phase. GIZ is currently planning the multi-year program. Agreements were accorded with the UNDP to share approaches and project work plans in order to operationalise collaboration. USAID will launch the bidding process for their multi-year program this year. Other partners will share work plans and will work in coordination with the project through the DREEMF, which centralizes project management by environmental constituents in the Region.</p>
Baseline programmes of MINAGRI, donor partners, Tany Meva and Sage	<p>These partners will play a pivotal role in supporting and complementing GEF funding for advancing with issues of food security, livelihoods and energy under both Components 1 and 2. These are central development issues that need to be taken into consideration, in order for the GEF project to secure global biodiversity benefits. Periodic information exchange sessions with partners working in the rural development will be developed throughout project implementation to define and harmonise priorities and interventions.</p>
Initiatives on policy reform and spatial planning	<p>A few partners are currently working on issues of policy and legislation reform, though moving slowly due to the political transition. The project will work closely together with Helvetas Swiss Inter-cooperation, WHH, the SNAT Consortium, MEPATE, MEEMF and other to explore synergies and collaboration topics related to policy reform and spatial planning.</p>

8 Legal Aspects

8.1 Legal context

291. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.
292. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.
- The implementing partner shall:
- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
 - b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.
- UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.
293. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via: <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

8.2 Audit Clause

294. Audit will be conducted according to UNDP Financial Regulations and Rules and applicable Audit policies.

8.3 Communications and visibility requirements

295. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at [\[Link\]](#) and specific guidelines on UNDP logo use can be accessed at [\[Link\]](#). Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the GEF logo. The GEF logo can be accessed at: [\[Link\]](#). The UNDP logo can be accessed at [\[Link\]](#).
296. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: [\[Link\]](#). Amongst other things, the GEF Guidelines describe when and how the GEF logo needs to be used in project publications, vehicles, supplies and other project equipment. The GEF Guidelines also describe other GEF promotional requirements

regarding press releases, press conferences, press visits, visits by Government officials, productions and other promotional items.

297. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

On UNDP Branding	http://intra.undp.org/coa/branding.shtml
On the UNDP Logo	http://intra.undp.org/branding/useOfLogo.html
On the GEF Logo	http://www.thegef.org/gef/GEF_logo
GEF Comms Strat.	http://bit.ly/1RxAq0D

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National Plans and Legislation :

- MINENVEF (2010). Deuxième communication nationale to the UNFCCC.
- SAPM & MEEMF. 2009. Cadrage général du Système des Aires Protégées de Madagascar.
- Plans Communaux de Développement (2005) PCD Région Atsimo Andrefana.
- Plan Natinoal de Developpement, Madagascar 2015-2019
- 5ème rapport national de la Convention sur la Diversité Biologique de Madagascar (2014)
- Décret N°2001-122 du 14 février 2001 Fixant les conditions de mise en œuvre de la gestion contractualisée des forêts de l'Etat
- Décret N° 2013 – 785, Fixant les modalités de délégation de gestion des forêts de l'Etat à des personnes publiques ou privées du
Ministère de l'environnement et des forets
- Loi n° 96-025 du 30 septembre 1996 relative à la gestion locale des ressources naturelles renouvelables
- Loi N° 96-018, Code pétrolier. 1996
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Policy briefs :

- Les Amis de la Terre France (2012). Synthèse. « Madagascar : nouvel eldorado des compagnies minières et pétrolières »
- Policy Brief of the ICCA Consortium issue no. 1, The Contribution of Indigenous Peoples' and Local Community Conserved
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- Rio Tinto/QIT Madagascar Minerals SA, (2011). Développement durable : rapport 2011, p. 10
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10 Annexes

Annex 1: Co-Finance Letters

Name of Co-financier	Date of letter	Co-financing Amount (\$)
HELVETAS Swiss Intercooperation, Madagascar *	05-May-2015	1,792,460
WELTHUNGERHILFE – WHH *	05-May-2015	1,639,213
Tany Meva	04-May-2015	350,000
Ministère de l'Agriculture	21-May-2015	38,000,000
Ader	14-May-2015	931,147
GIZ	02-Jun-2015	1,100,000
TOTAL		43,812,820

* Same letter for both organisations.

Refer to the PRODOC Addenda in a [separate PDF file](#) (or access the file by pasting this into a browser address bar: <http://bit.ly/1PiE3CW>).

Annex 2: Terms of Reference for Project Staff /Consultants

TORs in this PRODOC are provided in French to facilitate recruitment. They will be completed, dully formatted and validated during the appraisal phase.

Project Coordinator

Termes de références COORDINATEUR DE PROJET

Titre : Coordinateur de projet
Superviseur : Directeur National du Projet
Lieu d’Affection : Tuléar
Durée d’intervention : Deux ans renouvelables

Contextes

Le paysage forestier épineux et sec d’Atsimo Andrefana, qui couvre une superficie de quelques 2,4 millions d’hectares est classé parmi les écosystèmes les plus distinctifs à Madagascar. C’est un écosystème fragile qui fait face à différentes pressions.

Constituant un refuge important pour la biodiversité, les écosystèmes du paysage assurent aussi par ses ressources naturelles la base de survie de la majorité de la population locale. De ce fait, la pression accrue due aux actions anthropiques (reconversion de terre forestière en terre de culture, exploitation, extraction minière...), rend vulnérables les ressources dernières vestiges du paysage. Conséquemment, il est crucial d’intégrer la gestion de la biodiversité dans le développement, et d’influencer l’aménagement du territoire, afin de contrôler les pressions dans les zones les plus sensibles du point de vue écologique : aires protégées (AP), zones adjacentes et corridors écologiques importants.

Conscient de l’importance de la biodiversité et le développement humain, un projet intitulé : « Approche paysage pour la conservation et la gestion de la biodiversité menacée à Madagascar, axée sur le paysage forestier épineux et sec d’Atsimo Andrefana » est mise en œuvre dans la région par le gouvernement avec l’appui financière de PNUD-FEM. Le projet va adopter une approche à deux volets. Tout d’abord, il renforcera la gouvernance de l’utilisation des ressources au niveau paysager. Pour cela, il élaborera et mettra en œuvre un plan de gestion de la biodiversité et des écosystèmes, en appui au schéma régional d’aménagement du territoire, à l’échelle du paysage, en incorporant explicitement les besoins en conservation de biodiversité et des processus écologiques. Il recommandera les utilisations des terres en vue d’atténuer les menaces, à partir d’un outil, le BD LUP. Il collaborera avec les parties prenantes au niveau national et régional, afin d’impliquer les secteurs du développement ainsi que le secteur privé, et négociera l’application des mesures environnementales et de conservation de la biodiversité, afin d’atténuer les impacts des investissements de grande envergure sur les écosystèmes fragiles.

Ensuite, le projet collaborera avec les communautés locales pour renforcer la conservation à base communautaire, en abordant le problème des menaces sur les écosystèmes et la biodiversité, en rapport avec les moyens de subsistance artisanaux. Il tiendra compte également de l’exclusion des communautés des processus décisionnels concernant les projets économiques de grande envergure en sensibilisant les communautés sur leurs droits à la consultation publique. Le projet travaillera avec les communautés pour établir des « Aires Protégées Communautaires » (APC) multi-usages, et mettra en place le cadre institutionnel nécessaire pour la gestion, ainsi que les mesures pour assurer l’utilisation durable des ressources naturelles, tout en renforçant la participation locale dans les processus décisionnels.

Objectifs

L’objectif de ce TDR est de cadrer les attributions du Coordinateur du projet une des personnes clés qui vont réaliser le projet.

Le Coordinateur du projet travaillera sous la supervision du Directeur National du Projet.

Attributions

Le coordinateur du projet sera en charge de la gestion du projet et aura comme tâches spécifiques de :

- Coordonner les planifications et mises en œuvre des deux composantes du projet
- Assurer la gestion quotidienne de la Composante 1 du projet
- Représenter le projet dans la région d'intervention
- Représenter le projet au niveau des plates-formes régionales
- Élaborer les plans opérationnels et budgets pour la Composante 1
- Établir les rapports périodiques du projet
- Veiller à la bonne mise en œuvre des activités
- Assurer la cohérence des interventions des deux composantes
- Suivre la bonne mise en œuvre du projet
- Assurer l'encadrement et suivi des consultants du projet
- Assurer l'organisation des interventions des différents experts gouvernementaux et des consultants dans le cadre du projet

Profil requis

Le candidat doit avoir au minimum les qualités suivantes :

- Titulaire d'un diplôme d'Ingénieur forestier BACC+5
- Au moins dix ans d'expériences dans le domaine de la conservation et du développement
- Au moins cinq ans d'expériences probantes en gestion de projet
- Expériences avec les projets financés par les bailleurs internationaux
- Maîtrise de la politique environnementale et bonne connaissance des politiques sectorielles
- Bonne capacité de leadership
- Compétences à diriger une équipe multidisciplinaire
- Bonne connaissance du système d'information géographique
- Fortes capacités d'analyse, de rédaction, de planification et organisations
- Apte à travailler avec un minimum de supervision
- Excellente maîtrise du français et bonnes connaissances de l'anglais
- Apte à travailler en équipe
- Bon sens relationnel
- La connaissance de la région Atsimo Andrefana serait un atout

Project Administrative and Financial Officer

Termes de références RESPONSABLE ADMINISTRATIF ET FINANCIER

Titre : Responsable Administratif et Financier

Superviseur : Directeur National du Projet

Lieu d'Affectation : Tuléar

Durée d'intervention : Deux ans renouvelables

Contextes

[même que pour le coord.]

Objectifs

L'objectif de ce TDR est de cadrer les attributions du Responsable Administratif et Financier une des personnes clés qui vont réaliser le projet.

Le Responsable Administratif et Financier travaillera sous la supervision du Coordinateur de Projet.

Attributions

Le Responsable Administratif et Financier sera en charge de la gestion des aspects administratifs et financier du projet et aura comme tâche spécifique de :

- Assurer la gestion financière du projet
- Appuyer l'élaboration des budgets du projet
- Suivre les réalisations budgétaires du projet
- Veillez à la conformité des dépenses aux normes et
- Établir et Consolider les rapports financiers
- Assurer la gestion des ressources humaines du projet
- Assurer la conformité de la gestion aux normes de travail à Madagascar

Profil requis

Le candidat doit avoir au minimum les qualités suivantes :

- Titulaire d'un diplôme de maîtrise en gestion minimum
- 10 années d'expérience dans la gestion administrative et financière
- Au moins 5 années d'expérience avec les projets financés par les bailleurs internationaux
- Bonne connaissance des procédures des bailleurs
- Bonne maîtrise des outils de gestion (logiciel)
- Forte compétence en comptabilité analytique
- Maîtrise la langue française et anglaise
- Bonne maîtrise de l'outil informatique de base (bureautique, e-mail, internet)
- Capacité rédactionnelle forte
- Bonne connaissance de la région Atsimo Andrefana serait un atout
- Ayant un bon sens de leadership
- Apte à travailler sous pression et respecte les délais
- Méthodique et ayant un bon sens de rigueur
- Dynamique, sociable et intègre

GIS Expert

Termes de références DÉVELOPPEUR EXPERT EN SIG INTERNATIONAL

Devoirs et Responsabilités

Responsable de la réalisation de l'Activité 1.1.1, à partir de l'année 1, et d'autres activités/réalisations connexes.

L'activité clé de ce résultat est la conception, le développement, la mise en place et l'opérationnalisation des outils et plans susmentionnés (BD LUP, PRUSCB).

- Collecter, organiser et entreposer dans une base de donnée géospatiale les couches d'informations thématiques de sources externes (services internationaux et nationaux) au projet identifiées dans les requis du système
- Avec l'aide de l'expert en biodiversité réaliser les couches de données géospatiales synthétiques nécessaires pour réaliser le PRUSCB
- Réaliser le PRUSCB à l'échelle de la région avec l'aide de l'expert en biodiversité et l'implémenter sous forme de couche d'information géospatiale
- Mettre en place l'architecture technique du BDLUP
- Utiliser des technologies Open Source pour le développement du Système d'Information BDLUP selon les requis techniques et fonctionnels
- Arrimer le BDLUP, la géorépertoire et la voûte documentaire dans un portail WEB
- Transférer les connaissances, les technologies et participer au renforcement des capacités locales

Compétences

- Analyse en systèmes d'Information

- Développement de systèmes WebGis avec des technologies OpenSource
- Intégrations de technologies
- Traitement d'images, cartographie et intégration de données
- Une bonne connaissance générale en matière d'environnement, et développement durable et conservation

Profil requis

Éducation :

- Un diplôme universitaire (Master minimum) spécialisé en SIG
- Des fortes compétences en programmation

Expérience :

- Au moins 5 ans en tant que professionnel des SIG
- Des expériences éprouvées en termes de programmation WebGis de préférence
- A démontré sa capacité en termes d'autonomie, d'adaptation à des contextes nouveaux
- A démontré sa capacité à travailler dans un contexte multidisciplinaire et être proactif dans la recherche d'information

Langues :

- Français et Anglais parlés et écrits

Overview table of human resource inputs

Budget note ref.	Input	Comp	Units	Unit description	Unit cost \$ (*)	Sub-total \$	Link to project outputs	TOR in Annex 2 (\$)	Atlas Code (abbrev.)
Project core									
2c through 2j and 2x	Nat. Project Manager	1	3.5	years pro-rata	35,000	105,000	All	yes	71400 Contr Serv – ind
		2	2.5	years pro-rata	35,000	17,500			
		PM	0.5	years pro-rata	35,000	35,000	Mgt & Ops		
	Int. Technical Advisor - P4 x 2 years	1	2	years (proforma costs)	226,189	452,378	Various + M&E	yes	
	Int. Technical Advisor - IC x 3 years	1	2	years pro-rata	100,000	200,000			
		2	0.5	years pro-rata	100,000	50,000			
	Int. GIS Specialist – full time x 1.5 years	1	0.5	years (proforma costs)	190,050	285,075	Mostly 1.1 + others Comp1	yes	
	Int. GIS Specialist - IC x 1.5 years with intermittent inputs over the remainder of the project duration	1	0.5	years pro-rata	100,000	50,000			
		2	1	years pro-rata	100,000	100,000	Output 2.1		
	Database, IT and Digital Inclusion national expert, full-time	1	4	years	35,000	140,000	1.1, 1.2	no	
	Training, Stakeholder Engagement, Gender and Communications national expert, part-time at 50% over 4 years	1	4	persons-year at 50% time/remuneration	15,000	60,000	1.1, 1.2, 1.3	no	
BD and PA national expert, part-time at 50% over 4 years	1	4	persons-year at 50% time/remuneration	15,000	60,000	Comp 1 + BD Comp 2	no		
Planning, Procurement & Accounting Manager - national	PMC	4.5	years	33,000	148,500	Mgt & Ops	yes		
Short and medium term consultants									
1a	Int. BD Sectoral Mainstreaming experts	1	40	weeks	3,000	120,000	1.2, 1.3	yes	71200 Int Cons
1b	Evaluations – international (may include national consultants as part of a team)	1	12	weeks	3,350	40,200	UNDP GEF	std.	
		2	12	weeks	3,350	40,200	Eval		

(*) All costs here are indicative and for budget calculation purposes only. More realistic costing should be carried out in connection with project inception. Accordingly, unit costs does not automatically equate to any of the incumbent's remuneration level, neither proforma nor net, as this will be determined by processes linked to post classification and applicable practices determined by the UNDP Country Office.

(§) TOR not included in the PRODOC will be developed during the project's inception phase.

Annex 3: Links to Tracking Tools and Summary TT Results

BD SO2 (*mainstreaming*) monitoring tool and METT for Protected Areas – Key results

Refer to the SO2 TT in separate files in Excel through this [link](#) or access the file by pasting this into a browser address bar: <http://bit.ly/22PfMy8>

Below is a summary an analysis of both SO2 TT and of METT assessments for four sites. The former is being submitted to the GEF in Excel format to comply with PRODOC requirements (links above). The latter (the METT assessments) have a bearing for certain Logframe Indicators and can be availed upon request, but are not part of the required GEF documentation.

Table 8: SO2 TT, Part III - Management Practices Applied

Management practices employed by project beneficiaries that integrate biodiversity considerations and the area of coverage of these practices		Notes
Specific management practices that integrate BD	Application of the mitigation hierarchy at the landscape level	1
Certification system?	n/a	2
Area of coverage foreseen at start of project	At the baseline = 0 ha Target by project end = 2,400,000 ha	3
Notes: [1] The mitigation hierarchy is a method for evaluating options in a step-wise and prioritised manners during the implementation of various phases of a high impact project (in mining e.g.). Currently, it is not being systematically applied in the target Atsimo Andrefana landscape. However, by implementing the suit of activities foreseen primarily under Component 1, including training of key decision-makers, and with a facilitated access to relevant biodiversity information through a tailor-made spatial planning tool (the BD LUP), it is expected that the application of the mitigation hierarchy becomes much more widespread in decision-making processes. [2] It is not a given that the mitigation hierarchy constitutes a 'certification scheme' as other known examples. It is however an integral part of International Finance Corporation Performance Standard 6 (i.e. IFC PS6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources), where compliance or non-compliance can be asserted. [3] At project start, it is foreseen that a total terrestrial area of 2.4 million hectares, corresponding to the surface of three districts within the Atsimo Andrefana Region, will be the direct target landscape: Tulear II, Morombe and Betioky.		

