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United Nations Development Programme

Country: Republic of Madagascar

PROJECT DOCUMENT



Project Title: Enhancing the adaptation capacities and resilience to climate change in rural communities in Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana in Madagascar.	
UNDAF 2015-2019 outcome:	Outcome 1: Vulnerable population in targeted areas access to income and employment opportunities, improve their resilience capacities and contribute to inclusive and equitable growth for sustainable development.
Primary outcome of the UNDP Strategic Environment and Sustainable Development Plan: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded	
Secondary outcome of the UNDP Strategic Plan: Countries are able to reduce the likelihood of conflict and lower the risk of natural disasters, including from climate change	
Expected Outcome of the UNDP Country Programme: Outcome 2. National and local institutions and players have adopted appropriate systems providing for the structural transformation and strengthening of sustainable production capacities, favouring the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth. Outcome 4. Territorial and local communities have developed the capacities, means, institutional structures, operational frameworks and skills to foster resilience in the face of a crisis (economic, climate change, natural disasters), to effectively deal with its aftermath, and to promote local development by meeting publicly expressed needs.	
Expected Outcomes of the Country Programme Action Plan (CPAP): Outcome 3. “National and local institutions and players are now using tools and mechanisms to facilitate the achievement of MDG/SDG and to promote more effective development.” Outcome 4. “Structural transformation, strengthened sustainable production capacities, and sound environmental governance have effectively fostered the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth.”	
Implementation Agency: UNDP	
Execution Agency/Responsible Partner: Ministry of Environment, Ecology, Sea and Forests/National Climate Change Coordination Office	
Summary Description	
<p>In Madagascar, the economic sectors most affected by the harmful effects of climate change are agriculture, livestock, forestry, water resources, fishing and health. To enjoy sustainable livelihoods in a context of climate change, the local populations of the Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana regions must find a way to strengthen their adaptation and resilience capacities, which is the goal set by the proposed project. To this end, several barriers must be overcome, such as anthropic pressure on natural resources, the lack of financial and technical capacities, the difficult access to credit and inputs, the lack of water and sanitation infrastructures, the lack of agro-meteorological and climate information to inform climate change adaptation decision processes, the lack of awareness regarding climate change impacts and potential adaptation options on the part of decision-makers and the lack of coordination for adaptation interventions among sectors.</p> <p>This project serves to address these various obstacles by achieving three main outcomes. The first outcome aims to increase the awareness and strengthen the capacities of decision-makers, technicians and vulnerable communities in terms of Climate Change Adaptation (CCA). This awareness raising support will contribute to build a solid political framework, including CCA aspects, and to build a critical</p>	

technical capacity upon which the implementation of other project components can be based. This first outcome will enable setting up the institutional, structural and technical foundations needed to disseminate and appropriate adaptation measures and technologies. The second outcome aims to ensure the collection and production of reliable climate and meteorological information. Disseminating this information in a manner that meets the needs of end users will foster informed decision-making in regards to climate and meteorological conditions. Finally, the third outcome aims to transfer adaptation measures, options and technologies to vulnerable communities in the selected regions using a participatory approach, building on the strengthened capacities achieved through the first component, and the agro-meteorological information and forecasts produced through the second component.

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Total Resources Allocated	USD 67,239,067
• Regular (LDCF)	USD 5,877,397
• Other Total	USD 61,361,670
○ UNDP MSD	USD 5,000,000
○ Min of Agri	USD 47,009,500
○ UNICEF WASH	USD 2,365,000
○ Min of Transp	USD 1,970,000
○ Direc of Env	USD 1,017,170
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ACRONYMS

ADB	African Development Bank
AINA	<i>Action Intégrée dans la Nutrition et l'Alimentation</i> (Integrated Approach to Food Security and Nutrition)
ANDEA	<i>Autorité Nationale de l'Eau et de l'Assainissement</i> (National Authority for Water and Sanitation)
AROPA	<i>Projet d'Appui au Renforcement des Organisations Professionnelles et aux services Agricoles</i> (Support to Farmers' Professional Organizations and Agricultural Services)
ASARA	<i>Amélioration de la Sécurité Alimentaire et des Revenus Agricoles</i> (Improving Food Security and Farming Revenues)
AWPB	Annual Work Plan and Budget
BMZ	German Federal Ministry for Economic Cooperation and Development
BNCC	<i>Bureau National de coordination du Changement Climatique</i> (National Climate Change Coordination Office)
BPOR	<i>Budget Programme par Objectif par Régions</i> (Programme Budget by Goal by Region)
BV/PI	<i>Lettre de Politique Bassins Versants et Périmètres Irrigués</i> (Irrigation and Watershed Management Policy Paper)
CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CDP	Communal Development Plan
CLTS	Community-Led Total Sanitation
CO	Community Organization
CSA	<i>Centre de Services Agricoles</i> (Agricultural Service Centre)
CTAS	<i>Centre Technique Agro-écologique du Sud</i> (Agro-Ecological Technical Centre of Southern Madagascar)
DAOF	<i>Direction nationale de l'Appui à l'Organisation des Filières</i> (National Directorate Supporting the Organization of Agricultural Sectors)
DGE	<i>Direction Générale de l'Eau</i> (General Directorate of Water)
DGM	<i>Direction Générale de la Météorologie</i> (General Directorate of Meteorology)
DRDR	<i>Direction Régionale du Développement Rural</i> (Regional Directorate of Rural Development)
DREAH	<i>Direction Régionale de l'Eau, de l'Assainissement et de l'Hygiène</i> (Regional Directorate of Water, Sanitation and Hygiene)
DREEF	<i>Direction Régionale de l'Environnement, de l'Ecologie et des Forêts</i> (Regional Directorate of Environment, Ecology and Forests)
DRR	Disaster Risk Reduction
DRRHP	<i>Direction Régionale des Ressources Halieutiques et de la Pêche</i> (Regional Directorate of Fishery Resources and Fishing)
DSMCS	Direct Seeding, Mulch-Based Cropping System
DSNS	<i>Document de Stratégie Nationale Semencière</i> (National Seed Strategy Document)
DTU	Decentralized Territorial Units
DWS	Drinking Water Supply

EAP	Environmental Action Plan
EAPAR	<i>Projet d'Approvisionnement en Eau potable et Assainissement en milieu Rural</i> (Project to Supply Drinking Water and Sanitation to Rural Areas)
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field Schools
FO	Farmers' Organization
FORMAPROD	<i>Programme de formation professionnelle et d'amélioration de la productivité agricole</i> (Vocational Training and Agricultural Productivity Improvement Programme)
GCCA	Global Climate Change Alliance
GCOS	Global Climate Observing System
GDP	Gross Domestic Product
GDWCS	Gravity-based Drinking Water Conveyance System
GFCS	Global Framework of Climate Services
HOP	Hand-Operated Pump
HPWW	Hand Pump Water Well
IFAD	International Fund for Agricultural Development
IGA	Income Generating Activities
IWRM	Integrated Water Resource Management
LDCF	Least Developed Country Fund
M&E	Monitoring and Evaluation
MDG	Millennium Development Goals
MDP	<i>Maison des Paysans</i> (Farmers' House)
MEEMF	<i>Ministère de l'Environnement, de l'Ecologie, de la Mer et des Forêts</i> (Ministry of Environment, Ecology, Sea and Forests)
MFI	Microfinance Institution
MinAgri	<i>Ministère de l'Agriculture</i> (Ministry of Agriculture)
MinEL	<i>Ministère de l'Elevage</i> (Ministry of Livestock)
MRHP	<i>Ministère de la Pêche et des Ressources Halieutiques</i> (Ministry of Fishery Resources and Fisheries)
MSD	<i>Projet Moyen de Subsistance Durable</i> (Sustainable Livelihoods Project)
MSD-LCP	<i>Moyen de Subsistance Durable et Lutte Contre la pauvreté</i> (Sustainable Livelihood and Poverty Reduction programme)
MTTM	<i>Ministère du Tourisme, des Transports et de la Météorologie</i> (Ministry of Transportation and Meteorology)
NAPA	Climate Change National Adaptation Programme of Action
NAPCD	National Action Plan to Combat Desertification
NIM	UNDP National Implementation Modality
PAFIM	<i>Programme d'Appui à la Finance Inclusive de Madagascar</i> (Madagascar's Inclusive Financing Support Programme)
PANSA	<i>Plan d'Action National pour la Sécurité Alimentaire</i> (National Action Plan on Food Security)

PDWCS	Pump-based Drinking Water Conveyance System
PGM-E	<i>Programme Germano-Malgache pour l'Environnement</i> (German-Madagascan Programme for the Environment)
PMU	Project Management Unit
PNAEPA	<i>Programme National pour l'accès à l'eau potable et à l'Assainissement</i> (National Programme for Access to Drinking Water and Sanitation)
PNDR	<i>Programme National de Développement Rural</i> (National Rural Development Programme)
PNE	<i>Politique Nationale de l'Environnement</i> (National Environmental Policy)
PNIAEP	<i>Plan National d'Investissement Agriculture Elevage et Pêche</i> (National Agricultural, Livestock and Fishing Investment Plan)
PNLCC	<i>Politique Nationale de Lutte contre le Changement Climatique</i> (National Policy to Combat Climate Change)
PPP	Public-Private Partnership
PSAEP	<i>Programme Sectoriel Agriculture, Elevage, Pêche</i> (Sectoral Agricultural, Livestock and Fisheries Programme)
PSNA	<i>Politique et Stratégie Nationale de l'Assainissement</i> (National Sanitation Policy and Strategy)
RDM	Risk and Disaster Management
RFAD	Regional Fund for Agricultural Development
SDEA	<i>Schéma Directeur de l'Eau et de l'Assainissement</i> (Water and Sanitation Blueprint)
SDG	Sustainable Development Goals
SN-CC-AEP	<i>Stratégie Nationale face au Changement Climatique - Secteur Agriculture Élevage et Pêche 2012-2015</i> (2012-2015 National Climate Change Strategy-Agricultural, Livestock and Fishery Sector)
SNDR	<i>Stratégie Nationale de Développement de la Riziculture</i> (National Rice Farming Development Strategy)
SNFAR	<i>Stratégie Nationale de Formation Agricole et Rurale</i> (National Agricultural and Rural Training Strategy)
SNGF	<i>Silo National des Graines Forestières</i> (National Tree Seed Centre)
SNGRC	<i>Stratégie Nationale de Gestion des Risques et des Catastrophes</i> (National Risk and Disaster Management Strategy)
SRISE	<i>Système Régional d'Information et de Suivi-Évaluation</i> (Regional Information and Monitoring & Evaluation System)
SSPA	<i>Stratégie Sectorielle et Plan d'Action pour l'eau et l'assainissement</i> (Sectoral Strategy and Action Plan on Water and Sanitation)
TFP	Technical and Financial Partner
UNCCD	United Nations Convention to Combat Desertification
UNDAF	United Nations Development Assistance Framework
UNFCCC	United Nations Framework Convention on Climate change
WASH	Water Sanitation and Hygiene programme
WSCDP	Water and Sanitation Communal Development Plan

1 SITUATIONAL ANALYSIS

1.1 Context

Geography

1. With an area of 587,000 sq.km and a 5,600 km coastline, Madagascar is the fourth largest island in the world. It is located 400 km from the East African coast, southwest of the Indian Ocean. Madagascar presents diverse eco-regions and climates. The island contains tropical forests, dry subtropical forests, and a spiny desert. Madagascar is a biodiversity hotspot, as more than 80% of plant and animal species are endemic to the country.
2. Madagascar presents extremely varied climate conditions due to its geographical location, landform, maritime influence and wind conditions. There are five main climatic regions in the country, as shown in the figure below.

- East Coast: The climate in this region is hot and humid. As it is directly exposed to trade winds, it receives more than 1,200 mm of rain per year, with a maximum of 3,700 mm in Sainte-Marie and a minimum of 1,100 mm in the northern and southern tips. The average annual temperature is around 24° C, with highs of 31.5° C in Antsiranana and 30° C in Taolagnaro (Fort Dauphin), and lows of 19.4° C in Antsiranana and 16.2° C in Taolagnaro.
- Highlands: This region presents a high elevation tropical climate mainly characterized by cold winters. Annual rainfall amounts range from 900 mm (Ranohira) to 1,500 mm (Ivato). The average annual temperature ranges from 16° C to 22° C. An absolute maximum of 37.9° C was once observed in Ranohira in November and an absolute minimum of -1° C in Antsirabe in July.
- West Coast: The climate in this region is characterized by hot and humid summers. Average rainfall amounts lessen from North to South, from 1,650 mm to 400 mm, with the greatest amount of precipitation occurring in January. The dry season is particularly long, stretching from May to October. The average annual temperature varies from 24° C in the South to 27° C in the North. An absolute maximum of 40° C was once observed in Maevatanana.
- Southern Tip: The climate in this region is semi-arid. The average annual rainfall ranges from 500 mm to 700 mm, and the average annual temperature is 24° C. An absolute maximum of 43.6° C was once reported in Ejeda in November and an absolute minimum of 3.9° C was once reported in July.
- Sambirano Region: The climate in this part of the island is similar to that of the East Coast- hot and humid, with rather high rainfall amounts (2,000 to 2,300 mm) and 180 days of rain per year. December through March is the



Figure 1: The five climatic regions of Madagascar

rainiest period of the year. The average annual temperature is 26° C.¹

The economy of the intervention regions

3. Madagascar's economy is essentially based on agriculture, livestock, fishing/aquaculture, the textile industry, mining and tourism.
4. With 70-75% of the population living in rural areas, agriculture, livestock and fishing predominate Madagascar's economy. These three sectors contribute to around 43% of its Gross Domestic Product (GDP). Agriculture alone represents around 27% of its overall GDP and the livelihoods of more than 75% of the population. More than 70% of agricultural households practice livestock, which constitutes the main income source of 25% of the rural population².
5. This LDCF project will intervene in five regions: Analamanga, Atsinanana, Androy, Anosy, and Atsimo Andrefana. In terms of the climatic regions described above, Atsinanana is part of the East Coast region, Analamanga is part of the Highlands region, and Androy, Anosy and Atsimo Andrefana are part of the Southern Tip region. The five intervention regions are shown on the map below.

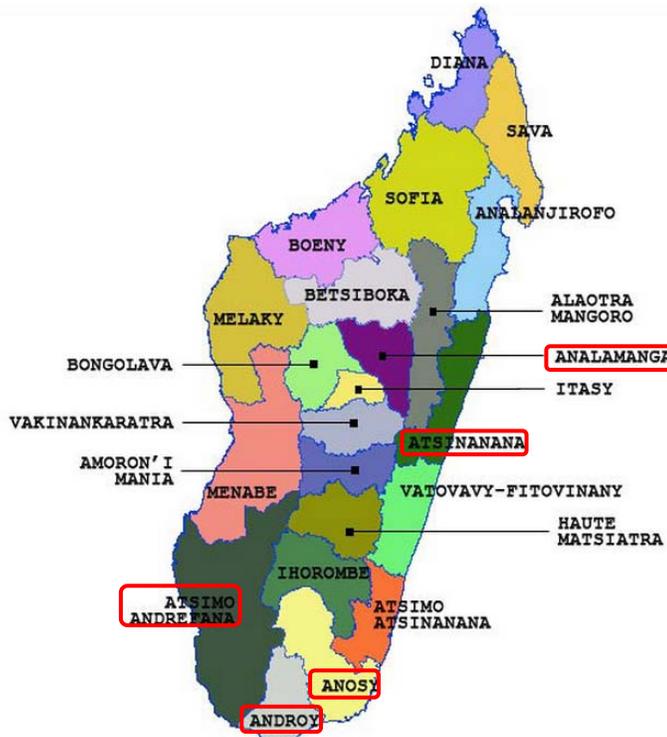


Figure 1: Administrative Map of Madagascar

6. These regions face significant challenge in terms of food security, health, and access to drinking water and sanitation. The southern, eastern and central regions of Madagascar are particularly affected by:

¹ The weather data presented in this paragraph was drawn from the following report: Razafindrakoto Benjamin. 2013. *Scenarios Climatiques pour Madagascar* (Madagascar climate scenarios).

² The data presented here was drawn from the *Stratégie Nationale face au Changement Climatique (SNCC) – Secteur Agriculture Elevage-Pêche 2012-2015* (2012-2015 National Climate Change Strategy - Agricultural, Livestock and Fishing Sector)

- **A high level of food insecurity** and food deficits in both quantitative and qualitative terms. Around 68% of households in the South and 42.6% of households in the East face food insecurity, while 50.9% of households in the Central Highlands are vulnerable to food insecurity³;
- **The most alarming morbidity rate in the country.** The child-juvenile mortality rate and the infant mortality rate in Anosy are respectively 112‰ and 75‰; 77 ‰ and 53 ‰ in Androy; and 76 ‰ and 47‰⁴ in Atsimo-Andrefana;
- **Little access to drinking water and sanitation.** According to the latest data from the Joint Monitoring Programme (JMP, 2014)⁵, Madagascar’s access to improved water sources is 35% in rural areas, and its access to improved sanitation facilities is only 11%, the lowest water and sanitation access rates in southern Africa. Access to drinking water also presents a growing challenge. The poor quality of existing latrines, combined with the high prevalence of open defecation (48% of the rural population), constitutes one of the main sources of water pollution. Health problems are also exacerbated by frequent floods and cyclones. Existing water and sanitation infrastructures have not been designed or built in consideration of extreme weather events.

7. According to the *Institut National de la Statistique de Madagascar*, the average annual household income (including on-farm consumption) of farmers in Atsinanana, Analamanga, Androy, Anosy and Atsimo-Andrefana are respectively 484 USD, 402 USD, 223 USD, 314 USD and 318 USD⁶. These revenues do not enable households to meet their food needs or other basic needs, such as water and sanitation, which explains the high poverty rate and poverty gap index in Atsinanana, Analamanga, Androy, Anosy and Atsimo-Andrefana, as shown in the table below.

Region	Poverty Rate			Poverty Gap Index		
	Urban	Rural	Regional	Urban	Rural	Regional
Analamanga	44.2	61.7	54.5	14.2	21.0	18.2
Atsinanana	60.2	88.7	82.1	25.7	46.0	41.2
Atsimo-Andrefana	63.1	97.5	94.5	25.7	53.7	51.2
Androy	94.4	94.3	94.4	63.8	60.3	60.9
Anosy	55.1	87.6	83.5	24.2	46.5	43.7

Table 1: Poverty Rate and Poverty Gap Index⁷

8. The specificities of the intervention regions are presented below.

Analamanga region

9. Agriculture occupies most of the region’s rural population, particularly rice farming, which is practiced by virtually all households. Most districts also grow such food crops as paddy rice, corn, manioc and potatoes. In peri-urban areas, people also engage in cash crops such as market gardening or floriculture. In addition to crop activities, Analamanga’s economy is characterized by livestock, poultry farming, fish farming, fishing, and beekeeping. Extensive livestock (poultry, pork and cattle) is practiced in all rural

³ PAM/UNICEF. *Analyse complète de sécurité alimentaire et nutritionnelle et de vulnérabilité dans les milieux ruraux à Madagascar* (Complete food security, nutrition and vulnerability analysis in rural areas of Madagascar); November 2011.

⁴ FAO. 2010. *The State of Food Insecurity in the World*

⁵ WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation – Madagascar: Estimates on the use of water sources and sanitation facilities (1980-2012). 2014.

⁶ Republic of Madagascar – *Institut National de la Statistique* (National Statistics Institute). 2011. *Enquête périodique auprès des ménages* (Periodic survey of households) – August 2010.

⁷ Source: INSTAT/DSM/EPM 2010

areas and is predominated by *gasy* chicken farming. Intensive poultry farming is concentrated in areas close to the capital. Fish farming is essentially practiced in Manjakandriana, Ankazobe, Atsimondrano and Avaradrano, fishing is practiced in lake regions, dairy production is concentrated in Manjakandriana and Atsimondrano, and beekeeping is practiced in eastern woodlands.

Region Atsinanana

10. This region's economy is dominated by import-export activities owing to its port in Toamasina. The existence of this port explains the regional presence of such cash crops as coffee, cloves and litchis. The main products grown are paddy rice, manioc, corn, bananas, litchis, pineapple, sugar cane, coffee and cloves. There is also a mining industry in the region which has an impact on the economy, as exemplified by the large "Ambatovy" mining project in Tamatave.

Region Atsimo Andrefana

11. Primary industries occupy 86.5% of the active population here and provide its main export products. The region has territories favourable for agriculture (irrigated areas), fishing (the entire coast), and livestock (grazing areas). The southwest thus presents considerable potential in terms of livestock and fishery and agricultural resources. The main products farmed in Atsimo Andrefana are respectively livestock meat, rice, goat meat, sugar cane, milk, cotton, manioc, sheep meat, lima beans, sweet potatoes, poultry meat, and peanuts. It should be noted that livestock is a large part of this region's economy⁸.

Region Anosy

12. In 2010, the regional GDP per capita was around \$322 and the national average GDP per capita was around \$391⁹. A self-subsistence economy predominates in this region. Crop yields are low due to recurring droughts and the use of traditional farming methods. Fishing activities along 194 km of coastline are not well developed and are mainly limited to the export of lobster and shrimp. Still, fishery resources represent a considerable source of income for more than one-third of the local population, particularly in the District of Taolagnaro. Anosy has other fishery resources (e.g.: tuna and sardines) but these are only consumed locally at this point. Anosy's substratum presents many economic resources for the country: precious stones (sapphires, rubies, etc.), industrial stones, and minerals such as bauxite, ilmenite and mica¹⁰.

Region Androy

13. Androy's economy is mainly dominated by livestock and agriculture. However, the development of agricultural production is highly dependent on the availability of water, which remains uncertain given the variability of rainfall amounts. Fishing also plays a considerable role in the region's economy. Androy's substratum is rich, and the region was once known for its mica mining; it presents opportunities for mining precious stones (sapphires, rubies and alexandrite) and industrial products such as graphite, mica and salt. Given its significant biodiversity and its coastal areas, the region also presents considerable eco-tourism potential¹¹.

⁸ UNDP. 2008. *Monographie région Astimo Andrefana* (Monograph for the Astimo Andrefana region)

⁹ *Plan d'Action Régional 2014 – Région Anosy* (2014 Regional Action Plan – Anosy Region)

¹⁰ Idem

¹¹ *Plan Régional de Développement de l'Androy*. 2005 (Regional Development Plan for Androy)

1.2 Problems Caused by Climate Change

Impacts of climate change on the key economic sectors of the five intervention regions

14. In Madagascar, the economic sectors most affected by the harmful effects of climate change are agriculture, livestock, forestry, water resources, fishing and health. The main potential impacts resulting from climate variability and change on these socio-economic sectors are described below.
15. **Agriculture:** Climate variability and change have upset agro-climate conditions. Farmers are finding it increasingly difficult to manage a growing calendar disrupted by climate change. The types of crops used are not adequately adapted to climate variability. The growing number of floods and droughts, combined with poor water management, erosion and fewer fertile soils, have contributed to the destruction of crops and declining crop productivity levels.

Declining precipitation amounts and higher temperatures in southern regions will facilitate a surge in parasites and diseases, such as mosaic disease, which could affect the production of manioc, the second leading food staple and source of income after rice in southern and eastern regions¹². As outlined in the Project Identification Form (PIF), reduced precipitation amounts could also threaten rice crops in these regions, particularly in the South. A reduction in precipitation could also lead to the need for increased irrigation and food safety hazards in these regions. Water stress, combined with higher temperatures, would worsen, exacerbating soil aridity in southern regions such as Androy, Anosy and Atsimo-Andrefana and making farming activities difficult.

In the southwest and the south, higher average temperatures, a shorter rainy season (up to 3 months per year) and poor rainfall distribution are the main signs of climate change, the most obvious impact of which remains a 75% reduction in the country's crops, especially corn and manioc crops, which are food staples in southern regions¹³.

16. **Livestock farming:** The reduction and degradation of grazing fields due to climate change threaten livestock feed. Grazing areas have shrunk by around 2% due to climate variability¹⁴ and higher temperatures have led to reduced productivity. Climate change also poses water resource shortage risks; in some areas, livestock watering has become difficult due to declining groundwater reserves and the early depletion of ponds. Herds also fall victim to extreme weather events such as droughts and floods.
17. **Forestry:** The degradation and disappearance of forestry resources has led to two main phenomena: the water erosion and soil erosion of large watersheds. Such erosion is exacerbated by climate change, which has led to increasingly frequent extreme weather events and higher temperatures, contributing to an alarming reduction in the forest cover and the progressive disappearance of all kinds of forests: coastal, low altitude, swampy, mangrove, etc. In a chain reaction, the reduced forest cover limits carbon absorption capacity, thereby contributing to global warming¹⁵.
18. **Water resources:** Water resources are unevenly spread out in the country. The East Coast gets over 1,200 mm of rain per year, the Highlands, 900-1500 mm, and the Southern Tip, only 500-700 mm¹⁶. Rainfall disruptions, extreme weather events, and increased evapotranspiration threaten the hydrological

¹² Republic of Madagascar – *Institut National de la Statistique* (National Statistics Institute). 2011. *Enquête périodique auprès des ménages* (Periodic survey of households) – August 2010.

¹³ GIZ. *Capitalisation des expériences en adaptation au changement climatique à Madagascar* (Capitalization of experiences in adapting to climate change in Madagascar), 2014

¹⁴ *Deuxième rapport national sur les ressources phylogénétiques pour l'alimentation et l'agriculture* (Second national report on phylogenetic resources for food and agriculture), 2008

¹⁵ National Tree Seed Centre (SNGF) (2014)

¹⁶ Republic of Madagascar. 2006. *Programme d'Action Nationale d'Adaptation au Changement Climatique* (Climate Change National Adaptation Programme of Action).

regime of various watersheds. Deforestation and the erosion of watersheds also contribute to the silting and sloughing of bottomlands. Not only does climate change lead to problems managing and controlling water resources, but it also changes the biophysical quality of water, which exacerbates local access to sanitation and drinking water problems¹⁷.

The vulnerability of water resources is worsened by the lack of established Integrated Water Resource Management (IWRM) systems. While ANDEA (the national water and sanitation authority) was created for this purpose, its legal status limits this organization's leeway. And with reduced groundwater reserves due in part to the rainfall shortage, some water supply infrastructures are no longer functional, as is mainly the case in Southern Madagascar (MINEAU, 2013). During the Project Preparation Grant (PPG) phase, various infrastructures were identified as non-functional in the intervention areas: boreholes, wells, impluviums, pumps, stand-posts, piping systems, etc.¹⁸. As such, there is a critical need to make these infrastructures more resilient to anticipated climate change effects in order to increase local access to adequate drinking water and sanitation facilities.

19. **Fishing:** The fishing sector has been affected by climate change as a result of lake depletion, recurring cyclones, increasingly toxic algae, and changes in migrating fish flows.
20. **Health:** Higher average annual temperatures due to climate change have led to the spread of diseases in areas where they never existed before. For example, malaria used to be endemic in coastal areas but now also contaminates the Highlands. Irregular rainfall due to climate change has also led to heavy rains, which worsen erosion and the transportation of suspended materials in watersheds. This makes for highly turbid and unsanitary surface waters. Higher temperatures also increase evaporation and the concentration of physical and chemical pollutants in surface waters and underground waters¹⁹. As such, waterborne diseases are more and more commonplace²⁰.

Higher temperatures also lead to heat waves, which are particularly hazardous for more vulnerable people such as the elderly and young children.

As a result of its impact on agricultural resources, climate change may also worsen the country's malnutrition and food insecurity problems.

21. The table below presents the main negative effects which extreme weather events could cause in the intervention regions targeted by the LDCF project.

¹⁷ Idem

¹⁸ The condition of water infrastructures found in the intervention regions is detailed in Appendix 4.

¹⁹ Andrianirina et al. 2014. *Troisième Communication Nationale – Etude de la vulnérabilité et de l'adaptation au changement climatique – secteur ressources en eau* (Third national communication – study on vulnerability and adaptation to climate change – water resources sector).

²⁰ Republic of Madagascar. 2006. *Programme d'Action Nationale d'Adaptation au Changement Climatique* (Climate Change National Adaptation Programme of Action).

Causes/sources	Potentially Affected region	Negative Effects	Affected Sectors
Floods	Atsinanana, Atsimo-Adrefana, and Anosy	<ul style="list-style-type: none"> - Degraded water quality (transportation of solid materials, turbidity, insalubrity, etc.) - Reduced yields - Impaired quality of life and livelihoods - Property damage (to agricultural, sanitation, drinking water supply (DWS) infrastructures, etc.) 	Agriculture, livestock, fishing, water resources, public health, coastal region and forestry/biodiversity
Droughts	Atsimo-Adrefana, Androy et Anosy	<ul style="list-style-type: none"> - Reduced yields - Impaired quality of life and livelihoods - Well depletion 	Agriculture, livestock, water resources, public health, fishing, and forestry/biodiversity
Cyclones	Atsinanana, Atsimo-Adrefana and Anosy	<ul style="list-style-type: none"> - Diminished quality of life and livelihoods - Property damage (agricultural, drinking water supply (DWS) infrastructures, etc.) - Loss of human life and biodiversity 	Agriculture, livestock, fishing, water resources, public health, coastal region and forestry/biodiversity

Table 2: Anticipated Effects of Climate Change by Key Sector and Project Intervention Region²¹

²¹ This table was drawn from the sectoral report on climate change produced during the Project Preparation Grant (PPG) phase on the basis of observations made in the field.

1.3 Long-Term Solutions and Barriers to Overcome

Long-term solutions

22. The long-term solution would be to promote the sustainable adoption of local, integrated agro-sylvo-pastoral systems and practices which are resilient to climate risks and which enable improving agricultural productivity and sustainably managing agricultural, forestry, fishing, grazing field, and water resources. Ideally, decision-makers and technicians involved in national, regional and local rural development should have the capacities, skills and information needed to analyze the impacts of climate hazards on ecosystems, agricultural production systems, livelihoods and the management of natural resources, including water resources. They should have the technical and functional capacities to anticipate and consider such hazards in their development activities and to support the dissemination of such resilient agro-sylvo-pastoral systems and practices.
23. In addition, local and regional development planning tools should incorporate a climate change component to ensure that interventions and support initiatives help strengthen resilience to the anticipated impacts of climate change. Similarly, national strategies and documents related to rural development, agricultural, livestock, forestry and fishing development, and improving access to drinking water and sanitation facilities should incorporate a climate change component and be operationalized so they can be implemented at regional and local levels.
24. Local, decentralized authorities from southern, eastern and central regions of Madagascar, such as Androy, Anosy, Atsimo Andrefana, Atsinanana and Analamanga, should have the knowledge and skills to identify, develop and implement Climate Change Adaptation (CCA) measures in order to reduce the vulnerability of rural communities and improve their income and living conditions. Communities whose main resources come from agriculture and other economic activities that depend on natural resources should also have relevant information (especially when it comes to weather forecasts), the necessary technical skills to adopt climate-resilient farming technologies, and access alternative and resilient livelihood options. They should also have access to adapted financial products that support the development of alternative, adapted Income Generating Activities (IGA).
25. However, Madagascar is currently facing several obstacles that could prevent it from availing itself of this ideal solution. A list of these potential barriers is presented below.

Barriers to overcome

26. **Strong anthropic pressure on natural resources caused by ill-adapted agricultural practices.** Destructive agricultural practices leading to soil erosion and degraded soil quality are limiting crop yields. To maintain cash revenues, *tavy* or *hatsake* (slash and burn) production techniques are the most common response to declining crop yields²². But these pose a major threat to Madagascar's forestry and natural resources, creating a vicious circle of worsening poverty and declining forest areas²³. WWF estimates indicate that up to 90% of the country's primary forests have already been lost²⁴. *Tavy* production techniques are mainly used in Madagascar to convert tropical rain forests into rice fields.

Generally, one-half to one hectare of forest is cut, burned, and then cultivated with rice. After a year or two of production, the field is left fallow for four to six years and the process is then repeated. After two or three cycles, soil nutrients are depleted and the land is generally colonized by scrub vegetation or exotic weeds²⁵. *Tavy* production techniques have been identified as the main source of deforestation and

²² http://www.erikastyger.com/Publications_files/EStyger%20S%26B%20Madagascar.pdf

²³ <http://www.new-ag.info/en/country/profile.php?a=2888>

²⁴ Idem.

²⁵ <http://www.wildmadagascar.org/conservation/threats.html>

subsequent degradation of high altitude regions²⁶. For example, in the Atsimo-Andrefana region, 31,000 hectares of forest were burned between 2000 and 2011 as a result of *tavy*²⁷ practices. The lack of State support, especially advisory services, promotes further deforestation and worsens other harmful agricultural practices that contribute to the depletion of natural resources and the further vulnerability of agricultural landscapes. Even though deforestation is illegal, the laws are not enforced, resulting in free access to forestry resources²⁸. In the face of poverty and a lack of alternatives, information and technical support/advice, producers thus continue to use traditional practices to produce enough food and generate enough income to survive. Styger et al (2006) believe that *tavy* practices will persist and that forests and biodiversity will continue to disappear if doable, affordable and sustainable agricultural techniques for high altitude regions are not developed and taught to farmers.

The clearing of forests also has negative impacts on water resources due to the depletion of water sources and increased run-offs, to the detriment of water seeping into groundwater reserves. This results in soil erosion and the silting of rice paddies in bottomlands. Climate change also increases flooding risks, thereby increasing the rice farming sector's vulnerability.

Such traditional practices constitute an obstacle to the above-mentioned long-term solution. Indeed, these practices hinder climate change resilience, the environment, natural resources and local communities. In order to set up integrated agro-sylvo-pastoral systems, as described in the above-mentioned long-term solution, the barriers created by such traditional practices must be overcome.

27. **The weak financial capacity and limited access to credit** of farmers do not favour mechanization and significant investments in farming activities. In the country's southern, central and eastern regions, revenues from farming (agriculture, livestock and fishing) are particularly low. This can be explained by low production yields, ineffective storage, rather ineffective farming product transportation and marketing systems, and high self-consumption levels. Access to credit is also limited due to the lack of decentralized financial institutions. As a result, farmers, breeders and fishers from these regions find it difficult to obtain the financial resources they need to develop effective and economically viable farming practices.
28. **The absence of effective agricultural input supply systems** in rural areas. The supply chain system does not always offer farmers, breeders, and fishers enough competitively-priced, quality inputs, which hinders production. And the private sector is not encouraged to invest in the sector due to producers' weak financial capacity, issues accessing production areas, and the lack of political incentives.
29. **Weak and precarious access to water and sanitation infrastructures.** Most of the locals (65%²⁹) depend on raw water sources to meet their daily needs, exposing them to significant contamination. In addition, the country's few existing infrastructures were not designed or built in consideration of extreme weather events. Southern Madagascar is especially vulnerable when it comes to drinking water. The quality and number of existing infrastructures is insufficient to provide minimal access to drinking water. As for sanitation, the poor quality of existing latrines, combined with the prevalence of open defecation (48% of the rural population³⁰), creates an unhealthy environment that is worsened by heavy rains and floods due to climate change.