Table 9: SO2 TT, Part IV - Policy and Regulatory frameworks

Sectoral Policy Scoring for primary and secondary sectors targeted for mainstreaming (Yes = 1, No = 0)	Agriculture (primary)	Mining (primary)	Oil (primary)	Forestry (secondary)	TOTAL
Biodiversity considerations are mentioned in sector policy	1	1	1	1	4
Biodiversity considerations are mentioned in sector policy through specific legislation	1	0	0	1	2
Regulations are in place to implement the legislation	1	0	0	1	2
The regulations are under implementation	1	0	0	1	2
The implementation of regulations is enforced	0	0	0	1	1
Enforcement of regulations is monitored	0	0	0	1	1
TOTAL SCORES AT BASELINE = 6 (out of 24 possible)	4	1	1	6	12

Table 10: SO1 TT, Summary of METT assessments for 4 PAs

Key data from METT assessments						
	METT score	METT score %	Date of PA establishment	Area in ha	IUCN Category	Management Authority
Mikea	72	71%	06-Nov-2011	184,630	II	Madagascar National Parks
Onilahy	74	73%	27-Jan-2007	102,179	V	Co-management, assisted by WWF
BezMaha	71	70%	04-Jun-1986	4,200	IV	Madagascar National Parks
Tsimana	82	80%	10-Apr-1905	203,740	II	Madagascar National Parks

Table 11: SO1 TT's Assessment Form with key METT questions displaying low scores

The 30 Key METT Questions (bonus questions excluded – max score per question =3; counting only the low scores <2)	Mikea	Onilahy	BezMaha	Tsimana
1. Legal status				
2. PA regulations				
3. Law Enforcement	0			
4. PA objectives				
5. PA design			1	
6. PA boundary demarcation				
7. Mgt plan				
8. Regular work plan				
9. Resource inventory				
10. Protection systems				
11. Research	1			
12. Resource mgt				
13. Staff numbers	1			
14. Staff training			1	
15. Current budget				
16. Security of budget		1		
17. Management of budget		1		
18. Equipment		1	1	
19. Maintenance of equipment			1	
20. Education and awareness				
21. Planning for land and water use				
22. State and commercial neighbors		1		
23. Indigenous people				1
24. Local communities				
25. Economic benefit		1		
26. Monitoring and evaluation				
27. Visitor facilities	1	1	1	
28. Commercial tourism operators	1	0	1	
29. Fees	1	0	1	
30. Condition of values				
TOTAL SCORES below 2: sum = 19	5	6	7	1

Annex 4: Incremental Cost Reasoning

Table 12: Baseline Alternative and Benefits of the GEF Project

<u>Current Baseline</u>	<u>Alternative</u>	<u>Global Biodiversity benefits</u>
<p>In the business-as-usual (BAU) scenario, deforestation and forest degradation trends experienced at the Atsimo Andrefana Spiny and Dry Forest Landscape will continue and likely accelerate.</p> <p>Forest patches will become further fragmented. Species that are forest-dependent will be increasingly threatened and may even become locally extinct.</p> <p>The existing threats to biodiversity from subsistence activities will be compounded by threats associated with large scale development: road opening, irrigation schemes, oil & gas developments and mining activities.</p> <p>Large scale projects will rapidly establish themselves in the region, bringing significant investments that are bound to transform landscapes and lead to biodiversity loss.</p> <p>There will be little if any investment in conservation, and any environment safeguards that may apply will be weak from a biodiversity perspective. At the landscape level, the “development accelerator effect” will add to the pressures, as increased economic activities will attract migrants. There will be more demand for firewood, charcoal, land and water resources.</p> <p>This will in turn exacerbate deforestation and forest degradation.</p>	<p>With the project, Madagascar will implement concrete measures for conserving, sustainably using and safeguarding biodiversity in the Atsimo Andrefana Landscape covering three contiguous districts (Morombe, Tuléar II and Betioki).</p> <p>In terms of response to the current, and emerging threats to biodiversity, the project promotes a paradigm shift from site based work to a landscape approach.</p> <p>The project will develop a collaborative governance framework for sectoral biodiversity mainstreaming involving public, private, CSO and CBO actors. Biodiversity considerations will be integrated into the development of economically relevant sectors across the landscape, in particular agriculture, forestry, extractive industries, energy production and transport, but also in the livelihoods and land use patterns of local communities.</p> <p>A two-pronged approach will apply.</p> <p><u>First</u>, it will strengthen resource use governance at the landscape level by developing and implementing the BD LUP. It will work with national and sub-national level stakeholders to engage economic sectors, and negotiate the application of biodiversity conservation and sustainable use measures, and bring about necessary policy change.</p> <p><u>Second</u>, the project will work with local communities to strengthen conservation on communal lands by establishing and managing multi use CCAs. It will put in place measures to ensure the sustainable utilisation of wild resources and conservation-friendly farming through a focused sustainable livelihoods and capacity building programme.</p>	<p>The highly threatened dry deciduous forest and spiny thickets totalling 2.4 million ha will enjoy increased conservation security and, at the wider landscape level, biological resources will be used more sustainably and essential ecosystem services maintained.</p> <p>Adverse land-use change will be stabilised in the fringes of core PAs (existing and new terrestrial PAs sum 240,000ha), thereby reducing the level of threats to biodiversity in PAs that emanates from their periphery.</p> <p>Forest fragments and extensive areas of high biodiversity value outside PAs (minimal estimated surface is 100,000 ha) will be brought under conservation management and will function as connectivity corridors.</p> <p>Threatened species found within the landscape will enjoy improved chances of survival among them emblematic species of lemur (<i>Propithecus verreauxi</i>, <i>Lemur catta</i> and <i>Cheirogaleus medius</i>), red-listed birds (<i>Monias benschi</i> and <i>Uratelornis chimaera</i> among others), as well as reptiles and amphibians (e.g. <i>Furcifer antimena</i> and <i>Ptychadena mascareniensis</i>).</p> <p>The current and emerging negative impacts on biodiversity from production sectors will be more effectively avoided, and managed at the landscape level, in particular within the agriculture, forestry, extractive industries, energy production and transport sectors.</p>

Annex 5: Context and analysis behind the project justification

This annex contains details and analysis on:

- A) The Consequences of the political crisis**
- B) Natural assets and recent trends in NRM**
 - Ecotourism
 - Boom of the mining sector
- C) The regional development context**
 - Key regional data
 - Atsimo Andrefana, a region with economic growth potential
 - Biodiversity of global significance
 - Migration
- D) Emerging sectors: mining, oil, and large scale commercial agriculture**
 - Extractives and associated infrastructural development
 - Large scale commercial agriculture
- E) Threats to and impacts to biodiversity specific to the target landscape**
 - Land use changes and habitat loss
 - Loss of high value species
 - Emerging sectors: potential threats, examples
 - Climate change
 - Tourism sector
 - The ‘park-edge’ effect
 - Dune shifting
- F) Key policy guidelines for environmental management in Madagascar**
 - Frameworks for governing the extractive sector
 - Frameworks for governing the agricultural and tourism sectors
 - Other legal, policy and institutional frameworks for managing the environment
 - The Protected Area System of Madagascar (SAPM)
 - Community natural resource management within the SAPM

A) The Consequences of the political crisis

The country is currently recovering from a long political crisis that started in 2009, after the democratically elected President was ousted by the opposition with support from the army. The free and peaceful presidential and parliamentary elections held in December 2013, with the support of the international community, were a milestone in the restoration of democratic institutions.

The five years of political transition and withdrawal of international aid have halted the development of the country and caused generalized institutional decline. Nevertheless, the return to rule of law and democratic institutions following the 2013 elections have given revived hope of improvements on several fronts of development.

The political crisis had a flagrant negative impact on the economy, and ultimately also on the management of its biodiversity and ecosystems. The country’s economic growth has been negative as shown by a rate of -4% in 2009, when the conflict broke out. With a population growth rate of 2.8%, massive reduction of development assistance, recurrent external shocks, lack of effective natural resource management, and low income rates, the social impact has even been greater. The extremely low growth rate, in the range of 1.5% on average during the period running from 2010 to 2013, failure to provide vulnerable groups with generalized access to basic social services, income generation, or jobs, extreme poverty and social, economic, and regional disparities were exacerbated.

Provision of social services, such as health and education, are heavily dependent on external aid. Where public institutions were already structurally weak, the crisis aggravated the difficulties they faced to deliver public services. Although the impact on conservation has not yet been fully assessed in monetary terms, there was a huge tendency to pull out investment gravely affecting PAs and sustainable environment land-uses.

Moreover, regarding investments in general, uncertainty still remains. According to the ranking conducted by Transparency International, Madagascar occupies number 127th out of 177 countries (2013) and according to the Mo Ibrahim Index, Madagascar is the African country where governance has shown the sharpest downfall, with its score decreasing from 57.5 out of 100 in 2000 to 45.7 in 2012.

Although the context in the past years was not favourable to investments, requests for lands for agribusiness development purposes were maintained and some permits were delivered to foreign companies. Official figures are however not available.

In the same way, emerging industries of the oil and gas sectors, as well as industrial mining are expected to develop rapidly. The government and many hopeful citizens see this as a game changer for Madagascar with respect to economic growth and improved social wellbeing. It is estimated that the mining sector currently generates approximately 15% of the GDP against less than 1% in 2010.⁴⁸

Although oil and gas developments are still at the exploration phase, and several mining project could take years to be fully blown productive and profitable, the launching of one or two extractives projects could be sufficient to trigger an economic boom.

What really could be a veritable 'game changer' for Madagascar is how manages its new extractives' boom – reason why this project is timely and relevant.

B) Natural assets and recent trends in NRM

Madagascar constitutes one of the world's most important storehouses of biodiversity (see e.g. PRODOC paragraph 11). To date, the natural endowment of Madagascar is the first line of economic resources used by its population, constituting 49% of the country's total wealth. This estimate includes the value of: (i) Forest areas that produce timber (lumber and firewood), non-timber forest products, and bioprospecting values; (ii) Protected Areas; (iii) Agricultural land, including farmland and pastureland; and (iv) Fishing. The value of ecosystem services - especially in terms of water and income from tourism - is included in the value of Protected Areas and agricultural land.⁴⁹

Biodiversity offers advantages in the form of ecosystem services; it regulates the flow of water, reduces floods and risks of water shortages. These benefits are also essential to urban water users and hydropower production. It is estimated that PAs provide water services to at least 430,000 hectares of irrigated perimeters and potable water to 17 major towns.⁵⁰

Given the current levels of degradation, as it will be presented further down, the question is how to translate Madagascar's natural assets into equitable benefits and, ultimately, welfare for the Malgasy population, without further aggravating the environmental crisis.

Ecotourism

The stunning landscapes offered by the country's terrestrial and marine ecosystems are the main assets of the Malagasy tourist sector. It is estimated that 70% of the tourists who come to Madagascar visit at least one Protected Area.

Before the crisis, the tourism industry, which largely relied on Madagascar's worldwide famed biodiversity, was estimated to generate USD 500 million per year, with an average annual growth rate of 10%. An important source of foreign currency revenues (6% of the GDP in 2007), this sector also accounts for more than 200,000 jobs (5% of the total number of jobs), especially in remote rural areas, benefiting the most vulnerable segments of population. However, with 200,000 visitors in 2012, the tourism industry in Madagascar remains weak compared to the millions of tourists that the neighbouring island of Mauritius welcomes every year.

⁴⁸ Banque Mondiale (2010) Opportunités et défis pour une croissance inclusive et résiliente, Ch, 8 Le secteur minier

⁴⁹ Country Environmental Assessment (CEA), World Bank (2013)

⁵⁰ Ibid.

The current boom pushed by the mining sector

For years, the country prepared for a new era in the mining sector by equipping itself with legal and institutional tools that promote direct foreign investments in this sector. The stock of foreign direct investments (FDIs) in the extractive sector (mainly mining) went from MGA 47 billion in 2005 to nearly MGA 5,800 billion (75% of the total FDIs) in 2009.⁵¹ This extremely rapid growth is largely due to the launching of two mining projects of global scope: the ilmenite mine (titanium ore) of QMM/Rio Tinto in the region of Anosy (southeast) that entered the production phase in March 2009 with an initial investment of nearly USD 1 billion⁵²; and the Ambatovy project for nickel-cobalt mining in the east of the country with an investment estimated at USD 5.5 billion.⁵³ The consortium led by the Canadian company Sherritt received a temporary exploitation permit in September 2012.

In spite of the "boom" that occurred over the 2005-2008 period, mining operations deteriorated and the country's attractiveness decreased as a result of the international financial crisis, combined with the national political crisis.⁵⁴ Although more than 4,000 permits were valid in 2008 (regardless of the type), in 2009 issuing permits reached a standstill, and forced numerous operators to work informally as shown by the trend in the number of regular permits.

To attract large-scale FDIs such as those from the large-scale extractive sector, recent governments have set up an enabling institutional and legal framework. Passed by parliament in 2002, the current Mining Code provides for the adoption of a specific legal framework for large-scale mining investments and a preferential tax system for mining projects exceeding a certain investment threshold.⁵⁵ The investment threshold was decreased from USD 100 to 25 million in 2005 to attract new investors.

The past governments of Madagascar have all placed mining at the heart of their strategic vision for development. Although mining has always had an important role to play (gold mining and gem stones mainly), the recent launching of the QMM and Ambatovy megaprojects denote a clear change in scale. They are a turning point in the country's development model.

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Like large-scale mining companies, small-scale or artisanal mines have a facilitated access to exploration and mining permits.

⁵¹ Les Amis de la Terre, France. Synthesis, November 2012. Madagascar : nouvel eldorado des compagnies minières et pétrolières.

⁵² Sustainable Development : Report 2011, Rio Tinto/QIT Madagascar Minerals SA, www.riotintomadagascar.com/pdf/RDD_2011_FR.pdf

⁵³ Rapport de développement durable 2010, Ambatovy.

⁵⁴ World Bank. 2014.

⁵⁵ Refer to section [1.2.3 Environmental Management in Madagascar](#) and to Annex 5-F for a brief analysis of the legal context of the mining sector.

⁵⁶ In Madagascar, an in-depth revision of extractive sector legislation was conducted in the 1990's leading to new policies. These policies were operationalised by adopting a new oil code in 1996 (Law n°96-018), a new mining code in 1999 (Law n°99022)13 and institutionalizing a special regime for large scale mining projects in 2002 (Law n°2001-031 on large scale mining investments – LGIM).

⁵⁷ Les Amis de la Terre, France (2012).

⁵⁸ Sustainable Development: Report 2011, Rio Tinto/QIT Madagascar Minerals SA, www.riotintomadagascar.com/pdf/RDD_2011_FR.pdf

⁵⁹ Rapport de développement durable 2010, Ambatovy.

⁶⁰ World Bank. 2014.

⁶¹ Refer to Legal and Institutional Framework section 1.5 for a brief analysis of the legal context of the mining sector.

In the government's view, the development of the extractive sector and associated infrastructures could become an important source of income for the country and contribute to poverty reduction.

However, there are countless illegal operations that still take place, that pose a real threat to biodiversity: risk of increasing pollution as a result of pollutant release during extraction, destruction of natural habitats, and exposure of workers to occupational hazards.

In spite of the benefits that the country and Region hope to receive through mining operations, this does not rule out the need to assess the negative impacts biodiversity and ecosystem functions and processes, since the value of the profits generated from the extractive industry investment projects may in turn affect the value of the Madagascar's natural capital resulting in a net negative economic balance.⁶²

Box 4: Ecological impacts of oil, gas and mining investments in Madagascar (quoted content in French from a 2013 WB report)

Empreinte écologique des investissements miniers à Madagascar

A Moramanga, entre Antananarivo et Toamasina, la compagnie **Sherritt International, basée au Canada**, prévoit d'extraire 60.000 tonnes de nickel et 5.600 tonnes de cobalt par an pendant 30 ans avec le projet Ambatovy, déjà en phase d'exploitation. La boue chargée de minerai est extraite de la mine à ciel ouvert, envoyée par pipeline à Tamatave où une usine effectue la séparation avant de stocker les déchets, d'abord à terre puis à terme en mer, après basification des boues acides (qui devraient être basifiées par du calcaire en provenance de Tuléar).

Le travail de la mine consiste à enlever la végétation, une forêt littorale pour l'essentiel, séparer mécaniquement et électriquement dans un lac artificiel le minerai du sable puis à reposer le sable débarrassé de son minerai, et enfin à revégétaliser ce sable débarrassé de son minerai.

À Fort Dauphin, dans le sud-ouest du pays, la compagnie **anglo-canadienne Rio Tinto**, géant mondial du secteur minier, prévoit de produire 750.000 tonnes d'ilménite par an au cours des 60 prochaines années (actuellement en phase d'exploitation).

L'investissement pétrolier, de la **compagnie française Total**, est en cours et à venir. Sur la côte ouest, à Bemolanga et Tsimiroro, Total pense exploiter des schistes bitumineux. Il s'agit d'un bitume très visqueux aggloméré à des schistes et à du sable, duquel on peut faire du pétrole. Les deux gisements sont estimés à 6 milliards de barils. Le processus d'extraction consisterait à chauffer le bitume en injectant de la vapeur et des solvants en profondeur puis à mélanger le sable extrait avec de l'eau chaude pour le rendre moins visqueux avant de laisser décanter pour extraire le pétrole.

Ces trois projets miniers ont **détruit ou détruiront des forêts** (600 ha pour Sherritt, 4.000 ha pour Rio Tinto, aucune pour Total, qui exploitera le gisement dans une région déboisée) et plus généralement des **espaces naturels** pour extraire le minerai ou les hydrocarbures.

Elles se révèlent également polluantes : très peu dans le cas de l'ilménite, bien plus pour l'exploitation du nickel, qui produit des boues acides, et peut-être plus encore pour l'exploitation des sables bitumineux, qui nécessite de grandes quantités d'eau dans une région désertique, stérilise les sols et produit d'immenses lacs de déchets miniers.

Les trois projets entraînent la **construction de nouvelles infrastructures** qui ont elles aussi une empreinte écologique : le port minéralier d'Ehoala, le pipeline qui amène les boues de Moramanga à Tamatave et qui traverse un corridor de forêts denses humides, et les probables infrastructures qui seront associées à l'exportation de pétrole dans le cadre du projet d'exploitation des schistes bitumineux.

Country Environmental Analyses, CEA, World Bank, 2013

⁶² Country Environmental Assessment (CEA), Banque Mondiale (2013).

C) The regional development context

Key regional data

According to official estimates, in the Atsimo Andrefana Region the intervention area, 82.1% of the population lives under the poverty line.⁶³ It was 76,2% in 2005 according to the IMF⁶⁴ (i.e. before the crisis). The rate of poverty prevalence the region is above the national average by a good 10 percent points. Rural areas are proportionately poorer than urban centres (87.4% and 65.9% respectively).

Education levels are low: just a little under one third of the population has attended at least primary school (52% at the national level). The birth rate is extremely high, with women having 6.2 children on average. Considering this number, the region's population is expected to double within the next 20 years. The population growth in the town of Toliara is significant: from 120,000 to 172,000 inhabitants from 2007 to 2010). This boom also translates into a strong demand for fuel wood. The annual fuel wood consumption per capita in the town of Toliara is estimated at approximately 150Kg of charcoal, against 100Kg in other regions.⁶⁵ Three quarters of the Region's communes are not connected to the power network and more than half of them do not have running water.

Due to high demands on natural resources, coupled with unsustainable agricultural practices, the natural forest cover of in Atsimo Andrefana is rapidly degrading. Indeed, its forest formations are especially vulnerable to any form of extraction, as their constituent natural species are slow to regenerate.

The economy of the Atsimo Andrefana Region is dominated by the primary sector and is concentrated on agricultural, fishing, and livestock farming activities. These activities are the source of income of 80 to 95% of the heads of household.⁶⁶ Part of the production is intended for sale, as shown by the existence of marketing infrastructures in the communes and numerous regular markets.

The region has undergone a process of negative industrialization over the past years. However, it is still home to a few industrial activities, including textile and garment manufacturing (24% of these activities). Still, in 2008, only 2% of the companies and businesses created in Madagascar over that year were located in the Atsimo Andrefana Region.

In 2009, mining activities of different types were practiced in nearly two thirds of the communes in the region. The map of mining indexes of the Ministry of Mining and Hydrocarbons shows that the area abounds with numerous and varied mining resources.

Lastly, with stunning landscapes and harbouring globally emblematic species (see e.g. **Figure 1** and **Figure 2**) the Region has a very high tourist potential, especially with foreign visitors with the capacity of hotels to accommodate tourists quadrupling over the past decade.

Atsimo Andrefana, a region with economic growth potential

298. Atsimo Andrefana is among one of the 12 economic growth areas identified within the NDP. The NDP states that within the Region "the opportunities for mining investments and related impacts on the development of the region and municipalities is considerable"⁶⁷. If the principles of inclusive and sustainable development are applied in the implementation of development plans and policies, the National Outline for Land-Use Planning Guidelines must, according to the NDP, "allow those responsible for economic, budget and sector planning, to consider the spatial dimension of development and establish coherent policies, enabling to increase the impacts of collective efforts".
299. The main challenge for the Region of Atsimo Andrefana is to reconcile sector guidelines that are not compatible. In this manner, the NDP recognizes that the geographic conditions of Madagascar make it abundant in minerals, oil and gas. Meanwhile, the NDP also made a clear reference on the need to make development compatible with conservation efforts through "*participatory conservation, systematic restoration, rational use of natural resources, and rational exploitation*" regarding the use of biological resources, which are considered a very important asset for the country:

⁶³ Monographie Région Atsimo Andrefana, CREAM (2013). Statistics in this section are from the same source, unless otherwise stated.

⁶⁴ International Monetary Fund, 2006. Republic of Madagascar: Poverty Reduction Strategy Paper Annual Progress Report. IMF Country Report No. 06/303.

⁶⁵ Réglementation de la filière bois énergie dans la Région Atsimo Andrefana, WWF (2012)

⁶⁶ Tableau de Bord Environnemental, ONE, 2007.

⁶⁷ Ministry of Economy and Planning: National Development Plan - 2015-2019.

"Mining activities [...] are among the top three causes of deforestation and forest degradation in Madagascar as the conflict with the network of protected areas, its impact on the lives of biodiversity and natural habitat functions, pollution of water and soil resources, and the effects of induced development. [...] It is crucial that mining activities mitigate the risks and threats, and contribute effectively to development opportunities. [...] The current growth of the sector has not been inclusive, sustainable, nor equitable. "

Biodiversity of global significance in Atsimo Andrefana

The target landscape of the project is home to unique biodiversity of global importance. It has a sub-arid climate and is characterized by dry and spiny forest vegetation which can be divided in two ecoregions: the dry forest ecoregion of Madagascar in the western and northernmost parts of the country, which is the only African tropical region with dry deciduous forest to be listed on the WWF Global 200 as endemic and highly vulnerable; and the spiny dry forest ecoregion along the western coast, extending from the Mangoky river, in the north, to the mountains of Anosy, in the south, and providing separation from the rainforest of Eastern Madagascar.

The two ecoregions are home to various and distinctive vegetation types, adapted to the weather and ecological conditions as well as the geographic situation. They are home to a diversity of habitats. The most frequent one is the xerophytic thicket of the Southwest in contact with the dry dense forest whose borders remain unclear whenever soil and climate conditions are similar, resulting in a diversity of plant formations of transitional type.⁶⁸

However, in spite of these natural barriers, the pressures that were previously overlooked or underestimated now constitute an imminent danger for biodiversity. Since the beginning of the 1980s, the ecoregion has been undergoing an unprecedented ecological crisis that translates into intense deforestation on the outskirts of large towns such as Toliara, around small urban centers highly subject to rural change (Morombe, Betioky, etc.), and in rural areas⁶⁹. As a result of the collapse of rural economies following cyclic droughts, drop in agricultural production, and price decrease of cattle, rural households find themselves suffering high levels of insecurity. Due to increasing demographic pressures associated with the inflow of migrants seeking work or farmland, the demand for forest products has steeply increased in both urban, and rural areas. This has triggered a spiral of unsustainable natural resource use and changes in the ecoregion and main ecosystem processes.



Fig3

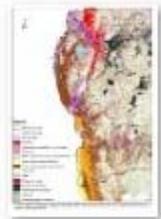


Fig4

Figure 3: Map of Protected Areas in the study area (SAPM 2013)

Figure 4: Map of ecosystems in the study area (Landsat Classification December 8, 2014, Hansen Global Forest cover, Atlas of the Rebioma vegetation 2008)

[Click here to access images](#)

These threats have aggravated deforestation, altered lower valleys, and transformed forests as slash-and burn farming and charcoal production gradually encroach on areas which were previously protected by their remote location, removing natural protective barriers.

In recent years, this situation has been exacerbated by the new large-scale investments in the mining and agricultural sectors compounded with existing artisanal mining operations.

⁶⁸ ONE (2007).

⁶⁹ Une vision de la biodiversité de la région écologique des forêts d'épineux, WWF (2000).

Migration

According to the settlement history of the region,⁷⁰ the territorial distribution of ethnic groups is well delineated although some overlapping and cultural mixing occur. For instance, the coastal area is settled by the Vezo.

The Mahafaly plateau and area of Amoron'i Onilahy is occupied by the Tagnalana, Mahafaly, and Antanosy.

The Masikoro plateau and Mikea forest⁷¹ are home to five ethnic groups: the Masikoro and Vezo, who are the most numerous, and the Mahafaly, Antandroy, and Sakalava.⁷² Masikoros are highly nomadic crop and livestock farmers, while Vezo's are nomadic fishers who do not own land.

Mikeas have highly specific characteristics that make them a very distinctive group. Mikeas are former Masikoro crop and livestock farmers or Vezo fishers who, towards the 17th century, sought refuge in the dry and spiny forest extending between Morombe and Toliara.⁷³ Until the 1970s, the lifestyle of the Mikea people was closely bound to the forest and they used its resources in a sustainable way, in accordance with their cultural identity.

Other minority ethnic groups, such as the Antandroy, Bara, Betsileo, Merina, and Indian-Pakistani have migrated to the region over the centuries. They generally are tradespeople, civil servants, carriers, or farmers looking for farmland.

D) Emerging sectors: mining, oil, and large scale commercial agriculture

Extractives and associated infrastructural development

The subsoil of the Atsimo Andrefana Region contains soils rich in mining resources that duly attracts large-scale investors. Each mining request is assessed and permits are granted and processed independently from other mining project. As a result, there is no consideration of the spatial planning of the landscape. Yet, changes in the profile of the landscape requires spatial planning in time and space in order to integrate the right balance between development and conservation and enable to design land-use plans that strike a balance between the right mitigation measures and trade-offs. As mentioned at the national level, the latter is required for Regional land-use planning.

The Government intends to use mining resources as the pillar of the country's development. This sector has significantly developed since last decade attracting numerous national and international investors. Two types of development scales exist: small-scale mines with a limited surface area and resources and large-scale industrial mining operations.

Mining operations permit of different kinds and durations have been issued on lands located in the target landscape. A clear map identifying the areas where permits were issued is still lacking.⁷⁴ Three quarters (3/4) of the permits issued were granted to small mines, including 70% for gold and precious stone mining (WWF). However, they generate only 2% of the revenues paid by extractive industries.⁷⁵

There are three large terrestrial oil blocks currently under the exploration phase and that belong to ESSAR Energy Holding (block 3110), Madagascar Southern Petroleum Company (block 3112), and Petromad (block 3114), overlap with the Atsimo Andrefana landscape as a whole. Several off-shore blocks of smaller size have also been granted. For the time being, none of these oil blocks have entered the production phase, however, terrestrial exploration activities are underway and progressing rapidly. Although they are located outside of the target landscape perimeters, oil reserves and gas reserves to exist in the Beza commune (Betioky district) and the town of Sakaraha respectively. The oil and gas concessions frequently change owners.

Mineral ores also attract numerous investors. In the Region, several of them have already led to major exploration works. Subject to the results of feasibility studies, some may move to the exploitation phase in the medium term, namely the ilmenite ore in the Ranobe area, close to Toliara, by the company Toliara Sands; and the coal of Sakoa which is simultaneously mined by two companies, namely Madagascar Consolidated Mining S.A. (MCM) and Pan African Mining Sakoa Coal S.A. (PAM Sakoa).

⁷⁰ *Plans Communaux de Développement*, 2005. The communal development plans were developed with support by NGO's such as WWF, and by MNP and GIZ.

⁷¹ Dina, J., Hoerner, J. M., 1976. Étude sur les populations Mikea du Sud-Ouest de Madagascar.

⁷² Tolojanahary, J., Etude des impacts environnementaux des travaux d'aménagement de la Route nationale 9 sur la forêt Mikea, Ecole supérieure polytechnique d'Antananarivo (Madagascar), UFR Sciences Economiques et de Gestion de Bordeaux IV 2012.

⁷³ Rengoky Z., Les Mikea : chasseurs, cueilleurs à Analabo, Mémoire de Maîtrise en Anthropologie. Université de Tuléar, 1998.

⁷⁴ Mining activities mentioned in this section are mainly terrestrial, even if they have indirect negative consequences on coastal and marine areas.

⁷⁵ Etat des lieux du secteur mine à Madagascar, WWF (2012).

The Region holds the highest number of environmental permits granted to companies in the country. From 2004 to 2010, seventy-five (75) permits were granted to projects to be implemented in this region. Four out of the thirty-seven environmental permits delivered by ONE in 2010 (including 14 for the mining sector) were located in the Atsimo Andrefana Region.⁷⁶

Land use planning in the Region has historically been subject to conflicts between sectors. Mining exploration permits have been granted in areas identified as key biodiversity areas, destined for conservation purposes. This has created insecurity among environmental operators, as well as for land and natural resource management by communities.

Since 2003, according to WWF, applications for mining exploration permits have been increasing, especially in the limestone sector. Although settled in the East, Ambatovy SA (Sherritt) intends to extract limestone in the area of Toliara (Soalara) for the processing of mineral ore and by-products at the Toamasina plant. Other investors (Magrama, Jindal, and small operators) are in the middle of conducting studies, exploration, and development campaigns for limestone exploitation.⁷⁷

WWF has warned about the threat that granting permits on lands bordering PAs and other located within PAs may represent for biodiversity. Currently, mining blocks are located bordering or encroaching on the NPA of Amoron'i Onilahy, KP 32 Ranobe, NP of Tsimanampesotse, Itampolo, and others, as well as in some community areas managed under management transfer contracts.⁷⁸

World Titanium Resources for instance holds exploration permits over 2,000 mining blocks in the Communes of Tsianisiha and Ankilimalinika; one ilmenite and zircon development pilot project was set up in 2006 and a feasibility study was conducted. The upper valley of the Manombo River is also included in the mining blocks and is owned by Madagascar Exploitation.⁷⁹

The company Toliara Sands (TS SARL) holds the ore in the Ranobe area on which over 20 million dollars have been spent on exploration and impact assessments since its discovery in 1999.

The company Madagascar Resources (MR Sarl.) has expanded its mining permits to the Manombo-Morombe area (Ankililoaka, Baibasy, and Ankarefo). Additional drillings were made in 2000, 2001, and 2003. A complementary drilling was made in 2012 (source of information: Toliara Sands document).

⁷⁶ ONE (2015).

⁷⁷ Rapport d'étude sur l'état des lieux du secteur mine de Madagascar, WWF (2012).

⁷⁸ Etat des lieux du secteur mine de Madagascar, WWF (2014). This document is a contribution by MWIOPO to the assessment made to diagnose the state of the extractive industries in Madagascar.

⁷⁹ This valley is very important for biodiversity conservation, and negotiations have taken place between WWF and the company to take discuss suspending the classification and taking away the permit issued to the company for this area, based on a voluntarily agreement with the company (WWF Réf).

Box 5: Mining operations in the Project Zone



Figure 5: Main mining exploitation permits in the study area

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World Titanium Resources has four exploration targets which comprise the Toliara Sands Exploration Project. These include Ranobe, Ankililoaka, Basibasy and Morombe.

Morombe

Exploration work to date indicates that the “Big Dune” area at Morombe contains higher TiO₂ ilmenite as well higher zircon grades than Ranobe. The area has abundant water which would allow a dredging operation. The ultimate potential seen is for a large-scale operation which could support the infrastructure capital required to export a product through a port created at Morombe.

A drilling program is planned for 2012 with several lines across the area following up earlier reconnaissance hand auger sampling results. The aim is to clarify the stratigraphy of the area, collect samples of heavy minerals (HM) for further analysis and determine the potential for economic mineralization.

Ankililoaka

At Ankililoaka, 25km north of Ranobe, drilling encountered intersections over a distance of 5000m, in young quartz sands and clay sands, to both the north and south of a northwest trending ridge of limestone. Based on the drilling, the exploration target at Ankililoaka is 360-368 million tons containing 5 – 6% THM and 8.5 – 9.5% Slimes. The heavy mineral suite is similar to Ranobe and is dominated by ilmenite (52%), leucoxene (5%), rutile (1%) and zircon (4%) with the TiO₂ content of the ilmenite ranging from 47.6 to 56.8% TiO₂.