By triggering less rainfall, higher temperatures and more extreme weather events, climate change will further limit local access to drinking water and sanitation. Indeed, extreme weather events worsen erosion and the transportation of suspended materials in watersheds, which makes for highly turbid and

²⁶ Humbert, 1927; Kiener, 1963; Oxby et Boerboom, 1985; Gade, 1996; Marcus, 2001

²⁷ <http://wwf.panda.org/?206007/Le-hatsake-menace-la-population-de-lAtsimo-Andrefana>

²⁸ http://www.erikastyger.com/Publications_files/ESTyger%20S%26B%20Madagascar.pdf

²⁹ Republic of Madagascar (2010): *Enquête démographique et de santé* (Demographic and health survey), April

³⁰ *Idem*

unsanitary surface waters. Higher temperatures also increase evaporation and the concentration of physical and chemical pollutants in surface waters and groundwater. These factors will therefore make it increasingly difficult for people to access quality drinking water and sanitation facilities. Such limited access is a barrier that hinders rural communities' capacity to deal with climate change.

30. The information needed to **plan resilient agricultural activities and early warnings for serious weather events is limited**. Where available, weather forecasts are not used to effectively plan a response to extreme weather events. The information needed to make better decisions is not structured or adapted to the needs of political decision-makers and technical personnel.

Moreover, the national meteorological and climate observation network is limited and there are no hydrometric stations in most of Madagascar's watersheds. This network does not cover all project intervention regions and does not enable collecting the quality and quantity of meteorological and climate data to support decision-making in regards to climate risks.

31. Stakeholders at all levels **do not have access to information on links between agriculture, livestock, forestry, water, sanitation and hygiene (WASH), public health and climate**, which hinders the ability to include climate risks in decision-making processes. In a climate change and variability context, agriculture, livestock, forestry and WASH sectors must be able to rely on relevant meteorological and climate information. This requires: (i) developing a framework to combine multiple information sources (climatic, environmental and social); (ii) developing the infrastructures needed to access and combine this data; and (iii) setting up means to communicate and update this information.
32. **Decision-makers' lack of awareness** when it comes to climate risks hinders the integration of such risks and adaptation measures in policies, strategies, plans, appropriated budgets, and local development as a whole. This phenomenon is exacerbated by the diminished technical capacities of essential departmental authorities and managers (Ministry of Environment, Ecology, Sea and Forests - MEEMF, Ministry of Livestock - MinEL, Ministry of Agriculture - MinAgri, Ministry of Tourism, Transportation and Meteorology – MTTM, the Ministry of Water, Sanitation and Hygiene, and the Ministry of Fishery Resources and Fisheries - MRHP), as well as regional and local governments. The recent political crisis has weakened national and decentralized institutions, especially in the agricultural, livestock, fishing and forestry sectors.
33. **The weak technical capacity of institutions responsible for water, sanitation and agriculture to deal with challenges related to climate change**. In 2008, a new Ministry in charge of Water was created to solely manage water and sanitation matters. While this is a good first step towards sectoral coordination, relationships between the government and other industry players remain weak, despite the fact that development partners and the local private sector would have the skills to support reform efforts related to water supply and sanitation. The lack of government resources (especially in terms of engineers, technicians, project managers and financial managers) is the greatest obstacle to meeting the gap between available investments and implementation of initiatives.

Moreover, the Water Code, the policy document governing the management of water resources in Madagascar created in 1999, does not include elements that would enable operationalizing Integrated Water Resource Management (IWRM) and a sanitation aspect. The document is expected to be updated in 2015, and the related implementation decrees should be revised and/or formulated.

34. **The weak technical capacity of vulnerable communities** to identify, develop and implement long-term CCA strategies. These communities lack access to agricultural inputs and climate-resilient plant materials and do not receive the farming support/advice they need to deal with current climate variability and future climate changes.
35. **Weak coordination efforts between ministries and funders**. For example, the water sector is fragmented into different departments, and the relevant Technical and Financial Partners (TFP) intervene in closed sub-sectors. Madagascar does have the Diorano-WASH Coalition, a discussion platform on

water and sanitation, but the Coalition does not play a coordination role. There are no structures to coordinate the efforts of interveners, efforts between funders, or government efforts in this sector. This coordination role falls to the government (the Ministry of Water, Sanitation and Hygiene and the Regional Directorate of Water, Sanitation and Hygiene-DREAH), but it does not have the resources to fulfil this role.

36. To deal with the above-mentioned barriers, the project will set out to:

- Increase the CCA awareness and capacity of those concerned private institutions and local authorities responsible for supporting livelihoods, rural development and local access to water and sanitation, so they can grasp and predict the impacts of climate change, including available climate risk management options, and make these part of the support provided to vulnerable communities.
- Ensure that updated information on climate change, short-term forecasts, seasonal forecasts, long-term climate scenarios and environmental monitoring, is available and easy to use and access. This will all be provided in the form of adapted information products and services fostering sound decision-making in the agricultural sector. The project will also seek to set up the infrastructures needed to provide this information and to increase the capacities of the human resources concerned.
- Implement various technologies and strategies to make local livelihoods and water and sanitation supply systems more resilient to climate risks. This will include the diversification of agricultural activities, the promotion of alternative livelihoods that are climate-resilient, and the promotion of improved local and household water and sanitation supply systems.

1.4 Intervention communes

37. During the PPG phase, 17 communes were visited in the 5 intervention regions. These were initially selected by the regional chiefs concerned in close collaboration with the National Climate Change Coordination Office (BNCC). Of the 17 communes, 11 were chosen to take part in the proposed project.

38. These 11 communes were selected based on the following criteria:

- The diversity of the ecosystems found in the communes visited;
- The level of vulnerability to climate variability and change. To assess this level of vulnerability, a Vulnerability Reduction Assessment³¹ (VRA) following the UNDP's methodology was carried out with local communities in each commune visited;
- The level of vulnerability to climate change, as determined by:
 - ✓ The socio-demographic characteristics of residents;
 - ✓ Political, institutional, environmental and social vulnerability;
 - ✓ The importance of the most vulnerable sectors to the local economy; and
 - ✓ The development potentialities of the commune.
- The local response/climate change resilience level, as determined by:
 - ✓ Local responses to identified impact capacities and potential adaptation measures;
 - ✓ Existing support initiatives, projects and programmes; and
 - ✓ Potential complementarity with existing initiatives.
- The ability to implement and operationalize the project.

39. After these criteria were applied to each commune visited, the 11 following communes were selected to take part in the project:

- Atsimo Andrefana region:
 - ✓ Analamisampy
 - ✓ Manombo
 - ✓ Miary
- Androy region:
 - ✓ Imongy
 - ✓ Tranovaho
- Anosy region:
 - ✓ Sampona
 - ✓ Tanandava
- Atsinanana region:
 - ✓ Ilaka Est
 - ✓ Betsizaraina
- Analamanga region:
 - ✓ Betatao
 - ✓ Ambatolotarakely

³¹ The method is described in further detail in the "Reference analysis of stakeholders/participatory process" part of Section 2.1 below. Appendix 5 outlines the methodology and results obtained from the Vulnerability Reduction Assessment (VRA) conducted in the five intervention regions.

2 PROJECT STRATEGY

2.1 Country ownership: country eligibility and country drivenness

Consistency with national and international frameworks

40. Madagascar ratified the United Nations Framework Convention on Climate change (UNFCCC) and the Kyoto Protocol in 1998 and 2003, respectively. As a Least Developed Country (LDC), Madagascar is eligible for LDCF funding. The initial activity supported by the LDCF involves preparing for the Climate Change National Adaptation Programme for Action (NAPA). As Madagascar completed its NAPA and submitted it to the UNFCCC in July 2006, it is eligible to receive LDCF support to implement priority activities identified in its NAPA.
41. The LDCF project is consistent with the United Nations Development Assistance Framework (UNDAF) 2015-2019 for Madagascar. It specifically meets Outcome 1: “Vulnerable population groups in targeted areas access income and employment opportunities, thus enhancing resilience and contributing to inclusive and equitable growth which in turn fosters sustainable development.” Indeed, the project will support producers in order to increase their resilience, food security and production; it will also help prevent and lessen the negative impacts of natural disasters and climate change by providing meteorological information and establishing CCA measures.
42. The proposed project is based on NAPA priority adaptation options and measures. These are consistent with the country’s goals under the United Nations Convention to Combat Desertification (UNCCD), as mentioned in the National Action Plan to Combat Desertification (NAPCD). The NAPA’s priorities specifically meet NAPCD measures in regards to creating resilient livelihoods within farming communities and to protecting natural resource. The NAPA’s adaptation options are also consistent with national goals with respect to the Convention on Biological Diversity (CBD), as stipulated in the national strategy and action plan on biological diversity.

Baseline stakeholder analysis / participatory process

43. Stakeholders at all levels were involved in all project preparation steps.
44. At the national level, semi-structured interviews were held with institutional partners, TFP and potential co-financing partners in Antananarivo.
45. At regional, communal and local levels, discussions and focus groups were organized. During the PPG phase, field missions were conducted in the 5 intervention regions. These missions were organized in close collaboration with the technical committee and the BNCC, which took part in the missions organized in all 5 regions. Regional chiefs were also consulted to select vulnerable communes to be visited during the PPG phase in order to identify the project intervention regions.
46. In each of the 5 intervention regions, individual discussions were held at regional and local levels with regional authorities, decentralized departments (agriculture, livestock, forestry, fishing, water and sanitation), and communal and community authorities.
47. Focus groups were organized at the local level in each commune visited to analyze the communities’ level of vulnerability using the UNDP’s Vulnerability Reduction Assessments (VRA). VRA were conducted at the community level and with producers of the vulnerable sites selected in the 5 project intervention regions. The recipient groups created to conduct the VRA were representative of different socio-economic groups, did not exceed 20-30 people, and were made up of an equal number of men and women. The VRA were conducted in keeping with the approach and methodology described in the UNDP’s Vulnerability Reduction Assessments Guidelines. The VRA is used to analyze the vulnerability of a given socio-economic group at a specific time (t) and to monitor the evolution of this vulnerability across time. The VRA is based on 4 questions-indicators (presented in detail in Appendix 5) aiming to

identify relevant local problems which are critical to understanding vulnerability to climate change. The type of vulnerability analyzed as part of this project dealt with the impact of climate change on the livelihoods of rural populations.

48. The table below lists the stakeholders consulted during the PPG phase and their specific contribution.

Stakeholder Consulted	Specific Contribution
National Climate Change Coordination Office (BNCC)	Participation in field missions and all consultations. Key recommendations on the selection of regional interventions, the project strategy and institutional arrangements
General Directorate of Meteorology (DGM)	Key recommendations on the project strategy and Institutional arrangements regarding Component 2
General Directorates in the 5 target regions: (Regional Directorate of Water, Sanitation and Hygiene - DREAH, Regional Directorate of Environment, Ecology and Forests - DREEF, Regional Directorate of Rural Development - DRDR, Regional Directorate of Fishery Resources and Fisheries - DRRHP, etc.)	Key recommendations on the project strategy and institutional arrangements
Local governments (Regional Chiefs, District Chiefs, Fokontany Chiefs)	Key recommendations on the selection of intervention regions, the project strategy and institutional arrangements
International organizations, funders (UNICEF, IFAD, FAO, EU, GIZ, etc.)	Presentation of existing projects, potential co-financing and recommendations on institutional arrangements.
NGO, Professional Organizations (PO) and Community Organizations (CO): WWF, Catholic Relief Service (CRS), Water Aid, CSA, RFAD, <i>Maison des Paysans</i>, <i>Chambres d'agriculture</i>, CTAS, AVSF, CARE, Action Against Hunger, Kiomba NGO, <i>Alimentation en Eau dans le sud</i>, etc.	Key recommendations on the establishment of activities and the presentation of existing projects
Microfinance institutions (FIVROY, Microcred, Vola Mahasoa)	Key recommendations on aspects of the project related to microfinance
Local communities of the regions visited	Participation in individual and group discussions and in vulnerability assessments to select intervention regions

Table 3: Involvement of Stakeholders during the PPG Phase

2.2 Project Rationale and policy conformity

Consistency with national priorities

49. Madagascar's NAPA identified seven priority sectors, including infrastructures, water resource management, agriculture and livestock, which were considered and respectively classified as priority one, priority two, and priority three of the project:
- *Infrastructures*: The project will help increase the climate change resilience of sanitation and drinking water services and conveyance facilities in the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions.
 - *Water resource management*: The project will help increase the resilience of water supply services by strengthening the water supply infrastructure network and the adaptation capacities of organizations and people involved in managing drinking water supply services. To protect water sources and boost groundwater reserves, the proposed project will also address deforestation issues using an ecosystemic approach.
 - *Agriculture and livestock*: The project will help increase the adaptation capacities of agricultural and pastoral communities and support the development, demonstration and transfer of climate change-resilient strategies, including the use of climate change-resilient agro-meteorological tools and agricultural products and technologies. The project will also consider forestry, an essential ecological sector that goes hand in hand with agriculture, to prevent soil erosion and increase cattle feed.
50. This project meets urgent and immediate adaptation needs. It goes beyond a traditional sectoral approach and offers an integrated approach which includes various sectors (agriculture, livestock, forestry, water resources, etc.) in order to achieve overall climate change resilience in the five intervention regions. It is designed to meet the additional costs of priority adaptation measures identified in the NAPA, and will increase the capacities needed to pursue activities once the project is completed. Consistency with the LDCF
51. This project was prepared following guidelines established under the LDCF. It is also consistent with guidelines established under the "Programming Paper for Funding the Implementation of NAPAs under the LDC Trust Fund³²" and guidelines established under the UNDP/GEF's "Adaptation Policy Framework for Climate Change³³".
52. The project complies with LDCF eligibility criteria as it (i) uses a country-led, participatory approach; (ii) implements NAPA priorities; (iii) supports a learning-by-doing approach; (iv) follows a multidisciplinary approach; (v) promotes gender equality; and (v) follows a complementary approach.

Overall consistency with the GEF

53. This project was designed to meet general GEF conditions in terms of implementation and development. For example, the following conditions will be addressed:
- *Sustainability*: The project was developed to have sustainable impacts at local, regional and national levels. Further information is provided in the sustainability section of this project document.
 - *Monitoring and Evaluation (M&E)*: The project will be implemented using an effective M&E framework (see M&E section further on). Lessons learned will be gathered during the implementation process so they can be used when similar initiatives are carried out in the future.
 - *Replication*: The project focuses on demonstrating and scaling activities in 11 priority communes, an approach that should facilitate the replication of small investments in other parts of the country.

³² GEF/LDCF, 2006.

³³ GEF/LDCF, 2005.

- *Involvement of players*: The project will foster coordination among stakeholders at all levels and sectors, including environmental planning and development stakeholders.

2.3 Project Design Principles and Strategic Considerations

Consistency with national strategies and policies

54. Madagascar has several policies and strategies related to climate change, poverty reduction, agriculture, water and sanitation, and the environment. This LDCF project is based on, and will seek to create synergies with, this political framework. The list below presents some of these policies and strategies, most of which date back to before 2009 and the political and institutional instability which Madagascar went through between 2009 and 2013³⁴.

Policies and strategies on climate change

55. Madagascar completed its *NAPA* in 2006. Its strategic focus lay in: (i) increased capacities, (ii) political reform, and (iii) including adaptation projects in sectoral policies and project activities. Of the *NAPA*'s 15 priority adaptation projects, the LDCF contributes to the following priorities:

- Help increase plant and animal production through the acquisition of agricultural materials, the distribution of inputs, and the development of Income Generating Activities (IGA) in promising regional sectors;
- Afforest rural areas that have reforestation plans with adapted/appropriate species;
- Fight erosion through soil protection and restoration (soil conservation) techniques, and stabilize dunes;
- Establish and/or improve a light decentralized weather service structure.

56. In 2010, the government set up a Climate Change Directorate³⁵ within the Ministry of Environment, Ecology, Sea and Forests (MEEMF) and adopted a *National Policy to Combat Climate Change* (PNLCC). One of the PNLCC's five intervention areas involves strengthening CCA measures in consideration of the country's actual needs.

57. Madagascar also adopted an agriculture-specific climate change strategy called the *2012-2015 National Climate Change Strategy - Agricultural, Livestock and Fishing Sector* (SN-CC-AEP). The aim of this strategy is to sustainably develop the agricultural sector in order to make it more resilient to climate change, increase the GDP, promote food security in urban and rural areas, facilitate export activities, and develop modern, eco-friendly techniques consistent with local cultural identities.

58. While this political framework considers climate change, it must be operationalized by implementing concrete CCA actions and field training activities for real effects to be seen, which is what the LDCF project proposes to do.

Agricultural and rural development policies

59. *National Rural Development Programme* (PNDR), 2006. The aim of this programme is to improve food security, increase the production and processing of agricultural products, value natural resources and develop markets.

60. *National Action Plan on Food Security* (PANSAs), 2005. The aim of this plan is to improve food security.

³⁴ Madagascar has had a democratically elected and internationally recognized government since January 2014.

³⁵ Recently turned into a National Climate Change Coordination Office (BNCC), directly linked to the Ministry of Environment, Ecology, Sea and Forests (MEEMF)'s General Secretariat.