Basibasy

At Basibasy, 60km north of Ranobe, there appears to be a shoreline running roughly through north- south, with clay-rich sediments to the east. West of this “shoreline” the sediments are more sandy and drilling encountered significant mineralization (i.e. 39m at 7.0% HM) in quartz sands in an area around 2km by 3km. The Exploration Target based on this drilling is around 440-446 million tons containing about 4.5%- 5.5 THM and 8 – 9% Slimes. The heavy mineral suite is dominated by ilmenite (50%), leucoxene (16%), rutile (1%) and zircon (7%) with the TiO₂ content of the ilmenite ranging from 50.2 to 59.6% TiO₂ and therefore appears to be different to that at Ranobe.

Source: <http://www.worldtitaniumresources.com/toliara-sands-exploration/>

Large scale commercial agriculture

Rain-fed farming, which essentially relies on the hot seasonal rainfall, is the most common form of agriculture. Flood recession agriculture, called *baiboho*, is the oldest form of agriculture practiced and is exclusively limited to the valleys of permanent rivers. WWF currently notes that the swamps of the Ranobe Lake are gradually being converted into rice fields by residents.

Nevertheless, irrigated farming is both the most speculative and most recent form of farming. Irrigated perimeters are rather numerous but their surface area is extremely limited. They essentially occur around a few rivers: Mangoky, Manombo, Fiherenana, and Onilahy.

Large-scale irrigated farming, practiced on private properties, for commercial exports is new in Madagascar. Consequently, there is little experience in environmental impact management at the landscape scale, although request for commercial land-use and production of various crops (maize, Lima bean, but also jatropha or cassava) are piling up.

In the Atsimo Andrefana Region, the Region is providing support for local development, such as infrastructure development, leading to accelerated growth of agribusiness, tourism, and other value chains, especially along National Road 9 leading to Morombe.

The Ministry of Agriculture is currently conducting two large projects, with funding from AfDB. The Lower Mangoky Rehabilitation Project (LMRP) consists in rehabilitating the Bevoay intake in the Lower Mangoky. This project has already allowed to irrigate 5,000 Ha of rice fields. Currently in its second phase, it will irrigate an additional 5,000Ha. Additionally, the Project to Rehabilitate Agricultural Infrastructures in the Southwest (PRAIS) aims to irrigate 13,000Ha of agricultural land mainly for rice, lima bean, and maize farming. Aside from the construction of these infrastructures, these projects also comprise agricultural research and development components. The World Bank, through the IG2P 2 is working on the development and organization of a few agricultural subsectors along NR9 and NR7.

Since 2010, a cotton project was initiated after the purchase of a cotton plantation by Haysa, a company of French origin settled locally since the 1950s. With WCS as the conservation partner, the project aims to set up production methods that are compatible with conservation.

Four other big operators are present in the Region: DRAMCO, Malagasy Standard Group (MSG), ChiMad Coton (CMC), and INDOSUMA. Contracting out directly with small producers, they offer farmers, faced with decreasing soil fertility for their own subsistence crops, new farming opportunities.

Bionexx, a large-scale company, has approximately 2,000 employees in the Ankililoaka area for 1,450Ha farmed land.

Recently, the Chinese company Tian Li Agri also settled in the region. Other Chinese companies are also looking for production opportunities around the town of Toliara.

E) Threats to and impacts to biodiversity specific to the target landscape

The profile of threats on the biodiversity in the Atsimo Andrefana Region, which is home to unique ecosystems and a huge wealth of rare species, is identical to the one on the country's biodiversity in general.

Land use changes and habitat loss

As in the rest of the country, deforestation is one of the major problems that the target landscape faces. It poses threats to biodiversity as it involves habitat loss and over exploitation of natural resources. These two phenomena traditionally occur because land is cleared for subsistence agriculture. Different factors account for the search for new farm lands.



Fig6



Fig7

Figure 6: Map of the deforestation of the study area 2000 - 2013 (Hansen GFC2014)

Figure 7: Deforestation to the east of Mikea (Hansen GFC2014)

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The late 1980s saw a boom for commercial maize production and marketing in the region of Toliara.⁸⁰ The progression of the agriculture frontier of maize that led to increased deforestation, was mainly done through slash-and-burn farming techniques, locally called *hatsake*. This pioneer agriculture developed rapidly as a result of several factors: increased demographic pressures due to the inflow of migrants, saturation of fertile soils, and slack controls of forest.⁸¹

The soils of the region are extremely poor in nutrients and within two or three farming cycles, become depleted. When land becomes sterile, farmers are forced to leave the exposed surfaces to clear new land, moving closer each time to biodiversity rich forests which still remain intact. From 1993 to 2005, deforestation has caused the loss of 217,165Ha, i.e. 18,097Ha/year or an annual average deforestation rate of 0.82%.⁸² This loss of forest has increased over the past decade. According to measurements by the WCS-ONE-MNP-ETC-Terra Consortium, the deforestation rate in the Atsimo Andrefana region amounted to 2.06% from 2005 and 2010 and 2.80% from 2010 to 2013 (PERR FH, 2014).

The Mikea forest, which a transition between dry and spiny forest ecosystems, is a blatant example of this, having lost 28% of its primary forest cover over the past three decades.⁸³ Moreover, it is estimated that the deforestation involves the

⁸⁰ Instabilité des cours du maïs et incertitude en milieu rural le cas de la déforestation dans la région de Tuléar Fauroux, S. (2000), in Tiers-Monde.

⁸¹ Tableau de Bord Environnemental. Synthèse sur l'état de l'environnement de la Région Atsimo Andrefana, ONE (2007).

⁸² Ibid.

⁸³ UNEP. Atlas de notre environnement en mutation: forêt Mikea ([online](#), no date).

disappearance of 75% of original plant species, some of which have a high economic value when used as construction wood or medicinal plants.⁸⁴

According to WWF, wetlands are endangered by the gradual conversion of the Ranobe Lake marshes into rice fields. Such conversion alters water quality and ecological processes of aquatic plants, and increases the vulnerability of several endemic bird species.

The situation is aggravated by the **high level of poverty**. Local communities adopt coping strategies that are environmentally unsustainable, faced with a lack of sustainable alternatives. It is also common for **migrants** to clear forest areas through slash-and-burn: **the different forest products are overexploited** and consumed in an unsustainable manner. Pressures are generated by migrant populations, coming from the north-eastern area of Morombe following the NR9 to settle on the West, closer to the Mikea forest. Accrued pressures have also been observed in Betioky, upstream of the River Onilahy.

Charcoal markets are also an important factor of degradation of the region's forest. The larger part of the production targets the supply the town of Toliara. Fifty-three percent (53%) of charcoal comes from the areas along the NR9. Studies conducted by PARTAGE for WWF show that people currently tend to gradually replace fuel wood with charcoal, even in rural areas.⁸⁵

According to a study conducted by the Environmental Program III in 2007, the annual consumption of fuel wood in the town of Toliara alone (firewood and charcoal) amounted to 288,782 metric tons equivalent of dry wood. All this fuel wood supply comes from illegal extraction from natural forests. Furthermore, according to this study, the potential for sustainable production of fuel wood by these natural forests now only amounts to 64,000 metric tons equivalent of dry wood. These figures confirm that the forests of the South West are rapidly degrading, including in PAs since the fuel wood consumption continues to increase.⁸⁶

Charcoal production is even more harmful as it uses several tree species at the same time. Thirty-seven percent (37%) of charcoal producers are located around the year. For 35% of producers this activity represents their main source of income.

Considering the type of agriculture and especially the livestock farming techniques practiced locally, **bush fires** have become unavoidable. Dry and spiny forest areas are especially sensitive and slash-and-burn farming practices can easily cause uncontrolled and highly damaging fires. According to aerial surveys, the surface area burned in the Tsimanampetse National Park was estimated at 20 hectares in November 2010, 52 hectares in November 2011, 39Ha in November 2012, and 33 hectares in December 2013.⁸⁷ In the KP 32 Ranobe New Protected Area, the surface area cleared amounted to 4,121 hectares in 2010 and 2,020 hectares in 2012.⁸⁸

Loss of high value species

Endangered species such as the radiated tortoise *Astrochelys radiata* and the spider tortoise *Pyxis arachnoides*, which are found only in the southern and south-western ecoregions, are exposed to rapid degradation of their habitat (spiny thicket), in addition to being collected for local consumption and national and international trade.⁸⁹

Emerging sectors: potential threats, examples

New risks of **pollution** have emerged over the past decades in relation to the emergence of a new economy relying on large-scale agriculture, mining and oil developments. These risks are related to the chemicals and wastes discharged on land and in water bodies/streams (sea, rivers, ground waters), i.e. pesticides, toxins, chemicals, etc.

Cotton is currently the most commonly farmed crop in the Atsimo Andrefana Region. It is one of the crops treated with DDT – as mentioned above. The relating risk of pollution is high and could affect water networks which are already scarce in some places of the region.

⁸⁴ Madagascar: [La forêt en danger](#) IRD (2000).

⁸⁵ Mise à jour de la stratégie ABETOL, Rapport final, PARTAGE (2011).

⁸⁶ Reboisement Bois Energie dans le Sud Ouest de Madagascar – Le bilan des trois campagnes. Synergie Energie Environnement dans le Sud Ouest, WWF (2011).

⁸⁷ Rapport d'analyse des photographies aériennes obliques de décembre 2014 dans le Parc National Tsimanampetse par Aviation Sans Frontières Belgique, Andriamalala, F. (2015).

⁸⁸ Oblique aerial photography: A novel tool for the monitoring and participatory management of Protected Areas, Gardner, C., J. et al. (2015).

⁸⁹ Programme d'actions pour la conservation des tortues terrestres endémique du sud et sud-ouest de Madagascar *Astrochelys radiata* et *Pyxis arachnoides*, 2010-2015, WWF (2010).

Since November 30, 1993, a ministerial order prohibits the use of DDT in agriculture. The same applies to POP pesticides (Dieldrine and Aldrine) which were used in cotton farming and are now prohibited by the same ministerial order. However, according to the studies conducted as part of the development of the implementation plan of the Stockholm Convention on POPs, some sites have been contaminated by POP pesticide residues in the Southern region of Madagascar.

In addition, maize farming substantially developed as the demand from neighbouring islands has increased. Due to failure to put in place an effective development and monitoring & coordination framework between the most concerned sectors (Agriculture, Forests, Land, etc.), this agriculture boom has strongly contributed to forest degradation.

These crops are still developing and others may add to the list. According to the Regional Directorate of Rural Development (DRDR), there are still other operators who are interested in investing in the region.



Fig8



Fig9

Figure 8: Main sectors where agricultural practices are intensifying (Ankililoaka)

Figure 9: Main sectors where agricultural practices are gaining in intensity (Morombe)

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These projects can also have damaging secondary impacts. The **opening of roads** will attract strong migration mostly of poverty stricken populations. The rehabilitation of NR9 by government-led local development projects (PIC II and PRBM) have provided access to several areas. Over the years, this could lead to **substantial inflow of migrants**. These additional impacts will exacerbate those of the initial footprint in that they will increase the **demand for water, wood, charcoal, and agricultural land**. This could also cause additional **poaching of endangered species**.

Impacts on biodiversity will be felt through the setting up of infrastructures when encroach on biodiversity rich sites to set up quarries, display construction materials, and opening access routes to transport their products. It has been observed that finding quarry sites suitable for road infrastructure construction in the region of Toliara is a difficult task.

An example is the case of KP 24 in the Commune of Maromiandra, where part of the Ranobe forests are being used by the CHINA Railway company - a provider of the Ministry of Public works - as a quarry for the rehabilitation of NR9.

As these emerging sectors are developing, it becomes increasingly important to conduct spatial planning at the landscape scale to strike a balance with sustainable and equitable development, in collaboration with all sectors.

As mentioned in previous chapters, in three cases of mining and oil investment projects, PAs as well as the ecosystem services that support conservation and provide socio-economic benefits to local communities, are seriously endangered by the loss of natural habitat.⁹⁰ Communities may have to leave the sites affected by pollution on soil, and water, and by forest degradation, hence the pressures on natural resources, PAs, and fragile ecosystems elsewhere will be exacerbated.

Climate change

According to the projections made for year 2055 the Southwest of Madagascar will be the part of the country most affected by **climate change**.⁹¹ Fish, which is the most nutritious food of coastal communities, will become scarcer as the temperature of the sea rises and cyclones become more intense. Because they damage crops, cyclones will also drive farmers to move from the inland to the coasts, which will further increase the fishing pressure. In reaction to this, coastal communities will move inland, looking for farmland, which, in turn, will increase deforestation.

These changes also impact on species' behaviour during the summer and increase their vulnerability. Beyond a given threshold, these disturbances provoke a change in the ecosystem's equilibrium. Moreover, increased evaporation and extended dry seasons disturb the reproductive cycle of tortoises and decrease the viability of their nest.

⁹⁰ Refer to Box 6 and Box 7 for more background.

⁹¹ Direction Générale de la Météorologie (2008).

Tourism sector

Sensitive areas are also disturbed by the rapid growth of the tourism sector in coastal regions, which increases pollution, sedimentation, and habitat destruction and fragmentation.

As mentioned earlier, the tourism sector is rapidly developing in the region. Its impact on the environment needs to be thoughtfully assessed to ensure the sector's sustainability and prevent damage to biodiversity. Impacts include both the direct impacts of tourist developments and related infrastructures and the indirect impacts of migration and increased population concentrations.

The 'park-edge' effect

Threats affecting biodiversity within the landscape level, including within and around protected areas (PAs), also cause habitat loss, ecosystem fragmentation and ecological isolation that can be felt at the landscape at large. A known phenomenon in this context is the "park-edge effect", which seems to be affecting the integrity of both Mikea forests and Ranobé PA in the Atsimo Andrefana Region (see evidence in Figure 6 and Figure 7).

The degradation starts near the PA border and spreads including within the gazetted area. The triggers behind the park-edge effect include e.g. actual encroachment into PAs (i.e. establishment of farms and other PA incompatible land uses within gazetted areas), uncontrolled fires set by slash-and-burn farmers, which extend beyond the perimeter of PAs and illicit collection of resources from PAs (such as fire wood). In addition, upstream extraction of water for irrigation purposes is bound to have an impact on PAs located downstream.

Dune shifting

Dune shifting is one of the threats characteristic of the biodiversity of south-western Madagascar. Dunes shift as the regular trade winds from the West and the monsoon blow. These movements induce changes in the ecosystem profiles of the coast. Indeed, permanently shifting dunes have selective effects, i.e. only few species that are resistant to the sand mass are able to survive in their wake.

F) Key policy instruments and governance frameworks for environmental management in Madagascar

Frameworks for governing the extractive sector

In the 1990's the World Bank led an in depth revision of the Madagascar's mining and oil legislation, within the frame of liberalization policies that were launched across developing countries. As a result, a new Oil Code in 1996 (Law n°96-018), a Mining Code 1999 (Law n°99022) and regulations establishing a special regime for large scale mining project in 2002 (Law n° 2001-031 related to large scale mining investment – LLSMI, modified in 2005 by the Law n°2005-022) were adopted.⁹²

With taxes on mining projects at 2%, Madagascar is one of the countries with the most attractive taxation system for investors. Regarding mining investment projects, those that are valued at more than 50 billion Ariary (about USD 22 millions), the LLSMI offers further incentives and advantages: taxing on company benefits is reduced to 25% (versus 35% as within the general system) or to 10% when products are processed in the country. In the latter case, taxes are established at 1% of the cost value of the product.

The National Board for Mining and Strategic Industries (NBMSI) is a public body that was created in 1976 to oversee mining and oil activities in the Island. The Mining Cadastre, was set up in 1999 and is the agency responsible for the overall management of the sector. The Mining Code is the milestone which enabled the rational development, to clarify rules and regulations, and expand mining activities not only for large scale projects by international companies but also for small scale national investors. The government does not expropriate neighbouring communities while according mining permits to companies, the State implements the rights to exploit mineral resources (dominion principle) under its charge, a principle which is recognized in almost all countries. In article 3 of the Code, the following reference is made: "*All surface areas, underground areas, water and deep sea areas of the national territory, containing mineral substances, are property of the State*".

⁹² Les Amis de la Terre France. Synthèse (2012). Madagascar: nouvel eldorado des compagnies minières et pétrolières.

The Mining Code has the objective of modernizing and simplifying the mining system, improve the management of mining permits, and mainstream environment measures within development projects. The Mining Code identifies the State as the main regulator of the sector under the dominion principle. The State has the rights to exploit all natural resources in the country. The principle of “first come, first served” is inscribed within the code. The revised Oil Code aims to create incentives for investors in Madagascar providing an “*an attractive legal mechanism*” for investors.

In conclusion, the main goals of the revised codes is to facilitate the granting of mining permits, offer companies fiscal, legal, and taxing benefits, secure investments and guarantee the free flow of capitals.⁹³

Frameworks for governing the agricultural and tourism sectors

Following the *Detailed Program for Agriculture Development in Africa*⁹⁴, the three sub-sectors of agriculture, livestock and fisheries (ALF) have a defined common vision for 2025: "Madagascar in 2025, will have competitive and sustainable agricultural production, including modernized agriculture industrial units to ensure food security and reinforce its exports to international markets". The Sector Plan Agriculture, Livestock and Fisheries (SPALF), designed to implement these guidelines, has stated “the extension of Agricultural areas, improved productivity and contribute to food security” among the objectives.

In addition, the Ministry of Tourism of Madagascar, who is responsible for developing this sector and implementing tourism policies has a Tourism Master Plan Outline and a National Committee for Tourism Development (NCTD). The latter is an interdepartmental committee aiming to achieve consensus among sector ministries and the support of all sectors in the strategic decisions of the tourism industry.

Other legal, policy and institutional frameworks for managing the environment

The legal framework for environment management in Madagascar is composed of the laws and regulations listed in the table below:

Table 13: Legal framework

Topic	Description
General legal instruments	<p>Madagascar Constitution of the Fourth Republic, December 11th 2010;</p> <p>Law 90-003, Environment Charter, updated in 2015;</p> <p>Ordonnance 82-029 concerning the conservation and protection of national assets;</p> <p>Inter-ministry regulation 4355/97, regarding ecologically vulnerable areas and defining their boundaries, completed by decree n° 18/732, September 27th, 2004, which states the definition and demarcation of vulnerable forest vulnerable;</p> <p>Inter-ministry regulation 52005/2010, revising the inter-ministry rule 18633/2008 referred to the temporary protection of sites that have been identified by the ordonnance 17914/2006 and ending the suspension of mining and forestry exploitation in targeted sites (which expired in May 2015)</p>
Protected Areas	<p>COAP (Protected Areas Code), refers to PA management, originally defining management regulations for PAs under IUCN categories I, II and IV. In 2005, the COAP was revised and a new decree was developed, to enable the extension of PA estate, by including new IUCN categories III, V and VI, under the COAP.</p> <p>The Law n°2015-005, which contained the revision of the COAP was only recently endorsed by the government in 2015. It supersedes the COAP. This new law fills the gap in the former legal framework. It defines multiple land-uses within PAs such as those under UICN V and VI, and clarifies the role and responsibilities of local community’s and the private sector, and those of the other stakeholders, in managing PAs clear. This law, mentions the role that PAs play in sustainable development of the landscape. It outlines the management arrangement for existing PAs. However, the revised COAP law does not yet have an approved regulating decree to make it operational.</p>

⁹³ Country Environmental Analysis, CEA, World Bank, 2013.

⁹⁴ From French translation *Programme Détaillé de Développement de l’Agriculture en Afrique*.

Topic	Description
	<p>Excerpts and definition contained within the revised COAP:</p> <p>[...] Community Protected Area is defined as: a <i>Protected Area set up and managed voluntarily by local communities</i> in view of conserving and using natural resources sustainably, preserving customs and cultural patrimony and spiritual heritage associated uniquely with traditional sustainable resource uses.</p> <p>[...] Protected Area Manager: all public or private entities, associations, legally founded or <i>local communities holding Protected Area management responsibility</i> in collaboration with relevant stakeholders. [...]</p> <p>[...] the present law creates the Madagascar Protected Areas System, an overall and coherent structure which encompasses all Protected Areas, without exception, including privately owned Protected Areas, Community Protected Areas, and the future established Marine Protected Areas.</p> <p>[...] It introduces a new status of PAs, by incorporating new IUCN categories, with specific management purposes such as Natural Monument, Protected Harmonious Landscape and Natural Resources Reserve. The latter two categories integrate production activities within PAs while still containing complementary management rules. <i>It is through these means that new categories of PAs (New Protected Areas) intend to be the response to the need to conciliate biodiversity conservation and sustainable development within and in the buffers areas of PAs [...]</i></p>
<p>Community Management of Natural resources</p>	<p>GELOSE: Through the decentralization policies implemented in 90s, different mechanisms were instated to devolve management authority to local communities over natural resources. The process is called : “<i>natural resources management transfer</i>”(NRMT/TGRN) or commonly “<i>management transfer</i>” (MT/TDG)⁹⁵;</p> <p>The TDG process is principally based on the GELOSE law and the Forest Management Contracts (FMC contracts). The GELOSE became legally operational in 1996⁹⁶, with subsequent revisions being made throughout the years. The GELOSE law refers to renewable natural resources. Agreements are signed between the local government and local communities to make the contracts official and to ensure simultaneously (1) transfer of Government responsibilities to local communities regarding the management of renewable natural resources, providing communities with the exclusive benefits that are derived, and (2) <i>relative</i> land tenure security for all land users (as opposed to <i>absolute</i> land tenure security, provided through a land tenure certificate issued by the land registry services);</p> <p>At the community level, local Community Based Organization (CBO) are created and representatives are elected to manage the contracts</p> <p>Forest Management Contracts (CFM)⁹⁷ are also contractual agreements. They legislate specifically on Government owned natural resources. In practice, they are less complex to implement than the GELOSE. The FMC is an agreement between the forest administration and the local community. It doesn’t require relative land tenure security. Under the FMC, communities define spatially “<i>vital areas</i>” to inhabit, and areas strictly allocated to conservation, sustainable hunting and to exploitation for agricultural needs⁹⁸.</p> <p>DECREE n° 2013-785 regulates the delegation by the Government for forest management to public or private parties.</p>
<p>Customary and Social norms</p>	<p><i>DINA</i>: This norm originates from social tradition and governs local community functioning. Its content is endorsed by traditional authorities (e.g. <i>Raiamandreny</i>), and applied by local communities within the <i>fokontany</i>. It regulates natural resource uses and social, economic and land management.</p> <p>To be operational community TDG, within the framework of the GELOSE, communities adopt the <i>Dina</i>, which should contain norms regarding the sustainable use of natural resources by communities.</p> <p><i>Dinas</i> are endorsed by the decentralized authorities of the Government and municipal courts and acquire legal enforcement value.</p>

⁹⁵ From the French translation “*transfert de gestion des ressources naturelles*” (TGRN) and more simply “*transfert de gestion*” (TDG).

⁹⁶ Law 96-025 of September, 30th 1996, Decrees 2000-027 and 2000-028.

⁹⁷ Decree n° 2001-122 stating implementation conditions of CFM.

⁹⁸ More practical than GELOSE, CFM is an agreement between forest administration and the community. It does not require land tenure security from resource users, not even partial security.

Topic	Description
Environmental Assessment	<p>The MECIE decree (Mise en compatibilité des investissements avec l'environnement) which regulates the compatibility of productive and infrastructure investments with the environment sets the legal framework to apply the Environment Impact Assessment (EIA) regulation. It defines the procedures required for investors to obtain environmental permits, before starting their project. The National Environment Board (NEB) is the agency designated to provide support and coordinate the assessment of projects and their compliance with regulations, and issuing the environmental authorization/permits to investors once the EIA's are approved and the process is concluded.</p> <p>The assessments and monitoring of the EIA's and the environmental mitigation measures it may contain, are conducted by the Regional authorities, through a committee set up for this purpose (<i>Comité Techniques d'Evaluations et Comité Technique de Suivi</i>). All sector ministries relevant to the investment, have a seat in the committee.</p> <p>The NEB facilitates this process in support to the Region.</p>
Mining and Oil	<p>Mining and Oil Codes⁹⁹ : the guidelines of the National Board for Mining and Strategic Industry (NBMSI/ OMNIS) are included in both codes, that state that all mining and oil activities have to fit within the NEP and promote social and ecological balance, in accordance with MECIE and the EIA regulations:</p> <p>For oil activities: all exploration studies such as terrestrial and marine seismic exploration and drilling, exploration assessments for fuel and oil production, and oil and rough materials transportation.</p> <p>For mining activities: all assessments/studies conducted within the framework of the exploration permits, those inscribed within the exploitation permits, and those concerning both types of permits.</p> <p>For both oil and mining activities, according to the MECIE law the following process must be respected: EIA, joined by an Environmental Programme Engagement (EPE), with program detailed action plans before action is taken.</p> <p>EIA papers submitted to NEB should be evaluated by a multidisciplinary committee.</p> <p>All companies engaged in oil and mining projects pay fees to conduct the EIA process, equivalent to 2,5% of their initial investment. All projects need to be endorsed by the NEB and have an environment permit.</p> <p>The Oil Code dates back to 1996 and is largely considered as outdated, although a revision is currently being undertaken. The current Mining Code was completed in 2002 and foresees the adoption of a special legal framework for large-scale mining investments and a privileged tax regime for mining projects above an investment threshold. The threshold of \$100 million was lowered to \$25 million in 2005 to foster new investments. This contrasts with the many small-scale artisanal mining operations, still found in many locations across the country—which have significant impacts. With facilitated access, and a weak overarching legal and enforcement framework, there are concerns, within the development assistance community, that Madagascar's mining and hydrocarbon rents are being undervalued—and at the expense of the country's unique biodiversity endowment. At the local level, the sheer scale of projects can cause social disruption.¹⁰⁰ There is also a need to “clean up” the mining permit registry from “legacy mining permits”, which do not bode well with the new context and would add to land use competition.¹⁰¹</p>
Inter-ministry Regulation n° 12032-2000	<p>This regulation was signed in 6, November, 2000 by the Minister of Energy and Mines and the Minister of the Environment. It guidelines for environment protection in the mining sector. It indicates administrative attributions and processes regarding environment assessments and environment management plans. This regulation is in sync with the regulations contained in the mining code and the MECIE decree.</p>

⁹⁹ National Board for Mining and Strategic Industries website (2015).

¹⁰⁰ Time Magazine Online, Feb. 3013: *The White Stuff: Mining Giant Rio Tinto Unearths Unrest in Madagascar*. [\[Link\]](#)

¹⁰¹ Much of the country's territory is covered by mining exploration concessions of one sort or another issued during colonial times. It had been relatively easy and inexpensive for a permit-holder to maintain and renew their mining permits—one reason why the artisanal mining sub-sector has flourished.

The Protected Area System of Madagascar (SAPM)

PAs have so far been the main strategy for biodiversity conservation in Madagascar¹⁰². Currently, Madagascar is about to review of its National Strategy and Action Plan for Biodiversity (NSAPB).

Since the implementation of the EAP, the Government of Madagascar has made significant progress in extending the PA surface and improving PA management. Until 2007, only 3% of the country's terrestrial ecosystems were protected, and several ecosystems and threatened species were under-represented in the PA heritage. Since then, concerted efforts have been made to carry out a gap analysis, identifying key biodiversity areas and establish new protected areas (NAP)¹⁰³, within the SAPM.

The action plan of the current SAPM (2012), which was submitted to Convention of Biological Diversity (CBD), to meet the PoWPA requirements, offers a significant increase in the coverage of terrestrial, marine and coastal Protected Areas (MCPA). The plan will extend the SAPM, to cover six million hectares of terrestrial sites, and one million hectares of MCPA. About 90% of these sites currently have a temporary protection status.

The newly created NAP's (IUCN categories V ET VI de l'UICN) amount to a total of 93 protected areas, all of which have received permanent protection status. Under categories I, II and IV, four PAs of the MNP network have been issued permanent protection status.

PAs of all IUCN categories together amount an estimated surface of 6.9 million hectares (12% of the country's total surface area). 60% of PAs have been issued an Interministerial Order, which is a temporary decree, securing and protecting the area from potential investors, a step which precedes granting of the permanent protection status decree. The expiry date of these temporary Decrees was May 15, 2015, as described in the Law No. 2015-005, which revised the COAP (refer to Table 13 further up). All PAs were granted the permanent status since then. In order to continue building the PA network, the country will continue efforts to develop a strategy for the protection and conservation of PAs with local communities.

Furthermore, during the sixth *World Parks Congress* in Sydney (Australia), which took place in November 2014, the President of the Republic announced ambitious steps to be carried out by the country favour of environmental protection.

The Government of Madagascar committed to:

- Finalizing the expansion of SAPM by tripling the protected area surface, which the country had previously committed to doing, and is about to be reached, and; to mainstream PA in the core of the country's sustainable development strategy, as an asset for economic growth, political stability and to promote equity. In this context, in 2015, all new PAs identified through different studies will be officially declared as PAs. A new PA foundation will enhance PA management ensure their economic sustainability;
- Triple the number of MCPA in the next five to ten years;
- Develop and implement a zero-tolerance policy regarding illegal wildlife trade, stop wildlife smuggling and support the global fight to stop illegal activities.¹⁰⁴

These new challenges will be assessed during the next World Parks Congress taking place in ten years.

Community natural resource management within the SAPM

Many local communities are engaged in building the PA system (categories I to IV), co-managing PAs in synergy with support agencies and ensuring the existence of a strong protection belt in the buffer zones of PAs. This strategy, which has been adopted in the last 20 years through the implementation of the country's environmental program (EP), ensures that the conservation strategy set up to build the SAPM is effective. The rate of participating communities in co-management is in constant growth thanks to their participation in different locally based institutions, such as, the COSAP¹⁰⁵, Parks Local Committee (PLC/CLP), and through CBO (COBA- *Communauté de Base*) and other associations¹⁰⁶.

¹⁰² Refer to [PPG Study #1](#) (Ecosystems, biodiversity and protected areas, by Rabemananjara Henintsoa. March 2015), annexed to this PRODOC, for list of PAs and key biodiversity areas for the Atsimo Andrefana Region as identified by CI, WWF, in support of the Government of Madagascar through the MEEMF and SAPM.

¹⁰³ As explained above the NAP fall under IUCN category V and VI, and are commonly referred to in Madagascar as New PAs of NAP's due to their recent creation and the type of category.

¹⁰⁴ worldparkscongress.org/about/promise_of_sydney_commitments.html

¹⁰⁵ COSAP (*Comité de Soutien aux Aires Protégées*) Support Committee for Protected Areas: Composed by representatives of local authorities and civil society members working in the buffers zones of PAs. Their attributions are to provide advice to the manager of the PA, to do communication and awareness raising and to ensure lobbying and advocacy at the local and regional level.

¹⁰⁶ Fifth National Report to the Convention on Biological Diversity – Madagascar (2014).

The legal and institutional framework for PA management promotes the use and recognition of traditional community laws (*Dina*), as norms that regulate natural resource practices by local communities (see table above). The content of the *Dina*'s, containing sustainable uses of natural resources, are valued and promoted within the formal legislative framework, endorsed and integrated as a component of the TDG contract developed through the GELOSE law.

The revised COAP has opened a new legislative path towards the legal recognition of co-management of PA by communities, and agents and operators managing PAs, providing New PAs (categories V and VI) a legal framework that secures the areas. Moreover, although PAs under categories I, II and IV do not allow productive land-uses within the boundaries of PAs and are managed without communities, these PAs are however surrounded by buffer zones where local communities live and practise sustainable development and NRM within the framework of the TDG and the *Dina*'s, in support of PAs.

These two management types, which value traditional community practices may be encompassed within the definition of (Indigenous) Community Conservation Area (or ICCAs), in the specific context of Madagascar, as explained in Box 6.

Box 6: Indigenous Community Conservation Areas (ICCA)

The Consortium for ICCAs (Indigenous Community Conservation Areas)¹⁰⁷ defines community conservation areas (CCA) as territories traditionally conserved by local or indigenous communities, where subsistence activities have enabled, due to their sustainable nature, to conserve ecosystems and maintain their resilience and diversity. This conception highlights the central role of traditional culture in biodiversity conservation.

These areas are “natural and/or modified ecosystems containing significant biodiversity values, ecological services and cultural values, voluntarily conserved by Indigenous peoples and local communities through customary laws or other effective means” (IUCN)

Madagascar's experience in operationalizing the ICCA declaration is in its preliminary stages. In June 2013, for the first time, a network of local CSO's called Tafo Mihaavo, was accepted as a member of the ICCA consortium, representing the only official ICCA from Madagascar within the world's Register of ICCA.¹⁰⁸

In Madagascar, the concept of ICCA is still evolving. With the recent revision of the PA Code (COAP, revision law), new possibilities have been opened to provide new legal frameworks to support the ICCA.

The CCA category, is contained in the revision law of the COAP and is similar to that of the definition provided for the ICCA, hence opening the opportunity to provide legal framing for the PAs with a community based management structure.

Consequently, in the Madagascar context, the management structure which is defined by the ICCA (which has international recognition) rests open to specific country based experiences that may be piloted by local communities and promoted by environmental constituents and the local government. There is no unique and legally defined form or management category for ICCA or CCA as of yet.