61. *Rural Development Policy Letter*, 2004. The aim of this document is to promote food security, reduce poverty, improve rural living conditions, and promote natural resource management and practices with a view to improving agricultural production in rural areas.
62. *National Agricultural and Rural Training Strategy* (SNFAR), 2012. The aim of this strategy is to increase skills and knowledge related to agricultural practices and resource management.
63. *The National Rice Farming Development Strategy* (SNDR), 2009. The aim of this strategy is to increase food security, to improve the health and living conditions of rice farmers, and to increase rice crop production and yields.
64. *National Seed Strategy Document* (DSNS), 2008. The aim of this document is to promote the use of improved seed varieties and to professionalize the seed industry with a view promoting the availability and use of quality seeds.
65. *Irrigation and Watershed Management Policy Paper* (BV/PI), 2006. The aim of this document is to promote natural resource management, to sustainably grow the agricultural sector, to diversify household revenues and to increase the life cycle of infrastructures.
66. *Framework Note for the Services for Farmers Strategy*, 2009. The aim of this note is to provide an overall and consistent agricultural service vision, to clarify roles, and to define mid-term strategic orientations and priorities.
67. While the aim of these sectoral strategies and policies is to help improve the agricultural sector and rural development, climate change is not an integral part of them, which is why the LDCF project proposes to include this dimension in all aspects of rural development.

Water and Sanitation policies

68. The *Water Code* was created in 1999 to govern Madagascar's water resource management. To promote Integrated Water Resource Management (IWRM), the National Authority for Water and Sanitation (ANDEA) was created but is not yet operational due to operational and funding issues.
69. *National Water, Sanitation and Hygiene Policy* – 2013-2018. This strategy describes the strategic development orientations of the Water, Sanitation, Hygiene sector and actions to be implemented to achieve the goals of the strategy, including an immediate operational plan to redesign the sector's image and reconsider the roles of key players.
70. *National Programme for Access to Drinking Water and Sanitation* - 2008-2012 (PNAEPA). The PNAEPA is a planning tool used by the water and sanitation sector to monitor, assess and implement sectoral actions and as a basis for negotiating with technical and financial partners.
71. The *Programme Budget by Goal by Region* (BPOR), 2008 is a planning tool that describes sectoral goals by region, prioritized in function of regional service rates and communal and regional priorities. It supports the coordination of regional players and TFP. However, this tool is not fully operational because it is not well understood and decentralization has resulted in complete inefficiency.
72. While developed, the political framework for water and sanitation matters does not specifically include climate change, which is what the LDCF project proposes to do.

Environmental policies

73. The *Environmental Charter*, 1990 (amended in 1997 and 2004). This charter presents the general execution framework of the country's environmental policy.
74. The *National Environmental Policy (PNE) – Policy Declaration*, 2010. The aim of the PNE is to improve the living environment of urban and rural residents. The main issues tackled by the PNE are: (i)

management of different sources of air, water, ocean and soil pollution, as well as intra-domiciliary pollution; (ii) eradication of deforestation; (iii) soil erosion control; (iv) the effective management of natural resources and biodiversity protection; (v) the fight against bush and forest fires; (vi) the effective implementation of international environmental agreements that have been or will be ratified by Madagascar; (vii) the management of climate change as a national and international issue; (ix) the development of environmental considerations; (x) the promotion of public-public and public-private partnerships in environmental management; and (xi) the building of environmental management accountability at all levels (centralized and decentralized).

75. The *Environmental Action Plan* (EAP) outlines all provisions adopted with a view to implementing the National Environmental Policy (PNE). It is a permanent 15-year plan, developed through an Environmental Programme to be conducted in three phases.
76. Madagascar's environmental policies and strategies are designed to protect the country's natural resources as a whole. The proposed project will also pursue this goal, while adding a new component focused on climate change impacts and resilience.

Ongoing Programmes and Projects

Co-financing Projects

77. Sustainable Livelihood Project (MSD)

- This programme is part of the UNDP's efforts to fight poverty in some of the vulnerable communities of Analamanga, Androy, Anosy, Atsimo Andrefana, Menabe, Atsimo Atsinanana and Vatovavy Fitovinany. Its aim is to foster a local development dynamic through the promotion of sustainable livelihoods, functional skills, employment and entrepreneurship, private funding and water resource management. The project tackles various themes: the environment, the fight against poverty, and disaster risk management. Nine communes receive support in the 7 regions.
- The expected outcomes of the project are as follows:
 - i. Vulnerable populations from the nine target communes have access to livelihoods and develop IGA and jobs;
 - ii. The communities in the nine communes are sufficiently organized and strengthened to identify and seize economic and social promotion opportunities;
 - iii. Regional and local capacities are increased in regards to operational coordination, community activity planning, and monitoring and evaluation;
 - iv. Improved agricultural systems and techniques, including sustainable agro-ecological practices adapted to the specific conditions of Southern Madagascar, have been capitalized;
 - v. The capacities of intermediary organizations have developed a more inclusive approach to economic development;
 - vi. Female entrepreneurship has been promoted by fostering skills development in the export field;
 - vii. Communities have gained economic benefits through an "inclusive market" system; and
 - viii. Blueprints and the integrated water resource database in southern regions have been disseminated and enriched.
- To foster greater coherence with other interventions, the programme will adopt an integrated community development approach, where relationships and complementarities are developed with other UNDP projects.
- As described in detail in the "Baseline Situation" and "Alternative" paragraphs of Section 2.4 (Project Objective, Outcomes, Outputs and Activities), IGA and jobs, as with the improved

agricultural techniques promoted by the Sustainable Livelihood Project (MSD), do not specifically include climate risk management. The LDCF project will seek to establish and promote CCA activities within MSD activities aimed at lessening the negative impacts of climate change. Both projects will be jointly pursued in Anosy, Androy, Analamanga and Atsimo Andrefana.

78. Support to Farmers' Professional Organizations and Agricultural Services (AROPA)

- AROPA took effect on January 13, 2009 for 9 years. Its implementation involves 3 successive phases, including a 3-year pilot phase (2009-2011), a 4-year intensification phase (2012-2015) and a 2-year disengagement phase (2016-2017). It intervenes in 5 regions, including Anosy and Androy.
- The goal of this project is to strengthen professional agricultural organizations in order to increase revenues and reduce the vulnerability of small producers (especially the poorest among them) by facilitating their access to services and equipment meeting their needs. It seeks to increase the revenues of 75,000 smallholder farmers and to reduce their vulnerability by increasing their access to agricultural services. It constitutes the International Fund for Agricultural Development (IFAD)'s government-approved contribution to the national "Support Services to Farmers" sub-programme.
- This project has 3 specific objectives:
 - Strengthen and professionalize Producer organizations (PO) to improve farming skills and to create sustainable production systems and facilitate their integration in the economic environment;
 - Increase access to agricultural services that meet producers' needs by creating intermediation mechanisms that will make it easier to align the service offer to the demand; and
 - Improve production and marketing levels in priority sectors by setting up mechanisms that will enable producers to access resources for financing agricultural services and production activities.
- The project includes 4 components:
 - Component 1: Support for structuring PO and professionalizing producers;
 - Component 2: Intermediation and service market development;
 - Component 3: Support for financing agricultural production and services; and
 - Component 4: Support for the national services for farmers strategy.
- From 2009 to 2014, smallholder farmers received support for 13 agricultural activities, including rice, corn, coffee, fish, *gasy* chicken, potatoes, beans, onions, peanuts, and the use of shared agricultural material, pork, honey and litchis. By the end of 2013, around 48,000 farmers received support³⁶ through the implementation of Farmer Field Schools (FFS). Through the project, they benefitted from technical, economic and organizational advice and financial services such as: the professionalization of farming and rural organizations and family farms, support from Agricultural Service Centres (CSA)/Regional Fund for Agricultural Development (RFAD), etc. The development of the agricultural sector carried out through the project resulted in the creation of 804 jobs in these regions.
- While indispensable and relevant to the rural development of recipient regions, the structural and institutional support lent by AROPA must be enriched with a climate change resilience dimension, which the LDCF project will accomplish. As well, the FFS set up by AROPA do not specifically address CCA options and measures, which will be strengthened through LDCF-supported activities, as described in the project strategy below.

³⁶ AROPA. 2013 Annual Report

79. FORMAPROD: Vocational Training and Agricultural Productivity Improvement Programme

- This programme receives 84 million USD in funding and targets a total of 13 regions, including Analamanga and Atsinanana. Designed to increase agricultural productivity and family farm revenues through the professional and vocational training of young rural people, the programme features three components: (i) a National Council for Agricultural and Rural Training to support agricultural development; (ii) a regional rural and agricultural training system adapted to rural needs; and (iii) a system to increase the productivity of family farms through basic and advanced training. In addition to targeting young people (a portion of the 300,000 people arriving on the job market each year), an important feature of FORMAPROD is the integrated training and technical and financial support it provides, which starts during the training period, continues into the production stage with the professional projects of trainees, and ends with the marketing stage. As such, the programme offers two types of agricultural training: an initial one and a continuous one, as well as extension services through FFS.
- As described in the project strategy below, the LDCF project will seek to strengthen the climate change dimension that is not specifically considered in the FORMAPROD training programme.

80. UNICEF WASH programme 2015-2019

- The aim of UNICEF's WASH programme is to increase equitable and sustainable access to, and use of, safe water and basic sanitation services, and to promote improved hygiene. Concretely, the programme works on various elements to meet the following goals:
 - i. Establish a conducive environment and strengthen political commitment, including funding allocations, and advocate to improve the sector's effectiveness and to develop sustainable models;
 - ii. Support governmental efforts to improve sectoral coordination in sanitation matters and foster knowledge transfers;
 - iii. Work closely with local communities to implement Community-Led Total Sanitation (CLTS), to improve hygiene practices, and to promote the eradication of open defecation;
 - iv. Support an integrated approach that considers health, nutrition and education by developing complete WASH kits to be used in schools, health centres and nutrition centres and ensuring they are used appropriately by communities; and
 - v. Prioritize the strengthening of Regional Directorates of Water, Sanitation and Hygiene (DREAH) in terms of service planning, budgeting, implementation and monitoring in order to create permanent rural services and to improve regional and local coordination efforts.
- The programme is pursued nationally, regionally and locally. Nationally, UNICEF seeks to strengthen political commitment and the national capacity to legislate, plan and budget for children. Regionally, it seeks to strengthen capacities to ensure the availability of, and equitable access to, services. Locally, UNICEF supports children, families and communities in order to promote knowledge, behavioural changes, demand for services, and opportunities for participation.
- The objective pursued by Madagascar's WASH programme is to increase children's equitable access to safe water, hygiene practices and sanitation services, especially the most disadvantaged children.
- The overall objective of the programme is to increase equitable access to, and use of, safe drinking water, sanitation facilities and healthy environments, and to promote improved hygiene.
- The programme includes five key outcomes:
 - *Development of policies and capacities*: by late 2019, the government increased its commitment and its capacity to legislate, budget, coordinate, deliver, monitor and assess national and regional WASH interventions.

- *WASH in schools and early childhood development centres*: Local institutions have improved their use of drinking water and children, and families have begun to use hand washing with soap and latrines after learning about good hygiene practices meeting WASH facility standards.
- *Sustainable access to drinking water*: the local demand for sustainable sources of drinking water has improved and has been met.
- *Hygiene and sanitation*: all the communities have stopped open defecation, and the use of sanitation facilities and hygiene measures has become generalized.
- *WASH in humanitarian situations*: populations affected by natural disasters have access to water, improved sanitation facilities and appropriate hygiene measures.
- The UNICEF programme targets Analanjirofo, Anosy, Atsimo Andrefana, Androy, Atsimo Atsinanana and Boeny (and provides some support to rural parts of Analamanga). These regions have a population of 5.3 million (25% of the total population).
- Support to DREAH under this programme would benefit from a CCA dimension so that DREAH are better equipped to manage climate change risks, a goal which the LDCF project will tackle. The LDCF project will work closely with the WASH programme to rehabilitate drinking water supply facilities and services in the target communes to make these infrastructures more resilient to the anticipated impacts of climate change.

81. Project for Developing the zebu industry in Madagascar

- This 5.6 million USD project funded by the Malagasy Government through the Public Investment budget will be implemented from 2013 to 2017 in 22 regions, including Atsinanana, Analamanga, Androy, Anosy and Atsimo Andrefana. Its objective is to strengthen zebu livestock productivity and improve their commercialization. To achieve this objective, the project aims to: (i) improve sanitary prophylaxis to lessen mortality rates among calves; (ii) set up a training programme for zebu herders on genetic improvement and species performance; (iii) disseminate participatory grassland management techniques; and (iv) improve advisory support to herders communities.
- Climate change could lead to change in the distribution of plants, the displacement of the localization of the pasture areas and water points, and the reduction of the grazing capacity of pasture areas. These climate related risks could affect the productivity of the zebu industry. The climate risks for the Zebu industry also include the risk of outbreaks of bovine diseases vectors such as the bovine Varroasis, the Rift Valley fever. Unfortunately the livestock breeders do not have the capacities enabling them to face such risks and the livestock supporting actors and decision makers of the sector do not have the required technical capacities to face such risks. Furthermore the capacity building programs of this project does not include building capacity of the sector actors in management of climate changes risks for the zebu industry. The LDCF project will strengthen these aspects and will support the development of improved feeding practices as well as the strengthening and improvement of animal genetics.

82. Emergency Project for the Preservation of Infrastructures and the Reduction of Vulnerability.

- The Sub-component A3 “Capacity Building for Disaster and Risk Reduction” of this project is funded by IDA and will be implemented from 2013 to 2016. The General Directorate for Meteorology (DGM) is in charge of the setting up of a forecast and warning system for flood prevention in the regions of Vatovavy, Fitovinany and Atsimo Atsinanana. This encompasses the purchase and installation of equipment and material for the installation of rainfall and hydrometric stations in the watersheds of the Districts of Vohipeno, Farafangana and Mananjary. Funds allocated to the DGM for the implementation of the above mentioned activities amount to USD 1,300,000. The LDCF project will be in synergy with this project by strengthening the network of agro-

meteorological and hydrometric stations in the intervention regions, thus leading to a better coverage of the territory with agro-meteorological and hydrometric observation systems needed to improve the capacities to predict climate and weather conditions.

83. Emergency Project for Food Security and Social Protection

- The Sub-component A2d “Diffusion of a National Warning System for Flood and Cyclone, and Development of Climate-Resistant Agricultural Infrastructures” is executed under the coordination of the National Irrigation and Watershed Programme and implemented from 2015 to 2017. The DGM is in charge of the following activities:
 - Set up agro-meteorological stations in targeted areas;
 - Set up hydrometric devices in targeted areas;
 - Train local communities on how to use the meteorological information obtained through the installed stations and devices; and
 - Analysis and modelling of the impacts of climate variability on agricultural productivity of target areas.
- To implement these activities, the DGM will receive 470,000 USD. LDCF activities will complement this project, in particular through the improvement of the network of agro-meteorological stations.

Other active projects and programmes

84. AINA

- The Integrated approach to Food Security and Nutrition (AINA) is funded by the European Union over 2013-2016. The programme is managed by a consortium of 7 organizations (AIM, ICCO, PAM, IFAD, GRET, WHH and CARE) under the FAO’s coordination. It intervenes in the Androy, Anosy, Atsimo Andrefana, Atsimo Atsinanana and Atsinanana regions.
- The overall goal of the CARE-run AINA programme component, which has a budget of 1,650,000€ is to help reduce the number of vulnerable families who go hungry in Madagascar. Its specific goal is to improve the food security and nutrition of vulnerable families in the target regions.
- The three expected outcomes of this project are:
 - Significantly increased and diversified food production;
 - Secure availability and access to food by the most vulnerable target households; and
 - Improved nutritional and hygiene practices.
- Through the AINA programme, CARE will carry out the following activities: support the hydraulic systems of small irrigated perimeters and the Drinking water supply (DWS); create FFS; disseminate improved, eco-friendly agro-ecological practices and cultivation techniques; establish effective partnerships between artisan seed producers and professional local service suppliers; and support the development of IGA consistent with the market demand and supported by savings and loan groups and community funds.

85. **EAPAR (Project to Supply Drinking Water and Sanitation to Rural Areas)**. Phase II of this project, funded by the African Development Bank (ADB), is in development. Phase I focused on 8 regions where 650 well boreholes were dug. As part of Phase II, the project will focus on the Androy region. A draft proposal was recently prepared to identify investments in the Androy region, and a detailed proposal will be created to mobilize Phase II funds.

86. **ASARA (Improving Food Security and Farming Revenues)** is an EU-funded programme that intervenes in the Anosy and Androy regions and involves the following organizations: AFDI, AROPA,

AVSF, WHH, and CARE which implements the Regional Fund for Agricultural Development (RFAD) component in the Anosy region. The overall goal of the ASARA programme is to help reduce poverty among rural populations in Southern Tip-Southeastern regions to make them less vulnerable to climate, environmental and/or economic crises. ASARA's specific goals are to: (i) improve the food product self-sufficiency of households by increasing production and reducing losses; and (ii) increasing the agricultural revenues of farming operations by developing IGA. The ASARA programme will therefore act on both the availability and accessibility of food security dimensions. The three priorities consistent with these goals are to: (i) improve the coverage of savings and loan services among farming populations; (ii) make the RFAD operational in the intervention area; and (iii) improve the environment of producers.