For the purpose of fitting the ICCA and CCA concepts within the Madagascar experience, current legislation combined, pertaining to community natural resource management (e.g. Gelose, GCF, COAP, revision law of the COAP etc.), form the legal framework on which new sites for community conservation, that will be created by the project, will be encompassed and promoted.

Source : www.iccaconsortium.org

The political turmoil, taken place in recent years, has led to an accelerated loss of natural resources, gravely deteriorating the state of the environment in the country. Good practise in natural resource management, and existing legislation, have frequently been violated and ignored. As a reaction to constant abuse by authorities, many local community networks were set up.

Some examples are: (1) The MIHARI network (or Locally Managed Marine Areas - LMMA), which assembles 134 coastal communities, which was established in January 2012 with support from international NGO's (CI and WCS).

¹⁰⁷ Legal and institutional aspects of recognizing and supporting conservation by indigenous peoples and local communities, an analysis of international law, national legislation, judgements, and institutions as they interrelate with territories and areas conserved by indigenous peoples and local communities, Jonas, Harry, et al., ICCA (2012)

¹⁰⁸ Website of ICCA registry

Thanks to this network, marine conservation areas, including MPAs, represent 7% of the Madagascar's Exclusive Economic Zone¹⁰⁹, and; (2) The TAFO MIHAAVO network, which assembles approximately 500 communities (fokonolona) spread across 18 of the 22 Regions of Madagascar, was established in May 2012 with support from National environmental institutions¹¹⁰. The Anja Declaration, issued by this network, during its constitutive General Assembly, declares the need for more efficient governance and sustainable management of natural resources based on the norms and values of the *fokonolona*. This was officially communicated during a side event of the COP held in Hyderabad.

Box 7: Legal Framework for Community Conservation Areas (CCA) in the Malagasy Context

Local communities in Madagascar (*le fokonolona*) have conserved local territories and natural resources as community patrimony of social and cultural interest, inherited from generation to generation, based on social conventions.

This responsibility has been granted legal recognition within the current judicial system through the natural resource management transfer law (*Transfert de Gestion des Ressources Naturels*, TGRN or *Transfert de Gestion*, TDG) to local communities (law 96-025 and related regulating decrees), in addition to the Forest Management Contract Law (*Gestion Contractualisée des Forêts*, GCF). The goals of both laws has been to reduce pressures on natural resources and encourage communities to participate in the formal management and conservation of natural resources.

The TDG is built on three guiding principles: subsidiarity, voluntarism, and non-discrimination. Today, almost one million hectares of forests and sites containing valuable natural resources have been secured and protected by way of the over one thousand management transfer contracts that have been signed. Some gaps still persist in spite of the good will and knowledge of communities to conserve resources, such as problems linked to weak management capacities and lack of sufficient economic incentives.

With local communities engaging in maintaining buffer zones, protecting each PA (IUCN categories V and VI) and practising sustainable resource management in their territories, it is possible to operationalize the landscape approach. This approach may be set up as a shared and organized management system under the management transfer regime, enabling traditional management and governance of resources, to lead the way as community conservation areas, (CCA).

Source: Report on the Fifth National Report to the Convention on Biological Diversity - Madagascar 2014

¹⁰⁹ Fifth National Report to the Convention on Biological Diversity- Madagascar (2014).

¹¹⁰ Such as the GEF SGP, PNUD, Tany Meva, SAGE, C3EDM, SAHA etc.

Annex 6: Description of selected Sites

A) Summary of methodology

In response to the global biodiversity loss crisis, several methods for identification of important sites for conservation have been developed (Biodiversity Hot Spots, Global 2000 and KBAs). Most of these prioritization methods are based on the concepts of irreplaceability, vulnerability or extinction of certain species. These methods rarely include human and social dimensions when used for delimitation of conservation areas. Yet in a landscape approach, we cannot omit this reality and must include these aspects, by proposing participatory conservation and mitigations measures to maintain ecosystems services and biodiversity also outside strict conservation areas.

Heather Rogers et al. (2010)¹¹¹ from Southampton University proposed a methodology offering a series of spatial synthetic indicators in order to relate human pressures with a spatial quantitative measure of biodiversity importance score for conservation. The composite indicator of the human pressure includes aggregated scores derived from spatial data on human population and its location, data on road network, potential yield for agricultural soils and frequency and location of fires occurrences in the studied area (the island of Madagascar).

For the current study, we developed a similar composite indicator on human pressure and an indicator on priority for conservation of biodiversity at landscape level.

Our pressure indicator aggregates previously cited data sets for the region, but also additional data on agriculture and deforestation. Additional information layers, even if partially correlated, allows a higher resolution mapping of human pressures, which is necessary because our study focuses on a specific region of Madagascar (Figure 10), which harbors a number of key ecosystems (Figure 11) and therefore requires a closer look than whole Madagascar Island in the case of the geo-analytical study.



Fig10



Fig11

Figure 10: Project focus districts in Atimo-Andrefana region

Figure 11: Project focus zone ecosystems in Atimo-Andrefana region

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The indicator on priority for conservation of biodiversity includes the results of a 2008¹¹² study by C. Kremen et al. from the University of Berkeley, meant to identify the expansion zones of conservation sites allowing the optimal additional contribution to the existing network of strict conservation areas in Madagascar. This is achieved with an approach prioritizing the conservation of populations through several taxa thanks to high resolution planning tools. The advantage of this approach is that it takes into account the highly complex patterns of endemism in Madagascar, which are different throughout the various taxa. The modeling result from Kremen study is based on land cover data from 2000, thus not reflecting the most recent changes in terms of forest loss. In order to consider recent changes that occurred in our study area, we also use data on the integrity of forested areas as of December 2014.

Finally, we identify three conservation scenarios taking into account the level of human pressure, that being either low, medium or high, within these priority conservation areas and then emit recommendations regarding the choice of sites, based on other qualitative criteria (proximity of management transfer and other sources of qualitative information) that enable us to offer a choice of the fifteen priority *fokontanys* within the project focus zone to harbour community conservation areas or other conservation initiative supported by the project.

¹¹¹ Prioritizing key biodiversity areas in Madagascar by including data on human pressure and ecosystem services (2009).

¹¹² Aligning Conservation Priorities Across Taxa in Madagascar with High-Resolution Planning Tools (2008).

We draw inspiration from an already field proven approach that we adapt to the reality of our study area in order to offer a reduced number of sites that, if they were the subject of participative management taking into account biodiversity, would significantly contribute to the maintenance of biodiversity at the landscape level.

B) Data, treatment and intermediate results from the geo-analytical study

Human pressures. To estimate the anthropogenic pressures affecting the studied area, we developed a composite indicator of human pressure composed of the 4 main elements that impact the environment at a landscape level, each of these elements having existing reliable and relatively recent data. These elements are roads, population density, deforestation and agriculture. This last element itself includes three combined sub-components expressing the intensity of agricultural activity: the potential yield for agriculture in the area, land use in terms of cultivated areas and finally bush fires, which are used in Madagascar as a traditional method for preparing the land for agriculture ("*hatsake*").

Each of these spatial components has then been separately standardized in a score out of 100, without affecting the relative distribution of the variable. This score was finally aggregated and normalized again to realize our final human pressure indicator ranging from 10.4 to 66.6

Population density. We have used the population data from the International Information Centre on earth sciences (CIESIN) at Columbia University. The data set is titled GPWFE and represents at a resolution of 2.5 arc-minutes an estimate of the population density for the studied zone in 2015. (See Figure 12.)

Road Network. The acceleration of ecosystem degradation is exacerbated by the development of road networks in the remaining wilderness areas (Spelleberg, 2002), although it is difficult to estimate the exact role of the roads in this matter, we can nevertheless assume that proximity to the road is proportional to the potential impact it may have on degradation of ecosystems. Our indicator is therefore calculated like the distance of each pixel of our study area to the nearest road or track. (See Figure 13.)

Bush fires. The role of bush fires remains complex and debatable, but it is mostly of anthropogenic origin (Kull, 2004) and is often linked to the local traditional farming practices. What is clear is that it represents a threat to biodiversity. We therefore generated a prevalence indicator based on remote sensing data showing the fire frequency for each pixel of the studied area from 2010 to 2015. This data is from the MODIS NASA satellite, from which we acquired images set stretching over the mentioned period. (See Figure 14.)

Cultivated areas and potential agricultural yield. The expansion of agriculture is a threat to global biodiversity and is often a source of conflict between conservation and satisfaction of local needs. High potential crop yield is a driver for agricultural settlements in new lands (O'Connell - Rodwell and al. 2000). We found some data from the remote sensing department of the University of Munich, showing the potential crop yield for 16 common plants in terms of tonnes per hectare. (See Figure 15.) This data is based on both climate and soil data in order to estimate production. It has also been standardized and reduced to a score on 100. Also, we have derived the agricultural areas of the study area from the classification of a Landsat image of December 2014. (See Figure 16.)

Deforestation. Deforestation is also an anthropogenic pressure indicator and has as a direct consequence on biodiversity loss due to the disappearance of viable habitat for species. Data from the University of Maryland (Hansen et al. Science 2013), produces the analysis of the overall loss of forest cover from 2000 to 2014 using a time series of Landsat imagery. We have managed to derive a deforestation intensity score on 100 expressing cover loss for each pixel (30m x 30m) of the studied area deforestation image. (See Figure 17.)



Fig12



Fig13

Figure 12: Population density score map

Figure 13: Impact of road network score map

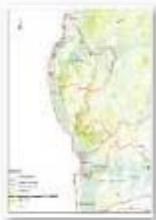


Fig14



Fig15

Figure 14: Intensity of bush fires score 2010 – 2015 map

Figure 15: Potential yield score 2011-2040 map



Fig16



Fig17

Figure 16: Cultivated areas map

Figure 17: Deforestation intensity Score map

[\[Click here to access images\]](#)

Intermediate Result 1: composite indicator of anthropic pressure

Each score presented previously is aggregated to form a spatial composite indicator of anthropic pressures.

Prioritization of biodiversity conservation. To assess and quantify the importance of a location in space for the conservation of biodiversity, we have also had to realize a composite indicator that estimates for each pixel of the studied area a score expressing the priority for conservation and maintenance of biodiversity. This indicator takes into account the data that we have obtained from the study of Kremen et al (2008) from the University of Berkeley. We have updated this data from 2008 by crossing it with a more recent data (2013) of intensity of tree cover, this update allowed us to take into account recent changes due to ongoing deforestation. (See Figure 18.)

High resolution modelling of prioritization. To obtain a quantitative indication of the relative importance of biodiversity for a given location in the landscape, we used the scores of a high resolution multi-taxonomic modelling study conducted by Kremen et al. (2008). This study helped prioritizing across key biodiversity areas the optimal areas contributing to maintaining biodiversity. The multi taxonomic approach takes into account the highly complex patterns of biodiversity in Madagascar. This study takes into account nearly 2,315 species, most of them endemic, through 6 taxa (ants, butterflies, frogs, geckos and lemurs) to produce a quantitative priority of conservation score. A zoning algorithm is used to optimize the prioritization based on the rarity of the specie, but also ensuring that there is no non representation of others. The algorithm also ensures the optimization of proportional representation of species across different taxa. We have managed to obtain the data resulting from this modelling exercise, giving a score out of 100, expressing the relative priority of each pixel of imagery for biodiversity conservation. We thus have an accurate digital measurement, a ranked representation of the areas to prioritize for the maintenance and conservation of biodiversity. This data comes to the same conclusions, but with more precision and information, than the identification of KBA realized by Conservation International (see Figure 19).

Biodiversity conservation rank score update with recent intensity of tree cover data. The prioritization score mentioned above is based on high-resolution modelling that is itself based, among other parameters, on the intensity of

tree cover in forested areas. The presence of the considered species is in direct correlation with the presence of their natural habitat. Kremen based his research on data from 2000 concerning forest cover, an update has thus been made taking into account deforestation. This composite data was made from reference data on the intensity of tree cover (2008) updated with data on deforestation from the University of Maryland (Hansen et al. Science 2013).¹¹³ (See Figure 20.)



Fig18



Fig19

Figure 18: Composite indicator of anthropic pressures score map

Figure 19: Biodiversity conservation rank score from Kremen study (2008)



Fig20

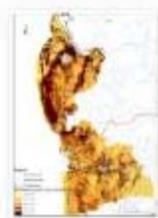


Fig21

Figure 20: Tree cover intensity score map

Figure 21: Composite updated indicator of conservation priority score map

[Click here to access images](#)

Intermediate Result 2: Updated Composite indicator of conservation priority map

Each score presented above is aggregated to form a conservation priority composite indicator, which gives a score for each pixel representing their relative contribution to maintaining biodiversity. (See Figure 21.)

C) Synthesis: Identification of conservation scenarios and sites selection

We estimated for each *fokontany* of the study area an average score of pressure based on the composite human pressure indicator described in details previously. In order to simplify and operationalize the project implementation, we identified three conservation scenarios based on the anthropic pressure level: low pressure level, moderate and high. We then distribute each *fokontany* across this discrete classification upon their respective average human pressure score.

These three scenarios can match specific intervention strategies that determinate the actions and resources to be invested according to the intensity of human pressures. (See Figure 22.)

Subsequently, we selected about fifteen sites/*fokontanys*, through the three possible conservation scenarios (low human pressure, moderate or high) according to the approach described below:

First, we select sites that maximizes the prioritization indicator score for the maintenance of biodiversity described above. To do this, we discretize the prioritization of indicator data score by averaging inside polygons (squares) of 2.5 km² and retain the squares whose sum of biodiversity conservation score is part of the highest decile of the score itself. These squares correspond to the highest priority areas for biodiversity conservation (1/10 higher). Translated in a more prosaic way, it means identifying within an area equivalent to 10% of the total area (thus corresponding to the national conservation target) the highest priority areas for biodiversity maintenance (Figure 23).

¹¹³ Hansen et al. Science (2013).



Fig22



Fig23

Figure 22: Intensity of human pressures classification map

Figure 23: Highest decile of conservation priority map: every yellow squares of 2.5 km sides represent a zone maximizing the conservation priority score (top 10% priority of conservation)

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As can be seen on the map (Figure 23), outside of the already strictly protected areas (Mikea and Tsimanampesotse National Parks, both classified in category II of IUCN management system), the sites of the top decile are relatively confined in space. In order to implement any conservation decision regarding these priority sites, we need to relate them to administrative entities, we chose the administrative boundaries of the lowest hierarchical level for which exists delimitation data: the *fokontany*¹¹⁴. *Fokontanys* of the studied area containing squares part of the top decile for conservation priority are 138 out of a total of nearly 800 *fokontanys* within the region. However, the ultimate goal was to reach a maximum of fifteen ideal sites (this target is linked to the project resources and was established during stakeholder consultations in preparation phase). For the final selection, we have used qualitative criteria (non-systematic) which, in order of importance, are the following:

- Importance of the sites (notwithstanding the importance for biodiversity) for ecosystem services
- Sites close to protected areas of category II where a threat on the integrity of the protected area exists, sites allowing more connectivity between protected areas or between protected areas and unprotected untamed lands
- Results of community consultations performed by the national team consultants who scouted the study area
- Willingness of locals to get involved in community conservation as indicated by the presence or proximity of management transfers (TDG) or other probing elements

Table 14: Fokontanys chosen for the creation of CCAs or for other conservation initiatives

FOKONTANY	COMMUNE	DISTRICT
Low Human Pressure		
Ambohimandroso	Manombo Sud	Toliary-II
Maharihy	Basibasy	Morombe
Fiherenamasay	Manombo Sud	Toliary-II
Karimela Mampiratra	Manombo Sud	Toliary-II
Nosy Ambositra	Nosy Ambositra	Morombe
Ampilokely	Befandriana Sud	Morombe
Moderate / Emerging Human Pressure		
Ankatsankatsa Sud	Nosy Ambositra	Morombe
Analodolo	Analamisampy	Toliary-II
Ankiliabo	Ankililoaka	Toliary-II
Anjabetrongo	Analamisampy	Toliary-II
Andranovorindregataka	Antanimieva	Morombe
Iaborao	Basibasy	Morombe
High Human Pressure		
Miary	Ankazombalala	Betioky Atsimo
Analatego Sud	Antanimieva	Morombe
Tantalavalo	Nosy Ambositra	Morombe
Mamery	Maromiandra	Toliary-II
Antanimena Maikandro	Ankililoaka	Toliary-II

¹¹⁴ Délimitation cartographique des Fokontany, Madagascar BNGRC, National Disaster Management Office, 2011.

Almost all retained *fokotany*s are therefore geographic areas hosting top priority sites (top decile) with the exception of a few (see Figure 24). These few one, even if not containing squares of the top decile, still have a biodiversity prioritization score in the 20% highest (see Figure 25). The exceptional criterion for their selection relates to their geographical position maximizing forest blocks connectivity in most cases. We will later detail reasons underlying their selection.

Finally, the final sites chosen *fokotany*s (refer to Table 14 and the two above-mentioned Figures) represent a coherent compromise between a systemic quantitative approach measuring conservation priority for biodiversity and the consideration of other qualitative arguments (ecosystem services and social dimensions) that are presented in the next section.

NOTE: Given the limited amount of resources, it would be ideal if the total number of finally retained sites to be beneficiaries of the project's Component 2 would be around a dozen, maximum 15. The choice can be further refined during project appraisal.



Fig24



Fig25

Figure 24: *Fokotany*s chosen for project conservation initiatives, the yellow squares represent the superior decile of priority for conservation score (areas constituting the top 10% priority conservation area of total area)

Figure 25: *Fokotany*s chosen for project conservation initiatives

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E) Presentation of the selected sites, details and justification of choice

Sites of Lake Ihotry watershed

The Ihotry Lake watershed was delimited using a digital elevation model (Figure 26) that we were able to get from USGS (resolution of 30 arcs / second). Advocacy of site selection is made easier when considering the dynamics of watersheds. We thought it appropriate to enrich the discussion on the choice of sites by bringing up an extra dimension to the sole prioritization upon biodiversity (although these criteria stays the primordial one for selection). Indeed, watershed analysis allows consideration of dynamics that otherwise might go unnoticed. The services provided by the ecosystems in terms of water supply and irrigation for crops depends on watershed functions. Maintaining these services depending also on ecological integrity of ecosystems is a guarantee of sustainability in agricultural activities, and thus a guarantee of population stabilization in currently cultivated areas. This, as a side effect, makes it easier to achieve conservation goals through population stabilization and decrease of migratory pressures on lands still sparsely populated and rich in biodiversity.

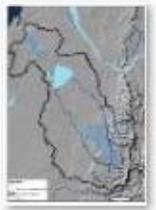


Fig26



Fig27

Figure 26: *Lake Ihotry watershed*, blue arrows indicate the direction of water flow

Figure 27: *Lake Ihotry watershed land cover*, blue arrow represent water flow direction, silting of the cultivation areas in the center of the basin causes enhance human pressure (red arrow) at West of the watershed on Mikea Forest area

[Click here to access images](#)

Watershed analysis also explain partly the origin and dynamic of the silting problem, particularly acute in the Ihotry Lake watershed area. Selected *fokontanys* (in this watershed) to shelter community conservation areas (CCA) contain sites of the highest priority for biodiversity conservation (conservation priority top decile), but also prove to be of the utmost importance for the regulation of ecosystem services (in this case water supply). The selected *fokontanys* for Lake Ihotry's watershed fall into two sectors baptized as follows for convenience, and are described further down:

- **East corridor sector** (*fokontanys* of Nosy Ammositra, Ampilokely, South Analatelo and Andranovorindregataka)
- **Ihotry North sector** (*fokontanys* of Maharihy, Tantalavalo and South Ankatsankatsa)

Ihotry watershed East sector corridor fokontanys: NosyAmbositra, Ampilokely, South Analatelo and Andranovorindregataka

This forest corridor (Figure 29) houses a western dry forest¹¹⁵ of deciduous type that is otherwise very poorly represented elsewhere in the three districts of our studied area. This kind of forest is in fact generally found further north both of the Mangoky River and our study area (see also Figure 11 for the ecosystems' map). This biotope is similar to the type of forest found in the Kirindy Mitéa national park north of the study zone. The presence of this habitat south of the river is an exception that provides an additional argument for its conservation. The forest corridor stretches from Nosy Ambositra to the north, through Ampilokely, South Analatelo and Andranovorindregataka to the south (Figure 29).

This particular forest is characterized by the abundance and variety of its tree species. Most tree species are deciduous. From April to October, that is to say during the dry season, most of the trees are leafless. Their height is usually quite low (ten to fifteen meters) and their trunk very thin (20 centimeters for the largest ones). The Baobabs encountered frequently are very large though (up to 15 meters of circumference) and very high (20 to 25 meters). The shrub layer is almost non-existent and there are very few vines¹¹⁶.

The forest corridor proposed here is home to squares of the top decile of biodiversity conservation priority (Figure 23) according to the indicators previously defined in this document. Another study published very recently (in July 2015)¹¹⁷ comparing several prioritization methods (irreplaceability, conservation index and species richness) ranks the Nosy Ambositra site north of the corridor as part of the top 50% of 22 sites already including protected areas and possible candidate areas for conservation across all Madagascar. This study leads to consider the establishment of a new protected area in this site. This matches with the results of our own study on conservation priority. Moreover, establishment of the corridor in the northern part would maintain the continuity and connectivity of these forest ecosystems with those of the Mangoky protected area near Nosy Ambositra.

The importance of biodiversity in this specific forest corridor is in itself reason enough to consider it for creation a Community Conservation Area (CCA). But in addition to that sole argument, if we take in account the dynamics of watersheds, we are strengthened in our consideration. Indeed, this forest corridor and its maintenance are also essential for the regulation of ecosystem services related to hydrography. The rivers constituting the watershed flow from east to west ending into Lake Ihotry (this flow direction is symbolized by the blue arrow in Figure 27). The waters go steeply downstream from the forest corridor that rests on a limestone plateau (about 800 meters) and then slopes gently from Befandriana through the vast cultivated plain down to Lake Ihotry. The river network is dense and well structured. Given the limestone bedrock, watercourses there are often temporary. The main rivers are the Bevato, the Befandriana, the Ambory and Tsivoro. They Flow from the limestone massif and are quickly lost in the sand cover upon their arrival in the coastal plain¹¹⁸. The water flow from these heights is intermittent in its surface run but is vital for the maintenance of human activities and alimentation of the underground waters.

¹¹⁵ Atlas de végétation de Madagascar / RBG Kew, publication 2007 Réalisation: REBIOMA Edition: Novembre 2008.

¹¹⁶ La végétation de la région de Béandriana, (Bas Mangoky) par P. La végétation de la region de Béandriana, (Bas Mangoky) par P. Ségalen et C. Bioureaux, 1949.

¹¹⁷ Comparing Methods for Prioritising Protected Areas for Investment: A Case Study Using Madagascar's Dry Forest Reptiles. Charlie J. Gardner, Christopher J. Raxworthy, Kristian Metcalfe, Achille P. Raselimanana, Robert J. Smith, Zoe G. Davies, (2015).

¹¹⁸ Etude de la vulnérabilité du bassin versant du lac Ihotry à l'érosion en nappe .M. Rabarimanana, R. Andriamasimanana, E.Rasolomanana, L. Robison (2012).

Despite its low population density, the limestone plateau housing the forest corridor suffers of important deforestation, especially in its western part. Already in 1949, Segalen and Bioureaux¹¹⁹ warned us about the future of these forests and the consequences of their loss:

“If the current situation continues, it is likely that primary forest will have soon disappeared. It will be replaced by savannah and grassland ... The loss of tree cover on these very sandy soils will accelerate the erosion. If the forest should disappear, then the risk of silting in the alluvial belt, now well cultivated, will increase. (...) The drainage system will undergo serious changes. Already, Befandriana, whose headwaters have suffered serious deforestation, has water merely a few days a year. (...) A torrential regime followed by sudden inflows of sand may become the reality if its headwaters are not protected. Finally, soil degradation by loss of the topsoil appears to be the inevitable consequence for all arable land.”

Given these forecasts that proved to be accurate, it is absolutely necessary to preserve what is left of these forests and, ideally, adopt reforestation policies and soil stabilization practices in the highly erodible area downstream. To prevent erosion of the sandy basin by torrential water flows, it is crucial to preserve the forests upstream of the watershed. These conservation measures and if possible restoration of the watershed are primarily designed to correct the torrential phenomenon through conservation, improvement and implementation of forest cover. They have a very beneficial effect on water infiltration and storage, as well as exerting effective control over surface runoffs and flood flows¹²⁰.

The plain that lies between the hills of the eastern watershed and Lake Ihotry is one of the main agricultural areas of the Atsimo-Andrefana region (Figure 27). To the west of the National 9 passing by Befandriana, this plain is home to very large agricultural areas, some irrigated in cultivation mosaics, some not. During community consultations in Befandriana, the silting up of rice paddies in the area has been profusely discussed, fertility loss caused by silting being widely acknowledged as a critical issue by the Environmental Dashboard ONE¹²¹.

Dandoy noted in 1972 that, between Manombo and Befandriana (including the watershed area of Lake Ihotry) east of the Mikea Forest, the "agriculture occupies only limited areas corresponding to the best soils and irrigable areas". It is clear that these lands of much agricultural value are now saturated and that to extend the cultivated areas, there is no choice but to do so by using new dry forest land¹²². When you combine this fact with loss of fertility of cultivated soils, it might explain why some of the human pressure for new cultivated area is now diverted on Mikea Forest boundaries westward (Figure 27).

¹¹⁹ La végétation de la région de Béfandriana, (Bas Mangoky) par P. La végétation de la region de Béfandriana, (Bas Mangoky) par P. Ségalen et C. Bioureaux, 1949.

¹²⁰ Correction des torrents et stabilisation des lits, F. López Cadenas de Llano, FAO (1992).

¹²¹ Rapport de synthèse sur l'état de l'environnement Région Atsimo Andrefana (2008).

¹²² La culture pionnière du maïs surabattis-brulis (hatsaky) dans le sud-ouest de madagascar. Pierre Milleville et Chantal Blanc-Pamard (2001).

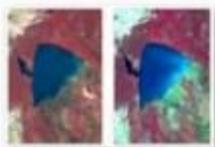


Fig28

Figure 28: evolution of the siltation situation of Lake Ihotry over 5 years (2000-2005)



Fig29



Fig30

Figure 29: East corridor sector: a very high biodiversity forest corridor on hills east of Befandriana, water flows from there to the lake, deforestation here leads to silting of important cultivated areas between proposed forest corridor and Lake Ihotry

Figure 30: Ihotry north sector: Maharihy, Tantalavalo and South Ankatsankatsa

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During the community consultations, the scarcity of drinking water during the dry season because of the major rivers drying up (including the Befandriana) was also reported. These intermittent streams originate in the wooded hills that shelter the forest corridor proposed as CCA. Even if not visible in the surface, undergrounds water still percolate from the forested hills to the cultivated plains. The importance of conservation is essential for the water supply for crops and human consumption. To ensure the sustainability of this support service, conservation is vital but should be accompanied by proactive community policies of reforestation.

According to the Befandriana community consultations reports, the issue of preservation of this forest corridor seems to have been understood by the local people, they encourage and strongly recommend the creation of new TDGs and Dinas as participatory management tools. This demonstrates the willingness of the community to participate in conservation efforts.

Human pressures remain relatively low for the *fokontanys* of Nosy Ambositra, Ampilokely and South Analatelo: the low population density may be explained by the presence of calcareous soils, not very suitable for agriculture. The *fokontany* of Andranovorindregataka is more densely populated and is subject to greater deforestation, the index of human pressure there is moderate-emergent.

Siltation also affects Ihotry Lake, mostly coming from the Befandriana River as shown in several studies¹²³. Cloudy water in light blue on the picture of 2005 (Figure 28) shows the sediment inflow into the lake and indicates the importance of erosion in the eastern part of the basin. This important site for fishery is home to a fishermen community that depends almost exclusively on the lake resources not only for subsistence, but also as an economic resource. The lake provides each year up to 10,000 tonnes of fish (mainly tilapia).

Ihotry watershed North West sector fokontanys: Maharihy, Tantalavalo and South Ankatsankatsa

These three *fokontanys* north of Lake Ihotry all host squares of the top decile of conservation priority according to the synthetic index defined by this study (Figure 24). These are deciduous dry forests progressing towards spiny thickets formations. West and south of the lake, we find one of the most prestigious baobab in the world: Grandidier's Baobab (*Adansonia grandidieri*), is the biggest and most famous of Madagascar's six species of baobabs. This imposing and unusual tree is endemic to the island of Madagascar, where it is an endangered species threatened by the encroachment of agricultural land.

This area bordering the lake possesses quite a good population¹²⁴ of two species of birds endemic to Mikea Forest: the long-tailed ground roller (*Uratelornis chimaera*) (Figure 32) and the subdesert mesite (*Monias benschi*) (Figure 33). The long-tailed ground roller is part of the list of wildlife species requiring special protection according to the Nairobi Protocol

¹²³ Étude de la vulnérabilité du bassin versant du lac Ihotry à l'érosion en nappe (2012), M. rabarimanana, R.andriamasimanana, E. Rasolomanana, L. Robison

¹²⁴ La conservation de la nature à Madagascar: la perspective du CIPO (1987), p.106, N.J. Collar, T.J. Dee et P.D. Gori

(1985) and is classified as a vulnerable species by the IUCN. Both species are also brought up in the PIF of this project in section 23 (Incremental Cost Reasoning), when identifying the global benefits of the projects on biodiversity¹²⁵.

Regarding the services provided by this ecosystem, we must emphasize the role played by the forest west of Lake Ihotry as a buffer strip against the progress of the huge sand dune that stretches from the western part of Maharihy toward southwest (see Figure 30) threatening Ihotry Lake. As we can see on the map, for the part of the watershed west to Lake Ihotry, the water flows from west to east (Figure 26). A portion of the forest is contained within the protected area of Mikea while another one remains unprotected. The conservation of Lake Ihotry depends on the success of the conservation of the Mikea forest within its protected part, but also in the parts currently without status. The protection of this forest strip between the lake and the dunes is not only a priority for the conservation of biodiversity, but its maintenance is also essential to avoid the progression of the sand dune towards the lake¹²⁶ causing silting and sedimentation. These consequences would additionally cause declining fish catches, economic and social instability, and therefore increased pressure on ecosystems.

An additional reason for these *fokontanys* (Maharihy, Tantalavalo and South Ankatsankatsa) to be home for the creation of CCA or other conservation initiatives is to maximize connectivity with the detached and isolated portions of the protected areas of Mikea and Mangoky that they shelter. These parts of protected areas are enclosed in non-protected areas that have a high level of conservation priority for biodiversity. Corridors should be put in place to maintain this connectivity and minimize fragmentation within the forest. For now, a gélouse type of TDG¹²⁷ is used mainly for the management of fish resources in the lake.

Maharihy is subject to relatively low anthropic pressures and its population density is lower than Tantalavalo's and South Ankatsankatsa's, which are more densely populated, especially on the banks of the Mangoky River along the National Road #9. In this area, the rice paddies productivity and the irrigation canals network state are some of the local population main concerns. These considerations were raised during the community consultants' visit to South Ankatsankatsa. Supporting and maintaining them in good condition would allow population stabilization, social and economic security, both guarantees of stability.



Figure 31: Flamingos on Ihotry Lake

Figure 32: The long-tailed ground roller (*Uratelornis chimaera*)

Figure 33: Sub-desert mesite (*Monias benschi*)

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East Mikea Sector sites: Iaobaro, Analodolo, Anjabetrongo and Ankiliabo

According to Lalaina Rakotobe: "The Mikea forest is renowned both for its biological diversity and by its species endemism (*Microgale jensae*, *Macrotarsomys petteri*, *Pyxis arachnoid brygooi*, *Furcifer antemena*, *Liohidium chabaudi*, *Uratelornis chimaera*, *Monias benschi*, *Alluaudiopsis marinierana*). It is also characterized by the presence of the Mikea people, who rely exclusively on its natural resources. In the past, the Mikea area covered about 700 000 ha, of which 558,870 ha were covered by dense dry forest, these forests form the *Dalbergia*, *Commiphora* and *Hildegardia* series. During the 1980s, this forest was partly destroyed because of the corn culture and in the 1990s, this deforestation was worsened by illegal commercial operations such as the production of charcoal and logging.

With a financial support from Conservation International, the World Bank and the Global Environment Facility implemented by the United Nations Development Programme, the Mikea complex received a temporary protection status in April 2007. Its surface is 371,340 ha including 184,630 ha of the National Park, surrounded by 186,710 ha of a

¹²⁵ PROJECT IDENTIFICATION FORM (PIF), A Landscape Approach to conserving and managing threatened Biodiversity in Madagascar with a focus on the Atsimo-Andrefana Spiny and Dry Forest Landscape

¹²⁶ Étude de la vulnérabilité du bassin versant du lac Ihotry à l'érosion en nappe (2012), M. rabarimanana, R.andriamasimanana, E. Rasolomanana, L. Robison.

¹²⁷ Lohanivo Alexio Clovis, 2014, Cartographie des Transferts de gestion Atsimo Andréfana, DGF/CIRAD-DP.

community protected area. The Mikea people are now subject to a safeguarding plan duly approved by the public and donors. Since 2005, Madagascar National Parks (MNP) manages the Mikea National Park. The Complex of Protected Areas is co-managed between partners as Fikambanana Miaro ny Ala Mikea (FIMAMI) and farmers' organizations in 15 towns nearby¹²⁸. Even though the creation of Mikea National Park is official since 2011, deforestation is still an actual threat.