87. **Developing value chains in Southeastern Madagascar.** This GIZ project is funded by the EU's ASARA program, with the GIZ acting as the delegated partner for Part 3 of ASARA on value chains. Sectors supported by this project include honey, goat and bean production. This component is implemented in three regions over 2012-2016: Anosy, Androy and Atsimo Atsinanana. In order to create synergies, the LDCF project will offer priority support to the same sectors as the GIZ project when setting up FFS in the Anosy and Androy regions.
88. **The WASH Coalition.** This coalition was set up in Madagascar by the Water Supply and Sanitation Collaboration Council. Its Madagascan name is *Diorano Wash*. Organizations that work on water and sanitation issues at the national level must be coalition members and adhere to its charter, which follows rules established under the Water Code.
89. **Global Climate Change Alliance (GCCA).** A new GCCA project will soon be created in Madagascar. It will receive 8 million euros in funding. Technical support could be provided by the BNCC as part of this GCCA. The second phase will focus on strengthening the capacities of players and supporting actions at the communal level. Intervention areas were identified in November 2014 during a feasibility mission.
90. **The PGM-E (German-Madagascan Programme for the Environment).** This programme is financed by the Federal Ministry for Economic Cooperation and Development (BMZ) and is implemented by the GIZ and the German Development Bank (KfW) over the 2005-2014 period; it seeks to work in selected regions to improve the sustainable use of natural resources by non-State players from the world of civil society, as well as private environmental and domestic energy firms. Among other things, the programme seeks to:
 - Foster a national political dialogue on policy orientation and effective interactions between the State, the private sector, and civil society regarding environmental matters;
 - Decentralize the management and governance of natural resources;
 - Promote the decentralized governance of natural resources; and
 - Use renewable energy sources to provide electricity to rural areas.One success story of this programme is the GIZ-led village reforestation project, which reforested a total of 7,000 hectares. Organizational players increased their capacities and can now effectively promote environmental themes by creating a national debate. As expected, the natural resource management activities of communes and rural populations have also been effective at the local level.
91. **The Sectoral Agricultural, Livestock and Fishing Programme (PSAEP) 2014-2025.** The PSAEP aims to improve initiative coordination and synergy through the establishment of a new partnership framework that is based on the shared vision and collective responsibility of agricultural, livestock and fishing stakeholders. The PSAEP will be executed over a 12-year period, from 2014 to 2025, and will include three phases: the post-crisis recovery phase (2014-2016), the interim phase (2016- 2020) and the fly phase (2020-2025). The PSAEP's central core is comprised of representatives from 3 key ministries (responsible for agriculture, livestock and fishing), the private sector, agricultural NGOs, Farming

Organizations, TFP, and the Rural Development Policy Unit. The phase now underway involves formulating the policy letter to be shared by the three Agriculture, Livestock and Fishing sub-sectors, and the PSAEP document, including action priorities, strategies and programmes. Madagascar will then finalize its PNIAEP (National Agricultural, Livestock and Fishing Investment Plan) and define a coordination and monitoring and evaluation (M&E) framework.

92. None of the development projects underway in Madagascar currently consider climate change, improving the resilience of local communities, adopting an ecosystemic and inter-sectoral approach, or producing agro-meteorological data and equipment. Combining all of these considerations is the added value which the LDCF proposes to bring to the table. Collaboration between players of these initiatives and the LDCF project will include sharing progress reports, best practices, and lessons learned.

Coordination with other initiatives financed by the GEF

93. The proposed project is also consistent with CCA initiatives financed by the GEF in Madagascar, i.e.: “Enabling Climate Resilience in the Agriculture Sector in the Southwest Region of Madagascar” (PRIASO), implemented by the African Development Bank, and “Adapting Coastal Zone Management to Climate Change in Madagascar Considering Ecosystem and Livelihoods”, implemented by UNEP. Synergies between these initiatives are made through their respective execution agencies, which are also involved in the proposed LDCF project, i.e. the Regional Directorate of Rural Development (DRDR) of Atsimo Andrefana for the former project, and the BNCC for the latter. The DRDR of Atsimo Andrefana will coordinate efforts related to planning, implementing and monitoring PRIASO and project activities, especially for those aimed at increasing the adaptation capacities of rural development institutions in the Atsimo Andrefana region, as set forth in the first part of this project. As the agency responsible for coordinating climate change-related interventions, the BNCC will ensure the synergy and complementarity of project activities with those of the adaptation project in coastal areas. These areas of complementarity will involve strengthening the institutional and technical climate risk management capacities of ministries responsible for agriculture, the environment, forests, livestock, fishing, water and sanitation, and their decentralized directorates (Component 1), and disseminating climate change-resilient agro-sylvo-pastoral, fishery and water management technologies in coastal areas (Output 3.1).
94. The GEF also support several non-CCA projects in Madagascar in the areas of sustainable land management, watershed management, rural small hydro, and biodiversity conservation. Most of these projects are executed by the MEEMF who will oversee coordination between the different projects funded. UNDP will also play a key role in coordinating activities between the different projects for which it acts as implementing agency. These include the Madagascar's Network of Managed Resource Protected Areas Project and the Landscape Approach to Conserving and Managing Threatened Biodiversity in Madagascar project with a Focus on the Atsimo-Andrefana Spiny and Dry Forest Landscape. The key stakeholders involved in these projects will be attending the project inception workshop that will be held during the first two months of project start, and to any subsequent national workshops that may be organised during the course of the project implementation.
95. The Project Manager, the Chief Technical Advisor and the Communication Specialist will play a key role in ensuring synergies with other GEF funded projects and in disseminating lessons learned and knowledge gained. A communication strategy will be developed and implemented, identifying key stakeholders to be reached and communication tools to be developed. Guidelines for the documentation and codification of lessons learned, best practices, and experiences will also be developed.

Anticipated benefits at national and local levels

96. Overall, the LDCF project will enable strengthening the climate change resilience of vulnerable communities in order to minimize the negative impacts of climate change on livelihoods.

97. The overall objective of this project directly contributes to Millenium Development Goal (MDG) 1, to eradicate extreme poverty and hunger. More specifically, it will contribute to MDG 1c: Halve, between 1990 and 2015, the proportion of people who suffer from hunger. By adopting specific gender-oriented strategies and considering gender equality throughout the project period, this project will also contribute to MDG3 to promote gender equality and empower women. Furthermore, through outputs 1.3 and 3.3, this project will directly contribute to MDG7.C to halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation.
98. By promoting climate-resilient agro-sylvo-pastoral, fishery and water management technologies, this project will directly contribute to Sustainable Development Goal (SDG) 2 to end hunger, achieve food security and improved nutrition and promote sustainable agriculture; SDG 6 to ensure availability and sustainable management of water and sanitation for all; and SDG 13 to take urgent action to combat climate change and its impacts. It will also contribute to SDG 5 to achieve gender equality and empower all women and girls.
99. This project will directly contribute to create and promote jobs, by contracting construction companies for installing agro-meteorological infrastructures and strengthening the resilience of existing water infrastructures, by promoting the recruitment and training of extension officers to supervise FFS, by promoting income generating activities to 3000 households and by working with active seed multipliers and distribution organization, among others.
100. At the national level, the LDCF project will enable strengthening the capacities of sectoral regional directorates, decentralized services, local authorities, NGOs and local organizations by creating training and awareness programmes on climate change. Creating awareness among decision-makers is a fundamental step towards helping Madagascar invest in and promote CCA using a multidisciplinary and ecosystemic approach in multiple sectors.
101. The project will enable operationalizing the “National Climate Change Strategy-Agricultural, Livestock and Fishing Sector” (SN-CC-AEP), which will foster the climate change resilience of these three sectors. The LDCF project will also foster the development of implementation decrees of the amended Water Code in order to make CCA an integral part of the country’s water management and sanitation mechanisms and approaches.
102. One component of the LDCF project seeks to strengthen the agro-meteorological sector. The project will help improve agro-meteorological infrastructure networks in the five intervention areas. It will also seek to strengthen the General Directorate of Meteorology (DGM)’s technical and human capacities at the national level, which will enable increasing the country’s data collection and analysis capacity, while ensuring that agro-meteorological products adequately meet local needs. This component will thus enable strengthening Madagascar’s capacity to deal with climate change and extreme weather events and to limit the impacts of climate change on local livelihoods.
103. The LDCF project will also produce and disseminate lessons learned in order to inform future development initiatives in Madagascar.
104. At the communal level, the LDCF project will make CCA an integral part of the texts and budgets of local development documents such as Communal Development Plans (CDP), Water and Sanitation Blueprints (SDEA) and Water and Sanitation Communal Development Plans (WSCDP) so that communes have the political and technical means to effectively implement CCA activities.
105. At the local level, the project will seek to implement concrete CCA measures in the agro-sylvo-pastoral, fishery and water management sectors. It will disseminate climate change-resilient technologies in these sectors to at least 3,000 local producers by establishing 120 FFS and will increase the resilience of drinking water services and conveyance infrastructures in the target communities. Local expertise in these technologies will be developed by training 80 FFS facilitators. The 3,000 producers participating in the FFS will also receive training on the collection and interpretation of agro-meteorological data and

products, which will enable them to adapt their practices to climate forecasts. The project will thus enable deploying a critical mass of producers using climate change-resilient techniques, thereby limiting the vulnerability which climate risks pose on their livelihoods.

106. The LDCF project will support the widespread distribution of improved seeds to make them more accessible to local producers. A Public-Private Partnership (PPP) will also be established to generate business opportunities and additional income for the local private sector.
107. Finally, the LDCF project will identify and implement IGA and promising climate-resilient lines of work for approximately 3,000 households, which can be seized by local communities, efforts which will be facilitated by increasing their access to credit.

Consideration of the gender dimension

108. In Madagascar, like in most countries, women generally earn less than men and have fewer opportunities than men. Despite their innovation and leadership skills, women have historically been kept away from local and national decision-making processes. In order to improve local climate change resilience and adaptation capacities, it is therefore essential that gender-specific strategies be identified to ensure that women are included in identified initiatives.
109. Women in the project intervention regions have limited decision-making power and have a limited ability to own or accumulate assets. This trend is perpetuated by estate mechanisms which prevent women and children from inheriting substantial assets. The same holds true for matrimonial systems which allow polygamy but which often result in separation. It is estimated that more than half of all marriages result in separation, leaving many women as the sole providers of their households. Female heads of households generally lose most of their resources and rarely own irrigated land.
110. In recent years, women's workloads have increased as they have become more involved in livelihood activities. They now perform agricultural tasks alongside men, in addition to fulfilling their household duties and working on other IGA.
111. Despite their crop work, women rarely have a say in how their household's farming activities are run or how their household revenues are spent. While they can choose how to manage their own IGA, they do not necessarily have a say in how the money they earn is spent.
112. Women's participation in community forums is extremely limited. Women say they aren't invited to meetings or are too intimidated to speak. There are also very few women who work in local administration groups or governments. Illiteracy is another factor that keeps women from being involved in social and community groups.
113. Women are even more vulnerable to climate change due to their key role at home and within the community. They must obtain water and fuel wood and take care of their vegetable gardens and children's health.
114. The proposed project activities will not only address differences between sexes, but will strive to reduce gender inequality by making women more autonomous and encouraging them to become more involved. Gender equality will be considered throughout the project period. The training provided through Component 1 will put a special focus on women working in recipient institutions. All participatory processes organized through the project will seek to integrate women in order to support and increase their participation in local decision-making processes.
115. Women will be an integral part of the target groups during the production of agro-meteorological products and services to ensure these best meet their needs.
116. Component 3 of the project will seek to integrate a significant percentage of women in activities related to transferring CCA measures and technologies to local communities. For example, at least 1,200 women

(40% of participants) will take part in FFS training modules and at least 32 women (40% of participants) will be trained as FFS facilitators. Some of the techniques and measures disseminated through the FFS will specifically target women, such as improved seeds and techniques for small-scale market gardens and livestock farms, etc. Women will especially benefit from measures to strengthen the resilience of water and sanitation services, as they are typically the ones who are responsible for obtaining drinking water for their households. This duty will be facilitated by the availability of reliable water and sanitation facilities that can meet their household's drinking water needs, even in the context of climate change. There will also be a special focus on women during processes to identify IGA, where they will represent at least 30% of the participants, and during activities to help communities access new financial products adapted to climate change.

117. To ensure that gender is considered, gender-specific (AMAT GEF-6) indicators will be used to monitor the entire project.

UNDP Comparative Advantage

118. The project strategy is consistent with the Country Programme Action Plan (CPAP) 2015-2019. This project is especially consistent Outcome 3. "National and local institutions and players are now using tools and mechanisms to facilitate the achievement of MDG/SDG and to promote more effective development" and Outcome 4. "Structural transformation, strengthened sustainable production capacities, and sound environmental governance have effectively fostered the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth."

119. The Project Strategy is also consistent with the UNDP's 2015-2019 Country Programme Document (CPD) for Madagascar, which seeks to pursue targeted activities in order to lessen, adapt and list the effects of disasters and climate change and to strengthen local resilience capacities, with a specific focus on women and children. The LDCF project is a perfect fit with the following CPF products:

- Outcome 3. National and local institutions and players have adopted appropriate systems providing for the structural transformation and strengthening of sustainable production capacities, favouring the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth; and
- Outcome 4. Territorial and local communities have developed the capacities, means, institutional structures, operational frameworks and skills to foster resilience in the face of a crisis (economic, climate change, natural disasters), to effectively deal with its aftermath, and to promote local development by meeting publicly expressed needs.

120. In keeping with the Madagascar Action Plan (MAP) 2007- 2012, the country's then reference development strategy, the UNDP's Country Programme for the 2008-2011 period was extended once until 2013 and then again until December 2014, after the political crisis. The evolving context had led the UNDP and its country team (UNCT) to adjust their assistance modalities in implementing the Policy Committee's decision. The UNDAF's evaluation of three of the preceding CPD outcomes and other programme and project evaluation showed that, despite the extended crisis, the adjustments made by the Office and the programme approach adopted enabled the UNDP to significantly, and in many ways, contribute to progress made at the national level.

121. The UNDP's support in regards to the environment, climate change and disaster risk management provided the country with a Risk and Disaster Management (RDM) situational overview through an in-depth evaluation of national agency capacities responsible for Disaster Risk Reduction (DRR), climate change, and the national DRR plan. At the national level, the UNDP's support also resulted in an updated national contingency plan and a revised National Risk and Disaster Management Strategy. With stronger capacities at various levels, the communes and the *Fokontany* now have DRR plans. Training curricula on DRR are now available and taught in primary and secondary schools, and RDM simulation exercises are conducted to better prepare institutions and the community.

122. The UNDP has helped Madagascar develop and implement the systemic and institutional management of natural disasters and climate risks since 2008. The country has thus been able to pursue various initiatives to make ecosystems more apt to act as a natural barrier to natural disasters. This support has made the UNDP's Madagascar office a privileged risk and disaster management partner. The Goal WASH project and other water and sanitation interventions executed through other UNDP projects since 2008 have also helped develop solid skills and experience within the country office. The UNDP's Madagascar office, via the GEF's Small Grants Programme, has also supported several pilot initiatives to develop IGA alternatives related to CCA and reducing climate change impacts. Many interventions carried out by the UNDP's Madagascar office to promote national cooperation have led to the development of skills and experience in food security, sustainable energy, participatory local governance, CCA, water and sanitation, biodiversity conservation, poverty reduction, inclusive financing and development, and the mainstream integration of gender equality in national projects and programmes.
123. In addition, four programme agents, including 2 senior managers, work on the Environmental Unit of the UNDP's Madagascar office. This unit enjoys support from units responsible for procurement, finance and human resources, and from senior managers of the UNDP's Madagascar office, which has built solid working relationships with national and international stakeholders of this project. The Environmental Unit of the UNDP's Madagascar office also enjoys support from the UNDP-GEF's Regional Coordination Unit in Addis-Abeba (including a French-speaking regional technical consultant), from the Stockholm International Water Institute (SIWI) in Stockholm, and from managers who can support the implementation, monitoring and evaluation of the project.

2.4 Project Objective, Outcomes, Outputs and Activities

124. The overall objective of the project is to strengthen the capacities of vulnerable communities of Androy, Anosy, Atsinanana, Analamanga and Atsimo-Andrefana to cope with the additional risks posed by climate change and variability on livelihood opportunities.

125. To reach this goal, the expected outcomes of the project are as follows:

- **Outcome 1:** The institutional and technical climate risk management capacities of ministries responsible for agriculture, the environment, forests, livestock, fishing, water and sanitation, and meteorology and their decentralized directorates, the community organizations and people of Androy, Anosy, Atsimo-Andrefana, Analamanga and Atsinanana, have been strengthened;
- **Outcome 2:** Agro-meteorological and hydraulic information has been structured and disseminated to effectively support the decision-making of relevant players and responsible ministries and communities in the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions; and
- **Outcome 3:** Adaptation measures and technologies have been transferred to, and implemented in, the 11 target communes of the Androy, Anosy, Atsimo Andrefana, Analamanga, and Atsinanana regions.

126. The first outcome aims to increase the awareness and strengthen the capacities of decision-makers, technicians and vulnerable communities in CCA terms in order to build a solid political framework, including CCA components and a critical technical capacity upon which the implementation of other project components can be based. This first outcome will enable setting up the institutional, structural and technical foundations needed to disseminate and appropriate adaptation measures and technologies. The second outcome aims to ensure the collection and production of reliable climate and meteorological information. Disseminating this information in a manner that meets the needs of end users will foster informed decision-making in regards to climate and meteorological conditions. Finally, the third outcome aims to transfer adaptation measures, options and technologies to vulnerable communities in the selected regions using a participatory approach, the strengthened capacities achieved through the first component, and the agro-meteorological information and forecasts produced through the second component. Expected outputs and proposed project activities are present below.

Component 1: Strengthening of the adaptation capacities of rural development institutions

Outcome 1: The institutional and technical climate risk management capacities of ministries responsible for agriculture, the environment, forests, livestock, fishing, water and sanitation, and meteorology and their decentralized directorates, the community organizations and people of Androy, Anosy, Atsimo-Andrefana, Analamanga and Atsinanana, have been strengthened.