According to Pierre Milleville and Chantal Blanc-Pamard (2001), in the Mikea Forest, deforestation occurs on the eastern side of the massif, along the axis Tulear - Morombe between Ankililoaka and South Befandriana. From the eastern edge of the massive, operators choose a "front" that they then extend westward. The expansion of this front or its lateral extent is the subject of very subtle strategies, related both to the acquisition of cultivable land and a coordinate occupation strategy by contiguous pioneers. In general, the stretch of the Mikea Forest narrows from east to west. Initially, three sectors appear to be in danger of deforestation in this area: the Ankililoaka sector, Antseva sector and Ampasikibo sector. These large populous villages are departure points for migrations. These three sites are also access points to the sea through the forest. In the case of Ampasikibo, the trail existed before 1949. The tracks are quite recent in the case of Ankililoaka and Antseva. They were created during the 1970's oil exploration in the region (...) corn, which was once the predominant food crop, has become a major cash crop in the region, leading to speculative behaviours, the appearance of large producers and the widespread use of hired labour. The considerable expansion of clearings has resulted in severely affecting many forest massifs¹²⁹.

The Mikea forest has an exceptional biodiversity and high endemism level, making it a **zero extinction site**¹³⁰.

The protected area is classified within IUCN management category II, which implies strict conservation within the National Park boundaries. Yet Mikea Forest integrity is still threatened in the areas that we have selected for intervention in the eastern part of the park. These frontiers of Mikea Forest are subject to clearing and fragmentation right inside the park boundaries, as shown in the following map (Figure 34). It is therefore imperative to take action within these sites to ensure the enforcement of strict conservation regulations that their category II classification implies. Respect of the park boundaries should be non-negotiable. For that to be possible, we would need to reinforce the capacity of responsible authorities in terms of surveillance, alert and response. Modern remote sensing tools allow to obtain quasi real time data on forest cover, forest fires and other threats. One of the goals of this project is to make such monitoring tools available within a near real time information system.

The *fokontany* of Iaobaro, Analodolo and Anjabetrongo are those for which the phenomenon of forest clearing and fragmentation is the worst (see Figure 34). These sites require a targeted intervention strategy taking in consideration the migration dynamics and their relationship to the economic activities of charcoal production and new lands clearing. Conservation in these areas cannot be achieved without the cooperation of local populations. Their engagement as conservation partners, especially in these most sensitive sites is vital for success. The project must therefore not only strengthen the capacities of the authorities for enforcement of strict conservation policies but also establish and/or strengthen the TDG and Dinas near the periphery of the park boundaries.

As we can see on the map (Figure 34), the tracks through the park to the coast are access roads to new clearing zones, they cross or are adjacent to the *fokontany*s selected as intervention sites. The installation of checkpoints just outside the park boundaries on these tracks with an effective authority presence would help control the situation. In the current situation, the permanent presence of the authorities is based at Ankililoaka, a representation of Madagascar National Parks is located in the village, almost fifteen kilometers away from the park boundaries. The remoteness to the park boundaries and the lack of equipment probably represents a problem for effective surveillance and law enforcement. Yet exercising authority effectively is a necessity if we really want the conservation of this last frontier of the original natural heritage of the region to be a success.

¹²⁸ Le Complexe d'Aire Protégée Mikea par Toany (MNP) et Zo Lalaina Rakotobe, Conservation International, Madagascar, Bulletin trimestriel (2010).

¹²⁹ La culture pionnière du maïs sur abattis-brulis (hatsaky) dans le sud-ouest de Madagascar. Pierre Milleville et Chantal Blanc-Pamard (2001).

¹³⁰ <http://www.zeroextinction.org/>



Fig34

Figure 34: Selected sites, East Mikea sector

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Iaobaro, Analodolo, Anjabetrongo and Ankiliabo have all been main subjects to GEF small grants programme to value monka¹³¹ (old clearings) in order to stabilize populations and reduce the pressure on the remaining untouched forests (crop diversification, use of legumes for restoring soils fertility deep soil with legumes, control of the crop calendar, etc.). These initiatives should be maintained, supported and sustained in order to perpetuate the gains already achieved.

The *fokontany* of Ankiliabo (site also proposed to strengthen the existing TDG¹³²) near Ankililoaka does not suffer of clearings within the park boundaries and its TDG seems to fulfill its mission. Ankiliabo also constitutes one of the main entries to the visitors of Mikea National Park and yet has no accommodation space for potential visitors, the equipment is virtually nonexistent. The park is very difficult to access, from the nearest village, a 3 hours hike is necessary to get to the park edge. Accessing it remains an adventure that some might appreciate, but developing easier access to potential tourists and visitors would definitely value the park as an asset for neighbouring population.

These four sites are subject to a human pressure considered moderate/emerging. The population density is relatively low, but the human pressure index is nevertheless expressed as emerging because of the intense deforestation level. This sparsely populated area (for the moment) leaves room for rapid intervention in terms of enforcement of regulations inside and outside park boundaries, in order to respect the limits and the ecological integrity of Mikea National Park.

Southwest corridor of Mikea: Fiherenamasay, Karimela Mimiratra and Ambohimandroso

The choice of these 3 adjacent *fokontanys* has essentially two main objectives:

- (i) Located on the southwest coast of Mikea park (Figure 35), these three *fokontanys* are the obligatory passage for all people or goods coming from the west coast using the coastal path along the west of the park. For now, the forest strip between the western boundaries of the park and adjacent Mikea coastal forests are virtually untouched and are spared. Anthropogenic pressures are very low because the population density is very low. To preserve a status quo and prevent the arrival of threats to this last no man's land, a simple measure could be put in place: the control of the goods brought through this unique coastal track. The establishment of a forestry control post or any other permanent surveillance on this axis could help monitor and curb illegal activity, it being the unique gateway to the western part of the Mike national park.
- (ii) The second objective would be to maintain connectivity between the PA of Mikea and Ranobe PK 32. Fiherenamasay is adjacent to the national park of Mikea and includes squares of the top decile of conservation priority for the maintenance of biodiversity in its eastern parts (see Figure 24). For the rest, it is mainly composed of a relatively intact forest in continuity with the ecosystem of Mikea (Figure 35). A Coba type of management transfer¹³³ already exists for the management of the forest resources.

This forest area goes stretch south through the adjacent *fokontany*, Karimela Mimiratra, which is also proposed to host a CCA. A protected forest corridor could be established and stretch to the banks of the Manombo River a little further south. Fiherenamasay and Karimela Mimiratra also comprise mangrove sites that are the subject of a Gélouse type of TDG¹³⁴, these sites have been identified by community consultants as important sources of raw material for handcrafts and as

¹³¹ GEF Country Portfolio Evaluation: Madagascar (1994–2007).

¹³² Lohanivo Alexio Clovis, 2014, Cartographie des Transferts de gestion Atsimo Andréfana, DGF/CIRAD-DP.

¹³³ Ibid.

¹³⁴ Ibid.

important nesting sites for fishes and crabs. There is a project of dune fixation at Fitsitike to protect mangroves against the invasion of the sands in the rural commune of South Manombo (GEF Small grants programs, Madagascar).¹³⁵

Finally, south of the corridor (Figure 35), the Ambohimandroso fokontany on the south shore of the Manombo river has the particularity of belonging to the protected area of Ranobe Pk 32 in its eastern parts. Deforested particularly in its western part, this fokontany could be the site of a reforestation project in order to create a forest corridor, thus restoring connectivity between forests of Mikea and Ranobe PK 32.



Fig35

Figure 35: Selected sites, South-West Mikea corridor

[\[Click here to access images\]](#)

Ranobe Sector fokontany: Antanimena Maikandro and Mamery

The **Antanimena Maikandro fokontany** (Figure 36) houses the Coba Mahavita Tsara, which manages a forest identified as a biodiversity hotspot (Antsihirike forest) as it contains squares of the top decile of conservation priority according to the present study (Figure 24). This site is adjacent to the protected area Ranobe PK 32, which is one of the areas of highest biodiversity and endemism in Madagascar. The creation of a CCA in this site could help maintain connectivity and continuity of forest areas outside the protected area. The richness of the site had already been recognized before this study and was rewarded with the award of a GEF grant for the conservation of biodiversity; the project will end in October 2015. This site is located upstream from the sacred water source of Ambobaka (essential for the irrigation of nearly 2000 hectares of crops and social cohesion) and is part of the watershed of the important Ankiloaka cultivating area, the conservation of this forest contributes to regulating runoff, erosion, and is an obstacle to the silting of rice paddies and irrigated crops downstream.

The **Mamery fokontany** (Figure 36) is vast and have portion of its total area that goes beyond the boundaries of the study area in its northern part. We have nevertheless decided to include it among the intervention sites as it is the only fokontany part of the project intervention districts (here Toliara II) which comprises a portion of its area for which the company World Titanium Resources has obtained an operating license.

The Mining Lease Area (MLA) of Tulear Sands project currently has a surface of nearly 12 square kilometers, making it the largest active mining project in the region (see location in Figure 36 and peak of the works in Figure 37). The ilmenite sands deposit are found several hundred square kilometres around in the area, so expansion projects are already on the map¹³⁶. The operation is planned for the hundred years to come and its operations will consume nearly 30,000 litres of water per minute¹³⁷. One of the infrastructure projects is the construction of a haul road that would cross portions of primary forests still untouched (a portion of this road would be included in the Mamery *fokontany* proposed as a project intervention site)¹³⁸.

¹³⁵ Fixation des dunes à Fitsitike pour protéger les mangroves contre l'envahissement des sables dans la commune rurale de Manombo Sud et prévention en amont, (GEF) Small grants programs, Madagascar

¹³⁶ <http://www.worldtitaniumresources.com/ranobe-project/mineral-resource/>

¹³⁷ WTR Ranobe forest mining, Madagascar, Environmental Justice Atlas Online (2015).

¹³⁸ Coastal & Environmental Services (CES), 2013, Ranobe Mine Project Southwest Region, Madagascar: Draft Environmental and Social Impact Assessment, Draft prepared by CES for World Titanium resource (WTR), April 2013



Fig36



Fig37

Figure 36: Selected sites for Ranobe sector

Figure 37: Drilling operation in the mining lease of Tulear sands project

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In addition to its impacts on biodiversity, the mine will move whole villages, sacred burial sites and will consume a large amount of water that of which we ignore the long-term environmental consequences. This could affect the living conditions of populations and the hydrology of this semi-arid region. Although some notables of the region are tempted to go ahead, local people through advocacy groups have expressed strong opposition to a project with that many unknown possible impacts.¹³⁹ An environmental permit has nevertheless been issued by ONE (March 2015).

It seems important that the project have presence in this major emerging threat site to strengthen the capacity of local people to learn about their rights in this kind of situation. According to its social and environmental assessment plan, World Titanium complies with the Equator principles¹⁴⁰ and therefore must comply with their specifications. The company has social and environmental responsibilities and is accountable for the impacts of its activities. The firm has to propose mitigation and compensation measures and must provide auditable business indicators of social and environmental performance.

Mamery *fokontany* has portion of its surface in Ranobe PK32 protected area and in its southern part includes sites with very high conservation priority (top decile of conservation priority for biodiversity). Until very recently, new species and / or populations of species that were thought lost or absent were discovered in the area¹⁴¹. A very strong deforestation took place in the northern part of the *fokontany* between 2001 and 2015 due to charcoal production activities and Tavy cultures.

The protected area of Ranobe PK32 is a category V area according to IUCN, with a co-management model. The project could reinforce the capacity of stakeholders in the development and implementation of management plans. A WWF aerial surveillance project in partnership with the Belgian aviation and Protected Areas System of Madagascar (MPI), has been relatively successful in reaching its current target of a 50% reduction of slash and burn practices in the Ranobe Protected Area PK32 by 2017¹⁴². Such initiatives should be strengthened and supported.

Both the *fokontany*s (Antanimena Maikandro and Mamery) selected in this area for intervention and/or CCA creation undergo considerably high human pressure according to our index This is resulting from a high deforestation rate and a very high amount of bush fires. Furthermore, Antanimena Maikandro has a relatively high population density.

Betioky Sector: Miary

The *fokontany* of Miary (Figure 38) in the town of Behavoha Ankazombalala, Betioky District, contains in its southern part a good portion of the special reserve Bezaha Mahafaly. Although this *fokontany* includes in its northern part but a small portion classified as top decile of conservation priority, it still houses patches of primary forest slightly connected to the Bezaha Mahafaly protected area that have a great score in terms of conservation priority (Figure 25). These patches of forest are connected to consistent forest areas extending almost continuously north up to Onilahy River. These forests north of the Miary site are subject to relatively little deforestation and human pressure (Figure 38). It would be interesting to strengthen the connectivity between the forests of the Miary site with the rest of the landscape by the establishment of a forest corridor in the Miary *fokontany* from Bezaha Mahafaly protected area towards the northern borders of the *fokontany*.

¹³⁹ Toliary Sands dans la tourmente, mardi 7 avril 2015, par Léa Ratsiazio, tribune.com Madagascar

¹⁴⁰ Coastal & Environmental Services (CES), 2013, Ranobe Mine Project Southwest Region, Madagascar: Draft Environmental and Social Impact Assessment, Draft prepared by CES for World Titanium resource (WTR), April 2013

¹⁴¹ New population of rare giant-mouse lemurs found in Madagascar - See more at: http://wwf.panda.org/wwf_news/?191725/New-population-of-rare-giant-mouse-lemurs-found-in-Madagascar#sthash.TD95qkLW.dpuf

¹⁴² WWF, Bulletin d'informations, MWIOPO, Madagascar, Juillet 2013.

The protected area of Bezaha Mahafaly has experienced strong deforestation in its southern part and Miary is classified as having a high human pressure index because of its deforestation rate. Also, the fokontany is crossed by one of the unique tracks of the region (which promotes human pressures by accessibility). One of a kind, the protected area Bezaha Mahafaly was, until recently (2009), home to the only protected gallery forest in Madagascar (Figure 39). It is classified category IV according to IUCN. This reserve benefits from a partnership with the School of Agricultural Sciences (ESSA-Forests) and is financially supported by the Liz Claiborne Art Ortenberg Foundation and is helped by the Tany Meva Foundation for the implementation of research and training programmes in the reserve and its surroundings. There is, therefore, a good synergy for the development of a landscape type of conservation approach that does not simply stick to the boundaries of the reserve.

In addition to its values in terms of biodiversity, the area has many cultural attractions that make it interesting for tourism. As for wildlife, it is one of the good bird watching sites west and south of Madagascar, including 6 species of the endemic families of Vangidae, giant Coua and green pigeons. The diurnal lemurs of Beza (sifaka lemurs) are easy to find and seems to accommodate with close observation.

Beza Mahafaly also offers a multitude of landscapes such as gallery forest, xerophytic thicket, grasslands savannas bristling with termite mounds, a temporary wetland, favourite place of wild ducks in the rainy season, but gradually giving way to various crops (onions, corn, beans) as well as canyons of sandy and rocky areas. Added to this is the culture of the Mahafaly people. Their name means “those who make taboos”. They are very attached to their zebu which are omnipresent in the veneration of the ancestors. Graves are expertly decorated of aloalo (wooden funerary sculpture) and many zebu horns killed in the preparation of the funeral. In addition to all this, visitors to Beza Mahafaly can visit the rock salt deposits and the manufacture of local rum. To top it all, it has a museum that helps appreciate the reserve and its biodiversity, the Mahafaly culture¹⁴³.

To the local community’s request, the reserve was enlarged up to 4600 ha in 2005. This is an excellent indicator of the willingness of local people to engage and participate in community conservation.



Fig38



Fig39

Figure 38: Site selected, Miary sector

Figure 39: Forest gallery in the reserve of Bezaha Mahafaly

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¹⁴³ <https://essaforets.wordpress.com/sites-dapplication/beza/>

Annex 7: Summary of Technical Reports from PPG phase

- Study 1:** Baseline study on ecosystems, biodiversity and protected areas, Rabemananjara Henintsoa, March 2015
- Study 2:** Report, PPG activities, BDLUP, technical fonctionnal and environnemental requirement, Djoan Bonfils, Avril 2015
[this report can be viewed in the PRODOC Addenda: <http://bit.ly/1PiE3CW>].
- Study 3:** Report, PPG activities, Potential sites for creation of community conservation areas, Djoan Bonfils, July 2015
- Study 4:** Résultats des Consultations Communautaires pour le développement du PPG (Partie Nord et Sud de la Région de Atsimo Andrefana).

Annex 8: Social and Environmental Screening Checklist and Template

Refer to the PRODOC Addenda in a [separate PDF file](http://bit.ly/1PiE3CW) (or access the file by pasting this into a browser address bar: <http://bit.ly/1PiE3CW>).

The SESP file in MS Word can be accessed at: <http://bit.ly/1ORi8YZ>.