Baseline situation:

127. During the 5-year political crisis that rocked Madagascar and exacted a heavy toll on its economy and the standard of life of its people, the UNDP played with various community development approaches consistent with sustainable development. The UNDP supported the implementation of the Sustainable Livelihood and Poverty Reduction (MSD-LCP) project, which enabled setting up information, guidance and support centres to help people access job and IGA opportunities. This initiative also helped political institutions (Ministries) increase their capacity to help the economy recover and to pursue other awareness cooperative movement activities with a view to promoting other work and intervention models designed for companies. This initiative also promoted the development and validation of Water and Sanitation Blueprints (SDEA) for the country's 3 southern (south-western, mid-western and south-eastern) watershed agencies. While these blueprints are essential tools for improving the management of

watershed-related water and sanitation management practices, they do not include comprehensive projections on climate change and their specific effects on water resources in the 3 target watersheds, nor do they include measures aimed at preventing and lessening these effects.

128. Over 2015-2019 and on the basis of the UNDAF 2015-2019, the UNDP's actions will provide continuity for those undertaken as part of the MSD-LCP project and will be supported by a new Sustainable Livelihood (MSD) project to be implemented in vulnerable communities in Analamanga, Androy, Anosy and Atsimo Andrefana. Nine communes have been initially targeted to foster the development of jobs, IGA, and to seize economic and social promotion opportunities. This project will also help interim organizations develop a more inclusive approach to economic development. The blueprints and integrated database of Madagascar's southern water resources will also be disseminated and enriched. However, the proposed job and IGA do not include specific provisions for managing climate risks that could negatively impact the achievement of MSD goals and expected outcomes. The LDCF project will thus support the implementation of CCA activities to help manage the impacts of climate change on MSD project activities.
129. Between 2009 and 2014, AROPA supported the structuring of Producer Organizations (PO) and the professionalization of producers and helped implement the national services for farmers strategy, among other activities. This project intervenes in 5 Regions, including Anosy and Androy, and will be implemented until 2017. To date, AROPA has helped structure around 48,000 smallholder farmers, 28 Regional PO and 6 Dairy PO. These PO benefitted from training on association life, finance and administration management, PO management, professionalization, etc. This project will also receive institutional and technical support from the MinAgri's National Directorate Supporting the Organization of Agricultural Sectors (DAOF) and from the regional services of the MinAgri, the MinEL, the MEEMF and the MRHP.
130. While the structural and institutional support lent by AROPA is indispensable and relevant to the rural development of recipient regions and provides management and technical capacities, AROPA must be enriched with a climate change resilience dimension to ensure these PO and government structures have the capacity to implement and disseminate CCA measures and technologies.
131. Finally, UNICEF's WASH programme aims to help the DREAH develop plans and budgets to bolster governmental water and sanitation interventions. However, this very necessary support should also include increasing capacities for assessing water resource-related climate risks and for identifying, economically assessing, prioritizing and integrating appropriate adaptation measures in the plans and budgets of watershed agencies and other institutions responsible for water resource management.

Alternative:

132. To reach this first expected outcome, the LDCF project will seek to use the structural and institutional foundations of Communes, PO, family farms and the regional services of the MinAgri, MinEL, MEEMF, MRHP and the ministry of water, sanitation and hygiene established through the support mechanisms of the MSD-LCP and AROPA projects, and to strengthen their specific strategic, institutional and technical adaptation capacities. This additional support will enable developing support capacities dedicated to implementing adaptation measures and technologies.
133. LDCF project financing will enable developing climate change training modules and implementing a training and awareness programme for regional, communal and community institutions, on climate change, potential adaptation measures and technologies, and their integration in development plans.
134. Beyond capacity-building, the LDCF project will enable further considering the climate change dimension in regional and national development policies and strategies. This integration will more specifically relate to the Communal Development Plans (CDP) of target communes, Water and Sanitation Communal Development Plans (WSCDP), and the three Water and Sanitation Blueprints

(SDEA) developed with the support of the Sustainable Livelihood (MSD) project. In this regard, the LDCF project will complement the MSD project and support the dissemination and enrichment of SDEA through an improved, upstream integration of the climate change dimension. The project will also support the operationalization of the SN-CC-AEP and the integration of climate change in the implementation decree of the Water Code, which is currently being revised.

135. Not only will LDCF financing foster further integration of aspects related to climate change in SDEA, CDP and WSCDP, in synergy with the above-mentioned projects, but it will enable developing and implementing a climate change training and awareness programme for regional and local governments, technicians, NGOs, and community organizations.

Expected Output:

136. **Output 1.1:** Technical authorities and services, i.e. 30 representatives from the Sectoral Regional Directorates (BNCC, DGM, DGAgri, DGE, SNGF), 30 representatives per Regional Directorate (DREAH, DRDR, DREEF, DRRHP, DIREL), 10 local administrators per commune, and 20 representatives per commune from professional and community organizations and NGOs that support rural development, will receive training and information on climate risk management.

- Activity 1.1.1: Identify and implement a training programme for political decision-makers, senior managers and technicians from the Regional Directorates concerned. The BNCC will coordinate the definition of this training programme and oversee its logistical organization in collaboration with the Regional Directorate of Environment, Ecology and Forests (DREEF).
 - (i) Identify the capacity-building needs of political decision-makers, senior managers and technicians from the Regional Directorates concerned;
 - (ii) Develop five climate risk management training modules on the following aspects:
 - a. Introduction to climate change: current climate trend and variability situation, forecast climate changes in Madagascar, with regional specifics, resulting climate risks, climate change effects on key sectors and thoughts on the vulnerability levels of these sectors, etc.;
 - b. Assessment of climate risks and vulnerability;
 - c. Adaptation options, measures and technologies identified using a multidisciplinary, ecosystemic approach for each region;
 - d. Economic assessment and prioritization of adaptation options; and
 - e. Introduction to the integration processes of the climate change dimension in local development plans and their related budgets.
 - (iii) Develop training tools.
 - (iv) Plan and organize a national workshop for some 30 representatives from General Directorates and Sectoral Technical Directorates.
 - (v) Plan and organize 2-3 day workshops for each region, and organize group activities. Some 30 representatives will be trained per region.
- Activity 1.1.2: Define and implement a climate change awareness programme for local governments, NGOs and community organizations that actively work in the 11 intervention communes³⁷. For each commune, around 10 local administrators and around 20 representatives from professional and community organizations and local NGOs will be trained. The BNCC will coordinate the definition of this training programme and the DREEF will oversee the logistical organization of awareness workshops.

³⁷ Communities from additional communes supported by UNDP, namely Antaritarika and Marolinta in Androy Region, Sarisambo in Anosy Region, Saint Augustin and Milenaka in Atsimo Andrefana Region, and Mahitsy in Analamanga Region, will also benefit from this climate change awareness programme

- (i) Develop a climate change awareness kit to be used by the DREEF and by regional and local associations and NGOs.
- (ii) Plan and organize awareness workshops in each target commune and promote concepts to include the climate change dimension in local development strategies.

137. **Output 1.2:** The local development plans of the 11 target communes and their related budgetary frameworks have been reviewed to incorporate climate risks and incentive measures fostering CCA.

The DREEF, in close collaboration with the Regions and the Regional Directorates of Rural Development (DRDR), will coordinate this support.

- **Activity 1.2.1:** Upgrade and/or support the development of Communal Development Plans (CDP) in the 11 target communes in order to integrate the climate change component.
 - (i) Participatory identification of needs and adaptation priorities by sector and by commune;
 - (ii) Economically assess and prioritize adaptation options;
 - (iii) Implement the Climate Proofing for Development tool designed by GIZ to identify climate risks, define the vulnerability level of CDP, and select priority adaptation measures to be included in the CDP;
 - (iv) Update/develop CDP by including the needs and priorities of the communes and priority adaptation measures.
- **Activity 1.2.2:** Develop CDP-related budgetary frameworks and investment plans that include a climate change component.

138. **Output 1.3:** The Water and Sanitation Blueprints (SDEA) of Madagascar's Southwestern, Midwestern and Southeastern watersheds have been revised with a view to including climate risks and relevant adaptation options and their dissemination; and the Water and Sanitation Communal Development Plans (WSCDP) and related budgets have been developed in the 11 target communes with a view to identifying, prioritizing and planning water and sanitation-related adaptation measures which include a climate change component at the communal level.

139. To achieve this output, the DREAH, in close collaboration with the UNICEF, will coordinate the implementation by the communes of the following activities.

- **Activity 1.3.1:** Revision, integration of a climate change dimension, and operationalization/dissemination of the 3 SDEA developed in 2011:
 - (i) Analyze the 3 SDEA in order to identify gaps with respect to the management of climate risks which may negatively affect the optimality of water supply and sanitation systems;
 - (ii) Participatory identification (through regional consultations and workshops) of recommendations for the revision and integration of climate change-related considerations in the SDEA;
 - (iii) Update and disseminate the SDEA.
- **Activity 1.3.2:** Include climate change in the development of WSCDP and their related budgets in the 11 target communes. The WSCDP is an important tool when it comes to planning water and sanitation-related activities at the communal level. The WSCDP revision-development process will follow the same methodology as the SDEA methodology described above.

140. **Output 1.4:** The National Climate Change Strategy - Agricultural, Livestock and Fishing Sector (SN-CC-AEP) has been operationalized, and a climate change perspective has been included in the implementation decrees of the revised Water and Sanitation Code.

141. These interventions will be respectively coordinated by the MinAgri and the Ministry of Water, Sanitation and Hygiene.

- Activity 1.4.1: Support the operationalization of the SN-CC-AEP: develop an action plan for its implementation.
- Activity 1.4.2: Support the development of Water Code's implementation decrees including a climate change perspective.

Cost of Expected Outcome 1:

GEF/LDCF requested: 552,397 USD

Co-financing amounts mobilized: 12,000,000 USD

Component 2: Production and dissemination of agro-meteorological and hydraulic information for appropriate decision-making in the area of rural development

Outcome 2: Agro-meteorological and hydraulic information has been structured and disseminated to effectively support the decision-making of relevant players, responsible ministries, and communities in the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions, with a view to making livelihoods and living conditions more resilient to climate risks.

Baseline Situation

142. The integration of climate risks and extreme weather events in rural development policies and strategies, and the development of adaptation strategies, must be supported by relevant meteorological information and weather forecasts. While the General Directorate of Meteorology (DGM) has national meteorology, rainfall, hydrology and climatology stations, the current facilities do not cover all project intervention areas and do not enable collecting enough quality data to systematically and effectively document decisions made in sectors vulnerable to climate risks³⁸.

143. The Emergency Project for the Preservation of Infrastructures and the Reduction of Vulnerability as well as the Emergency Project for Food Security and Social Protection both aim at strengthening the network of rainfall, hydrometric and agro-meteorological stations in their intervention region. However, additional equipment is required to improve the climate, meteorological and hydrometric monitoring network in the LDCF project intervention areas in order to conduct specific downscaled climate modelling for those areas. Furthermore, the DGM does not appear to have enough internal equipment to deal with climate change at this time. While climate change analysis is an integral part of the DGM's purview, its capacities must be strengthened for it to be more effective. An information transmission system would also be needed to ensure that any information produced is thoroughly understood and used to inform decisions made in vulnerable areas.

144. As mentioned above, the MSD, AROPA and UNICEF Wash projects support the development of community initiatives aimed at improving the living conditions of target communities, increasing agricultural production, improving access to drinking water and providing more sustainable livelihoods. As long as technicians, local decision-makers and farmers do not have access to meteorological, agro-meteorological and hydrometric information and forecasts which are relevant to their area and needs, the efficiency and effectiveness of the supported measures disseminated through these projects will not be optimized, as local decision-making will be limited by the weakness of the meteorological factor.

Alternative

145. The effects of the LDCF project on the General Directorate of Meteorology (DGM) are highly synergistic: on the one hand, DGM personnel can be used to implement Component 2; and on the other, LDCF financing will strengthen the DGM's facilities, internal structure, human capacities and data. LDCF financing will also strengthen the DGM's observation network and provide for a budgeted

³⁸ Appendix 6 provides additional information on Madagascar's hydro-meteorological network.

ongoing quality control and maintenance plan. Component 2 of the project will also serve to restructure the DGM in order to better integrate climate change analyses under the organization's purview. The DGM will improve its capacity to collect relevant, adapted climate and meteorological data, to analyze such data, to produce decision-making tools adapted to end users, and to work with other national and regional climate change institutions.

146. Finally, based on the data and observations collected, the project will promote the development and dissemination of products and services adapted to local decision-makers, technicians, rural communities and producers, so these can be effectively used in the field.

147. Given the DGM's current human and material resources, this option would be applied in 3 southern regions (Atsimo Andrefana, Androy and Anosy). It would consist of a pilot phase that can later be reproduced and replicated in other regions, including Analamanga and Atsinanana.

Expected Outputs:

148. **Output 2.1:** Two agro-meteorological stations in Ampanihy and Amboasary-Sud, two synoptic stations in Betroka and Faux-Cap, three climatology stations in Behara, Beroroha and Sakaraha, and 10 hydrometric stations for the watersheds of the Mandrare, Menarandra, Linta, Onilay and Fiherenana rivers have been set up, and the interregional meteorology service in Toliara, strengthened.

The DGM will coordinate the following activities:

- Activity 2.1.1 Set up and equip 17 additional stations to support the implementation of the Global Climate Observing System (GCOS) based on the results of the PPG and the regional plan to improve the network of agro-meteorological, synoptic, climate and hydrometric stations, which will be developed beforehand.
- Activity 2.1.2: Set up and maintain equipment that can process data for the interregional meteorology service in Toliara to ensure it can serve as the regional data centre responsible for technical aspects, maintenance and data transmission to the DGM in Antananarivo.
- Activity 2.1.3: Set up an ongoing data maintenance and quality control plan. The project will initially support maintenance costs, but these costs will be progressively included in the DGM's budget to ensure the sustainability of its financing at the end of the project.

Output 2.2: A service dedicated to conducting downscaled climate change modelling and sector impacts analysis has been created within the DGM and its technical and human capacities have been strengthened.

The DGM will coordinate the following activities:

- Activity 2.2.1: Provide technical support to create a service dedicated to conducting downscaled climate change modelling and sector impacts analysis within the DGM.
 - (i) Assess climate change-related service needs within the framework of DGM skills;
 - (ii) Support the restructuring process, including the training and development of existing personnel and the recruitment of new people; and
 - (iii) Update and reorganize the DGM's annual budget to modernize its services.
- Activity 2.2.2: Develop and implement a training and development strategy to increase the DGM's capacities.
- Activity 2.2.3: Identify and set up technical infrastructures (computer material, software, printers, etc.) required by the DGM to conduct climate change analyses.

149. **Output 2.3:** DGM and user capacities to analyze agro-meteorological and hydrological data have been strengthened.

The DGM will coordinate the following activities:

- Activity 2.3.1: Implement the capacity training and development strategy of the DGM and the target groups identified in Activity 2.2.2.
- Activity 2.3.2: Identify and set up technical infrastructures required by the DGM to meet the service demand.
- Activity 2.3.3: Set up a platform of users identified as targets during the needs analysis study to be conducted as part of Activity 2.4.1. This user platform could take the form of a committee to manage user feedback and requests regarding the agro-meteorological products provided by the DGM, and would support the Global Framework of Climate Services (GFCS).

150. **Output 2.4**: A system to produce and disseminate agro-meteorological information has been designed and put into service.

- Activity 2.4.1: Conduct an analysis on: (i) the needs of target groups in regards to agro-meteorological products and services; and (ii) the needs of the private sector and the purchasing potential of agro-meteorological products and services.
- Activity 2.4.2: Design the products and services to be developed by the DGM based on the needs analysis conducted in Activity 2.4.1
- Activity 2.4.3: Create a development and dissemination plan for the DGM's different products:
 - (i) Formulate a development plan based on the results, including a distribution strategy and financing plan for the different products;
 - (ii) Test the content and effectiveness of the distribution products and strategy with the target groups;
 - (iii) Improve and revise the development plan accordingly.
- Activity 2.4.4: Develop and distribute support products and services (introduction to products, training, etc.), ensure that all the identified targets have received the products and that they meet the private sector demand, and gather feedback on the products to assess their impact.

Cost of Expected Outcome 2:

GEF/LDC requested: 1,000,000 USD

Co-financing amounts mobilized: 15,000,000 USD

Component 3: Introduction of communal adaptation strategies to the Androy, Anosy, Atsimo Andrefana, Analamanga, and Atsinanana regions.

Outcome 3: Adaptation measures and technologies have been transferred to, and implemented in, the 11 target communes of the Androy, Anosy, Atsimo Andrefana, Analamanga, and Atsinanana regions.

Baseline Situation:

151. To fight poverty and improve the living conditions of the most vulnerable populations in the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions, the Madagascar government, with the support of its technical and financial partners, is currently implementing various initiatives aimed at improving livelihoods and reducing vulnerability to poverty in these regions. The projects presented below are part of these initiatives.

152. In addition to activities mentioned in the first Component, the Sustainable Livelihood Project (MSD) supports the capitalization of improved agricultural techniques, including sustainable agro-ecological and pastoral practices adapted to the specific conditions of Southern Madagascar. However, these practices

do not consider changing climate conditions over the mid- and long-term. This project also promotes female entrepreneurship by fostering skills development in the export field.

153. Between 2009 and 2014, the AROPA project supported some 48,000 smallholder farmers in 13 agricultural sectors, including rice, corn, coffee, fish, *gasy* chicken, potatoes, beans, onions, peanuts, the use of shared agricultural material, pork, honey and litchi, and provided technical, economic and organizational advice. To this end, AROPA set up training to improve smallholder farmers' techniques and productivity. By the end of December 2013, AROPA had set up 422 FFS to strengthen local advisory exchanges between smallholder farmers (3 to 6 FFS set up by supported commune). However, the training provided in these FFS does not specifically address CCA options and measures, a dimension that could be strengthened in the training curricula established. This project also supports professional organizations in order to give them permanent access to outputs.
154. FORMAPROD, a professional training programme that seeks to increase agricultural productivity, supports producers through a system of continuous training and system to access financial services. FFS are used in this project as a training mechanism, so there is already an elaborate training system in place, particularly in the Analamanga and Atsinanana regions. The LDCF project's contribution will focus on further incorporating the climate change dimension in this training system.
155. UNICEF's WASH programme currently finances the construction and rehabilitation of water points in 6 intervention regions, especially Hand Pump Water Wells (HPWW) and Drinking Water Conveyance Systems (DWCS) which include boreholes, immersed pumps, water towers, standposts, etc. These water points serve to improve access to drinking water following a basic development scenario but are not scaled for climate change. UNICEF also promotes Community-Led Total Sanitation (CLTS), an approach designed to change behaviours and strengthen resilience and environmental conservation by reducing open defecation and promote the use of latrines. This approach strives to change behaviours by considering existing cultural barriers with respect to hygiene and sanitation. The scaling of sustainable drinking water supply models also helps make people more resilient to climate change-related floods and droughts.
156. The condition of water and sanitation facilities in the intervention regions was assessed during the project feasibility study and is presented in Appendix 4. Many of these infrastructures are barely functional or non-functional, thus limiting access to drinking water and sanitation. Climate change in the five intervention regions may significantly exacerbate the situation, making access to drinking water and sanitation even more difficult. Indeed, extreme weather events, such as floods, carry solid waste to water, making it more unsanitary. Increasingly frequent cyclones could further destroy facilities that are not scaled to deal with such events. Rising temperatures and droughts increase evaporation, depleting rivers and increasing contaminants, making it even more difficult to access clean drinking water.
157. AROPA supports producers' access to microfinance services. An agreement between the *Association Internationale de Crédit Agricole et Rurale* (International Agricultural and Rural Credit Association) and the FIVOY microfinance institution was signed to expand FIVOY's reach in the Anosy and Androy regions in order to help vulnerable smallholder farmers access local microfinance services. By the end of 2013, 405 smallholder farmers had benefited from 4 types of FIVOY credit arrangements.
158. Finally, the project for the development of the zebu industry aims to improve the productivity and commercialization of zebu livestock, through the improvement of sanitary prophylaxis during calving, a training program for herders on genetic improvement and species performance, the dissemination of participatory grassland management techniques, and the improvement of advisory services provided to herders' communities. However, these different activities don't integrate either climate change considerations, or the potential impact and disruptions it may cause to the livestock sector.

159. These projects would be more effective if the climate change dimension was further incorporated to improve the long-term resilience of local populations. This is the approach the LDCF project proposes to bring to the reference situation.

Alternative

160. LDCF funding would enable setting up an FFS network to popularize climate change-resilient agricultural technologies in the target communes. The FFS curriculum established by the LDCF project could borrow from those already developed by the FORMAPROD project, while including a climate change dimension. This FFS network could use existing structures and organizations that are already active in these fields. The FFS established would be used as a vector to identify, test, validate and disseminate adaptation technologies and measures. The agro-meteorological products and services approach developed in Component 2 of this project would be introduced to the FFS in order to inform producers and increase their capacity to select adapted agricultural practices and measures. This would be a new approach for Madagascar.

161. The heart of the FFS approach resides in encouraging farmers and breeders to actively engage in a participatory process in order to test and adopt CCA practices and technologies. To ensure participants apply what they have learned, the training will be provided by local facilitators. FFS enable farmers and breeders to acquire and consolidate knowledge through observation and experimentation. This form of learning serves to increase their capacity to adapt to climate change, to strengthen the resilience of their practices, to prevent potential conflicts between farmers/breeders, and to lessen land degradation in their area. As part of this project, the FFS concept will teach new resilient practices, such as the use of meteorological data in farmer decision-making processes, the use of resilient seed varieties, the establishment of agricultural infrastructure, integrated pest and disease control, etc. The project will also put a special focus on local women and ensure that they make up 40% of those who attend the FFS and who are trained to become FFS facilitators. Some of the resilience techniques and measures implemented in the FFS will also specifically address the needs of women.

162. The techniques and technologies that will be disseminated through these FFS will include agro-ecological practices that could be directly capitalized in order to complement the Sustainable Livelihoods Project (MSD) and its goal of capitalizing improved agricultural systems and techniques.

163. LDCF funding will also be used to help producers in the target communes to access selected adapted seeds. The LDCF project will work synergistically with the MSD and AROPA projects by increasing the critical mass of producers with permanent access to quality seeds and increasing their access to select adapted seeds with a view to improving the food security of vulnerable communities.

164. As part of its water and sanitation activities, UNICEF's WASH programme seeks to strengthen capacities and to change local behaviours through the CLTS approach and the construction of water and sanitation infrastructures. The LDCF project and UNICEF will work synergistically to increase the climate change resilience of complementary water and sanitation services in the target communes. This will enable the people in these communes to access drinking water and benefit from structural sanitation capacities, which will increase their resilience to potential droughts and/or floods. To strengthen the resilience of water and sanitation services, the project will modernize and rehabilitate existing infrastructures based on identified risks, as doing so will be essential to managing the growing frequency of droughts. UNICEF will coordinate the implementation of these water and sanitation activities. The CLTS approach to changing behaviours currently implemented by UNICEF will also help address growing flood risks by limiting the spread of contaminants. The complementary services that will be modernized and rehabilitated through the proposed project will thus address the drought and flood risks identified during the PPG phase. The project will foster a High Labour Intensity approach in order to promote participation and get as many communities involved in the work to be undertaken. This approach will be a sustainability gauge of the modernized and rehabilitated services.

165. The LDCF project will seek to modernize and to strengthen the resilience of existing water and sanitation services in the intervention regions to facilitate access to drinking water and sanitation facilities, thereby increasing their capacity to deal with the negative impacts of climate change.
166. Finally, the LDCF project will work synergistically with the AROPA project (and Madagascar's Inclusive Financing Support Programme – PAFIM – financed by the UNDP, with which AROPA entered into a partnership agreement to set up 10 local savings and loan groups), which it can build upon to help local producers obtain credit from microfinance institutions. This project will enable FFS-supported producers to access credit in order to implement adaptation initiatives and measures to be identified during FFS training. Both projects will also benefit from mutual lessons learned.
167. The LDCF project will complement the project for the development of the zebu industry through (i) the development of improved feeding practices for zebu livestock, as an alternative to grasslands' reduced production capacity due to climate change, and (ii) the improvement of animal genetics.

Expected Outputs:

168. **Output 3.1:** Climate-resilient agro-sylvo-pastoral, fishery and water management technologies, and advisory support services for resilient agricultural practices have been disseminated to 3,000 producers from the most vulnerable communities (of which 40% are women) in 11 pilot communes of the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions.
169. Activities supporting the achievement of this Output will be coordinated by the Regional Directorates of Rural Development (DRDR) of the 5 target regions and will be implemented in close collaboration with other relevant Regional Directorates, associations and/or regional or local NGOs, with the support of the National Tree Seed Centre (SNGF).
- Activity 3.1.1: Analyze climate-resilient, water-efficient agro-sylvo-pastoral and fishery technologies, adapted to local ecosystemic conditions, including: agro-ecological practices, conservation agriculture, compost use, integrated pest and disease management, erosion control measures, cattle and crop integration, use of fodder in crop rotations, use of adapted seeds, introduction of perennial crops and agro-forestry, cover crops with nitrogen-fixing varieties, options to mitigate the risks posed by pesticides, etc. Some of these adaptation options will specifically target women, while others will specifically target men;
 - Activity 3.1.2: Participatory development of a training curriculum for agro-sylvo-pastoral, fishery and water management activities to be set up in FFS, including climate change considerations;
 - Activity 3.1.3: Train 80 FFS facilitators (40% of whom are female), on climate change-resilient agro-sylvo-pastoral, fishery and water management techniques in the intervention regions;
 - Activity 3.1.4: Set up 120 FFS in the target communes (around 10 FFS per commune in function of the commune area and the number of *Fokontany* targeted), including FFS centered on fishing and aquaculture. Progressively train 3,000 producers (40% of whom are women) on the FFS approach, using the established project curriculum. The training will be provided over an 18 month cycle, with 2 or 3 facilitators per group of up to 30 people;
 - Activity 3.1.5: Disseminate and implement technologies and measures identified in Activity 3.1.1 within the FFS;
 - Activity 3.1.6: Set up quarterly/annual sessions to update the facilitators' skills and knowledge; and
 - Activity 3.1.7: Facilitate communications between FFS through exchange visits and open house days.
170. **Output 3.2:** An input supply chain promoting sustainable, climate-resilient agriculture, supported by seed multiplier groups, NGOs and community organizations, has been established.

- Activity 3.2.1: In partnership with active seed multipliers and distribution organizations (such as GRET/CTAS in the Androy and Anosy regions and the *Maison des Paysans* in the Atsimo Andrefana region) and existing seed producer/multiplier organizations):
 - (i) Select and test plant varieties in FFS in partnership with FOFIFA and other partners;
 - (ii) Progressively introduce in FFS, select adapted seeds already produced by GRET/CTAS and existing seed multiplier groups, including fodder seeds to increase the livestock sector's resilience;
 - (iii) Conduct a study to identify barriers to the wide-scale adoption of adapted varieties and appropriate solutions;
 - (iv) Obtain support from the private sector through a public/private partnership aimed at promoting the direct sale of seeds to FFS by seed producer cooperatives; and
 - (v) Strengthen the existing seed multiplier network in the target regions through partnerships with existing organizations.
- Activity 3.2.2: In partnership with animal species research organizations, and in close collaboration with the General Directorate for Livestock:
 - (i) Help strengthen and improve animal genetics; and
 - (ii) Support the development of improved feeding practices (salt blocks, fodder conservation, etc.).

171. **Output 3.3**: The resilience of priority water and sanitation services in the 11 target communes of Androy, Anosy, Atsimo- Andrefana, Analamanga and Atsinanana has been strengthened and these communities have been made aware of basic sanitation measures and hydro-agricultural and drinking water conveyance facilities with a view to reducing their vulnerability to the expected impacts of climate change.

172. The Regional Directorates of Water, Sanitation and Hygiene (DREAH), in close in collaboration with UNICEF, will coordinate the implementation of the activities below in order to achieve this Output. The drinking water supply infrastructures and services of areas targeted by this project are especially vulnerable to climate change. Less rainfall over only several weeks per year in these areas would have an immediate effect on the availability of water. The resilience of these infrastructures and services will be strengthened in order to increase water resource reserves, limit water losses, improve pumping systems, and protect water points. This work will be carried out with a view to increasing the efficiency of water resource management systems in a context of declining rainfall amounts, and thus available water, over the short, mid- and long-term.

- Activity 3.3.1: Conduct a feasibility study which includes a climate risk assessment and a cost-benefit analysis on infrastructures to modernize and rehabilitate.
- Activity 3.3.2: Based on the feasibility study, strengthen the resilience and sustainable management of the following water supply services and hydro-agricultural and sanitation facilities:
 - Strengthen the resilience of 3 impluviums (rainwater retention tanks) in Imongy (raise low walls, retread and seal leaks) and strengthen the rainwater collection system in private tanks;
 - Strengthen the resilience of impluviums in Tranovaho;
 - Strengthen the resilience of 3 impluviums in Sampona and disseminate the rainwater collection system in private tanks;
 - Disseminate the rainwater collection system in private tanks and strengthen the resilience of a Hand Pump Water Well (HPWW) in Tanandava;
 - Afforest watersheds with a view to protecting the Gravity-Based Drinking Water Conveyance System (GDWCS) of Betatao, in partnership with the Regional Directorates of Environment,

Ecology and Forests (DREEF) concerned and with the National Tree Seed Centre (SNGF)'s support;

- Afforest watersheds in the 5 target regions, including Ambatolotarakely, Betatao, Tranovaho and Betsizaraina, in partnership with the DREEF concerned and with the SNGF's support;
- Strengthen the resilience of the Pump-based Drinking Water Conveyance System (PDWCS) of Soahazo (Analamisampy): set up the pumping zone protection area, change the pump and power generator, and renovate the network and standposts;
- Strengthen the resilience of the irrigation canal in Miary to promote improved water management in a context of less rainfall and available water (rehabilitate water intakes, dredge canals, rehabilitate gates and splitters);
- Strengthen the resilience of 3 HPWW in Manombo and build protection areas;
- Strengthen the resilience of the GDWCS of Mahitsy – District of Ambohidratrimo, and reforest the watershed;
- Strengthen the resilience and dredging of sanitation drains in Eastern Ilaka; and
- Strengthen the resilience of the PDWCS in Betsizaraina: renovate the water tower, standposts, and supply pipes, and build a protection area.

Pursuing these activities via a private-public partnership will also promote the institutional and technical consideration of climate change in water and sanitation infrastructures and make them more resilient.

- Activity 3.3.3: Get the water point committees to provide technical support on the efficient management and maintenance of water and sanitation services in the intervention regions, through awareness sessions and training on selling water, maintaining infrastructures, etc., with a view to helping local communities more effectively manage climate risks.

173. **Output 3.4**: The target vulnerable communities have appropriated the agro-meteorological products and services created and provided through Output 2.4, and have made them part of their agricultural and water management practices thanks to the support and advice provided by the FFS on resilient agriculture and water management practices.

174. The DGM, in collaboration with the General Directorates of Agriculture and Water, and the Decentralized Territorial Units (DTU), will coordinate the following activities.

- Activity 3.4.1: Integrate a training module on the use and application of agro-meteorological products and services (developed in Component 2) for local producers in the FFS curriculum.
- Activity 3.4.2: Set up meteorological and climate observation modules for producers within the FFS, which considers traditional areas of knowledge. The data and results obtained will enable the producers to directly adapt their agricultural practices to the weather and climate provisions, based on the data collected during these modules. The data will also be reported in the national observation system of meteorological and climate data.

175. **Output 3.5**: Access to adapted forms of credit from active microfinance institutions and access to markets by the target communities have been strengthened with a view to developing climate-resilient IGA alternatives for local producers.

- Activity 3.5.1: In partnership with the Regional Fund for Agricultural Development (RFAD), Agricultural Service Centres (CSA) and the other players involved in the 11 target communes, identify promising climate change-resilient IGA and sectors for groups/associations and individual producers (30% of them women) supported by FFS.
- Activity 3.5.2: Analyze credit needs to increase the entrepreneurial capacities of these players and to foster the marketing of products generated, sectoral management, and market access.

- Activity 3.5.3: Support microfinance institutions (Fivoy, Microcred, etc.) in order to develop financial products adapted to the needs of local producers, as identified in Activity 3.5.2.
- Activity 3.5.4: Foster relationships between producers and their organizations and micro-credit agencies (Fivoy, Microcred, etc.). Regional project coordinators will help producer's groups and women's groups access the new, adapted financial products developed in Activity 3.5.3.

176. **Output 3.6:** A Public-Private Partnership (PPP) has been established to foster and promote the joint contributions of the public and private sectors in regards to CCA, in the areas of agriculture, meteorology, and water and sanitation in Madagascar.

- Activity 3.6.1: Conduct a study to identify optimal conditions for collaboration between the private and public sectors in regards to CCA, in the areas of agriculture, meteorology, and water and sanitation in Madagascar, especially in terms of the availability of agricultural inputs and improved seeds, the maintenance of agro-meteorological facilities and water and sanitation infrastructures, the availability of advisory support, and the management of IGA and income.
- Activity 3.6.2: Develop an action plan to set up the PPP based on the study conducted in Activity 3.6.1
- Activity 3.6.3: Support the implementation of the first steps identified in the action plan developed in Activity 3.6.2.

177. **Output 3.7:** An effective Monitoring and Evaluation (M&E) system and the dissemination of best practices and lessons learned have been provided through the implementation of the project.

- Activity 3.7.1: Develop and implement an M&E methodology with a performance evaluation framework, outlining roles, data compilation and collection frequency, and a procedural manual, in order to inform the project performance monitoring indicators.
- Activity 3.7.2: Conduct midterm and final evaluations.
- Activity 3.7.3: Collect, publish and disseminate project-related best practices and lessons learned.

Cost of Expected Outcome 3:

GEF/LDC requested: 4,046,000 USD

Co-financing amounts mobilized: 32,731,670 USD

2.5 Indicators, Risks and Assumptions

178. The proposed logistical framework and indicators below are consistent with the GEF-6 tool (Adaptation Monitoring and Evaluation Tool - AMAT) and the UNDP's monitoring and evaluation framework. The Objective and Outcomes indicators are in compliance with UNDP's Result Based Management nomenclature. A more detailed monitoring and evaluation plan will be developed when the project is launched.

179. A general monitoring and evaluation plan has been defined and is presented in the section below. It includes ongoing reporting, audits, a midterm and a final evaluation.

180. The project development-related assumptions are as follows:

- Key institutions and organizations are taking an active part in the training organized;
- A sufficient number of producers have agreed to attend FFS and to disseminate and adopt climate-resilient practices;
- Local plans (CDP, WSCDP, SDEA etc.) and the Water Code are effectively applied and remain reference documents in this matter;
- The DGM is willing to follow the proposed restructuring process;
- Areas remain available to set up FFS in each commune throughout the intervention period; and
- Microfinance institutions remain present in the intervention regions.

181. A complete Risk Matrix appears in Appendix 1 of this project document. It presents risks identified in the PIF, as well as those identified during the PPG phase. Additional barriers are presented in the previous "Barriers to Overcome" section. Most of the risks are of a political, organizational or strategic nature, and relate to the weak institutional and individual capacities of public structures in regards to adaptation. A summary of the key risks identified appears below.

- The resurgence of a socio-political crisis in Madagascar;
- A potential reorganization and recurring institutional instability;
- A lack of community involvement in some of the project intervention sites;
- The non-adopted or weak adoption of IGA alternatives and climate change-resilient technologies;
- Inconsistent political will at communal and regional levels during the project period;
- Unforeseen climate disasters disrupting the implementation of the project; and
- CCA capacities are lacking in the key institutions involved in the project.

2.6 Cost-Effectiveness

182. Cost-effectiveness lies at the heart of the proposed approach. The LDCF project is designed to consider existing initiatives in the intervention regions. The project is based on finding complementarities and synergies with projects and programmes seeking to obtain similar goals, while avoiding the duplication of initiatives. The LDCF project will also coordinate its interventions with other GEF Climate Change Adaptation projects established in the region.

183. The first Component of the project consists of training existing personnel from national and regional institutions and then pursuing local public awareness campaigns. Not only does this approach promote the sustainability of the project results and increase capacities in the country, but it is cost-effective. The alternative would be getting external experts to carry out the awareness campaigns, which would cost more in terms of personnel and transportation and would compromise the sustainability of the project effects. That is why the proposed project's methodology was chosen.

184. The first Component will also support the integration of a climate change dimension in strategic and planning documents (most of which already exist), such as Communal Development Plans (CDP), Water and Sanitation Blueprints (SDEA), Water Code implementation decrees, and the National Climate Change Strategy-Agricultural, Livestock and Fishing Sector (SN-CC-AEP). This approach would thus operationalize and enrich existing initiatives, while limiting the development costs of such documents.
185. The second Component seeks to support the production and dissemination of agro-meteorological information critical to both political decision-making processes and the agricultural processes of local producers. Making informed decisions at national and local levels would help strengthen overall resilience, thereby limiting the long-term costs of climate change. Strengthening the DGM's technical and human capacities would thus be profitable over the long-term in this regard. The long-term costs of personnel and equipment would also be included in the DGM's internal budget to ensure the sustainability of the project. Restructuring the DGM through the project would also be cost-effective, as it would transform the institution into a true service provider capable of building new capacities which, over the long-term, would produce income generating services. The alternative approach to achieving the expected effects of the project would be to not restructure the DGM and outsource services to produce and disseminate required agro-meteorological information. This alternative would neither be cost-effective nor sustainable, as it would involve significant subcontracting costs and would not ensure the availability of agro-meteorological information after the project ends. The proposed methodology is therefore the most cost-effective option.
186. The third Component seeks to introduce CCA practices by setting up FFS.
187. The adaptation technologies that will be transferred through the FFS will also be identified following the participatory approach used with producers during their long-term (18-month) training. This approach will ensure that the technologies identified match the environment and local context. This will promote the regular adoption of these technologies, which will be low-cost to producers to increase their adoption and ensure a good cost-effectiveness ratio. The alternative to implementing such activities would be using a traditional-top down educational approach, through which the selected adaptation technologies would be taught to producers by external experts. This alternative would not be cost-effective, as it would involve significant personnel costs, nor would be it sustainable, as producers would not be able to appropriate the practices and technologies, which would compromise their use after the project ends. The proposed methodology is therefore the most cost-effective option.
188. The third Component also seeks to strengthen the resilience of water and sanitation infrastructures. Climate change causes significant reductions in rainfall, making access to drinking water increasingly difficult. To ensure that local populations can deal with lower rainfall amounts and become more resilient to climate change, they must increase their capacity to retain and store rainwater. The project proposes to rehabilitate small, existing infrastructures, in order to sustainably and cost-effectively strengthen the resilience of local communities. The drinking water supply infrastructures and services that will be rehabilitated through the project will foster more effective local water resource management in generally declining levels of rainfall and available water. The infrastructures will be rehabilitated in close collaboration with the DREAH and with UNICEF, whose additional financing will strengthen the entire water supply and sanitation system at the commune level, thereby ensuring the cost-effectiveness of the facilities rehabilitated through GEF funding. The alternative would be building new, wide-scale water and sanitation facilities through regional interventions to promote sustainable access to drinking water and climate change resilience. But this alternative is limited in that these infrastructures may not meet the local demand or be used, and would be very costly. The proposed approach—rehabilitating existing infrastructures and services in collaboration with the DREAH and UNICEF— is therefore the most cost-effective and sustainable option.

189. Finally, over the course of visits to the 5 intervention regions, including tours of existing land and infrastructures, focus groups were systematically organized with local authorities and recipients in order to identify which activities would best meet local needs in order to maximize their benefits.

2.7 Sustainability

190. The project, especially through activities carried out in the first Component, seeks to strengthen national, regional, and local CCA capacities and to sustain these capacities over the long-term, even after the project-related interventions are over.

191. The first Component of the project will integrate CCA in such rural development texts as Communal Development Plans (CDP), Water and Sanitation Blueprints (SDEA), Water and Sanitation Communal Development Plans (WSCDP), the National Climate Change Strategy- Agricultural, Livestock and Fishing Sector (SN-CC-AEP) and the Water Code's implemented decrees. These texts will continue to exist after the project ends, which will promote the long-term consideration of climate change in rural development initiatives. Integrating climate change considerations in CDP-related budgetary frameworks will also promote the allocation of sustainable CCA funds at the communal level. By systematically making climate change part of various policy documents and strengthening national capacities in this respect, the project will help institutionalize the consideration of climate change in the development of policy documents, which will ensure the long-term sustainability of project learnings.

192. The development of new agro-meteorological stations under the second Component of the project will be a long-term investment. What's more, the interregional meteorology service in Toliara will benefit from the equipment and skills needed to maintain these stations, and from a maintenance and quality control plan. Support and advocacy efforts will be pursued throughout the project period to ensure that the DGM's annual budgets include the forecast equipment maintenance and operating expenses of these stations. Through the creation of a Public-Private Partnership (PPP) under Output 3.6, the project also seeks to ensure the financial sustainability of climate information systems by getting the private sector involved in financing and maintaining the agro-meteorological network.

193. The DGM's restructuring, which will be implemented through the second Component of the project, will enable this institution to better integrate climate change, to strengthen its capacities and to become a quality long-term service provider. The DGM's new products will also be perfectly adapted to the local demand and needs, which will foster the local use of sustainable agro-meteorological products. An international agro-meteorological specialist will be contracted during the project implementation period to support the development of an infrastructure maintenance plan, a scientific climate change service, a capacity-building strategy, and agro-meteorological products. This international specialist will provide ad hoc services to lay the foundations of the DGM's restructuring. However, he will only play a support role with existing national resources, which will be progressively strengthened over the course of the project. The DGM's restructuring will be sustainable in that by the end of the project, human capacities will be sufficient to manage the institution's prerogatives without the need for outside assistance.

194. The FFS approach promoted through the third Component of the proposed project seeks to foster producers' long-term adoption of CCA-resilient techniques. The FFS created through the project will seek to address existing barriers to adopting these practices. The training provided will focus on the demand and the needs of local populations. The FFS will foster learning through practice to encourage producers to sustainably appropriate various CCA practices, thereby ensuring their use, even after the project ends. The sustainability of the knowledge acquired through the FFS approach will also be fostered through Public-Private Partnerships (PPP) to ensure that CCA practices are used in Madagascar's agriculture, meteorology, and water and sanitation sectors. These PPP will promote the availability of agricultural inputs, improved seeds, IGA and revenue management, etc.

195. The project will also support water point committees in the maintenance and management of water and sanitation infrastructures, which will promote the sustainability of rehabilitated infrastructures in the intervention regions.
196. Finally, by collaborating with existing regional microfinance institutions, the project will enable developing adapted forms of credit which local populations will be able to continue accessing from the institutions that helped implement them during the project intervention period.

2.8 Replicability

197. Integrating CCA in development policies, strategies and plans will enable replicating other CCA promotion initiatives. By implementing CCA initiatives at the community level, this project seeks to foster the appropriation of adaptation measures promoted with local populations and the replication of those measures. The training provided in FFS will have a spillover effect, first within each commune (around 10 FFS will be created in each commune), and then in adjacent communes, through the 80 facilitators that will be trained during the project period. Through exchange visits within the FFS network, the CCA measures promoted can thus be replicated in other communities.
198. The active involvement of competent regional authorities in all project activities will also help increase the appropriation of the results achieved by these authorities, thereby making it easier for them to replicate these activities in other parts of the region.
199. Among other things, the proposed national capacity-building activities, along with the compilation and dissemination of training tools and lessons learned through the project, will create a spillover effect, allowing the project to be replicated elsewhere so that other stakeholders can enjoy the same results. And finally, collaborating with other projects and programmes and working in 5 distinct regions will promote exchanges and the broader adoption of CCA measures with other recipients.

2.9 Stakeholders' Analysis

200. Stakeholders which will be involved in the project implementation were identified following a consultative and participatory process. This involved:

- Semi structured interviews at the national level with institutional partners, TFP and potential co-financing – these interviews allowed the identification and analysis of stakeholders and of their role in project implementation.
- Discussions and focus groups at regional, communal and local levels. During the PPG phase, field missions were organised and conducted with the BNCC in the 5 intervention regions. All selected pilot communes were visited. Focus groups and community-level organisations, including women and men focus groups, were organized at the local level in each commune visited to analyze the communities' level of vulnerability, to discuss and identify potential adaptation options, priorities and measures, and to identify local organisations, their mandate and activities;
- Implementation arrangements and roles of stakeholders were discussed and validated during a validation workshop.

201. The stakeholders involved in the project and their respective roles are presented in the table below.

202. Different ethnic groups are represented in the target areas, including: Mahafaly, Antandroy, Antanosy, Vezo and Betsimisaraka. These groups have been consulted separately during the field missions and their specific concerns have been discussed and gathered during focus groups organised at the community level. Specific activities that will be implemented as part of the establishment of the FFS will be defined together with these groups and aligned with their specific concerns. FFS would focus on farming, livestock raising, fishing and/or aquaculture, depending of the specificities of the group that will benefit of the training and support provided as part of the FFS. Furthermore, water and sanitation services that will be provided under output 3.3 have been defined to respond to a specific local need at the community level.

Stakeholder	Role in the Project
Government	
National Climate Change Coordination Office (BNCC)	- National project execution agency - Steering committee member - Responsible for achieving Output 1.1 - Responsible for coordinating Output 3.3
General Directorate of Meteorology (DGM)	- Responsible for executing Component 2 and Output 3.4 - Steering committee member
General Directorate of Agriculture (DGAgri)	- Responsible for coordinating Outputs 3.1 and 3.2 in collaboration with the Regional Directorates involved - Responsible for the Agriculture Component of Output 1.4 - Involved in Output 3.4 in collaboration with the DGM - Steering committee member
General Directorate for Livestock	- Supervision of activity 3.2.2 - Supervision of the livestock component of output 1.4 - Steering committee member
General Directorate of Water (DGE)	- Responsible for the water Component of Output 1.4 - Steering committee member
National Tree Seed Centre (SNGF) Directorate	- Contributes to Activity 1.1.1 - Contributes to Output 3.1 in collaboration with the Regional Directorates involved
Decentralized Services	
Regional Directorates of Water, Sanitation and Hygiene (DREAH)	- Responsible for achieving Output 1.3 and 3.3 in collaboration with UNICEF - Contribute to Output 3.1 in collaboration with the Regional Directorates involved
Regional Directorates of Rural Development (DRDR)	- Contribute to Output 1.2 with the DTU - Responsible for coordinating Outputs 3.1 and 3.2 with the General Directorate of Agriculture - Contribute to Output 3.4 in partnership with the DGM and the DREEF

Regional Directorates Environment, Ecology and Forests (DREEF)	<ul style="list-style-type: none"> - Logistical support on Output 1.1 - Responsible for achieving Output 1.2 - Involved in the awareness campaign component of Output 3.1 - Contribute to Output 3.4 in partnership with the DGM and the DRDR
Regional Directorates of Fishery Resources and Fishing (DRRHP)	- Contribute to Outputs 3.1 and 3.2 in collaboration with the other Regional Directorates involved
Regional Directorates of Livestock (DIREL)	- Contribute to Outputs 3.1 and 3.2 in collaboration with the other Regional Directorates involved
Interregional meteorology service in Toliara	- Contributes to Output 2.1
Decentralized Territorial Units (DTU)	- Participate in Outputs 1.1, 1.2, 3.3, 3.4 et 3.5
Associations, NGOs and development partners	
UNICEF	- Labour for Outputs 1.3 and 3.3 in collaboration with the DREAH.
NGOs, POs and local associations (MDP, GRET, CTAS, CSA, CARE, etc.)	<ul style="list-style-type: none"> - Involved in setting up FFS (Output 3.1) - Involved in achieving Output 3.2 in partnership with the General Directorate of Agriculture and the DRDR.
Microfinance institutions	
FIVOY, Microcred, etc.	- Involved in achieving Output 3.5
Local communities	
Local producers	<ul style="list-style-type: none"> - Involved in Component 3 - Main project recipients

Table 4: Stakeholders Involved in the Project

3 PROJECT RESULT FRAMEWORK

The project will foster the achievement of Programme Outputs, as defined in the UNDP's Country Programme and the United Nations Development Assistance Framework (UNDAF)'s Country Programme Action Plan (CPAP).

UNDAF Outcomes 2015-2019:

Outcome 1: Vulnerable populations in the intervention areas access income and employment opportunities, improve their resilience capacities, and promote the growth of sustainable development.

Outcome 3: Populations in the intervention areas, especially vulnerable groups, have access to and use quality, sustainable basic social services.

UNDAF Outcome Indicators 2015-2019:

Outcome 1:

- Extreme poverty rate (broken down by region, gender, place of residence, quintile, etc.)
- % of the population living with food insecurity

Outcome 3

- Percentage of the population using improved basic sanitation infrastructures

Applicable GEF-6 Strategic Objectives :

Objective 2: Strengthen institutional and technical capacities for effective climate change adaptation

Objective 3: Integrate climate change adaptation into relevant policies, plans and associated processes

Applicable expected GEF-6 Outcomes:

Outcome 2.2: Access to improved climate information and early-warning system enhanced at regional has been improved at regional, national, sub-national

Outcome 2.3: Institutional and technical capacities and human skills strengthened to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures

Outcome 3.2: Policies, plans and associated processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures

Applicable GEF-6 outcome indicators (based on the AMAT GEF-6 tool):

Indicator 7: Number of people/geographical areas with access to improved climate information services

Indicator 9: Number of people trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures

Indicator 13: Sub-national plans and processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures

	Indicator	Baseline Situation	End-of-Project Targets	Verification Sources	Risks and Assumptions
Project Objective: Strengthen the capacities of vulnerable communities in the Androy, Anosy, Atsinanana, Analamanga and Atsimo-Andrefana regions so they can manage the additional risks which climate change and climate variability pose on their livelihoods	Extend of adoption of climate-resilient technologies/practices	The use of climate-resilient technologies and practices is very limited among producers of the intervention regions.	75% of FFS recipients have adopted climate-resilient technologies/practices	FFS Surveys Project monitoring and evaluation report	<p>A sufficient number of producers have agreed to attend FFS and to disseminate and adopt climate-resilient practices.</p> <p>There are still areas in each commune where FFS could be set up over the intervention period.</p> <p>A new socio-political crisis in Madagascar, along with a potential reorganization and recurring institutional instability, could disrupt the implementation of the project</p>
	Vulnerability index of target communities	The vulnerability indexes of the intervention regions are as follows ³⁹ : Betatao: 3 Ambolotarakely: 3 Ilaka Est: 2 Betsizaraina: 3 Manombo: 3 Soahazo-Analamisampy: 3 Miary: 3 Imongy: 5 Sampona: 4 Tanandava: 3 Tranovaho: 5	One-point reduction of the vulnerability index of each commune	Vulnerability Reduction Assessment (VRA)	<p>Unforeseen climate disasters disrupting the implementation of the project</p> <p>Inconsistent political will at the communal and regional levels during the project period</p>

³⁹ Details on the Vulnerability Reduction Assessment (VRA) methodology and results are presented in Appendix 5.

<p>Outcome 1: The institutional and technical climate risk management capacities of ministries responsible for agriculture, the environment, forests, livestock, fishing, water and sanitation, and meteorology and their decentralized directorates, the community organizations and people of Androy, Anosy, Atsimo-Andrefana, Analamanga and Atsinanana, have been strengthened;</p>	<p>Number of people trained to identify, prioritize, implement, monitor and evaluate adaptation strategies and measures</p> <p>(AMAT GEF-6 Indicator 9)</p>	<p>Institutional and technical strategic adaptation capacities are currently lacking at the sectoral and technical general directorate level, the sectoral regional directorate level, the community organization level, and the rural population level</p>	<p>30 General Directorate representatives trained</p> <p>30 Regional Directorate representatives trained per region</p> <p>10 local administrators trained per commune</p> <p>20 representatives from professional and community organizations and NGOs trained per commune</p>	<p>Organized training and awareness session report</p> <p>Project monitoring and evaluation report</p>	<p>Key institutions and organizations are actively involved in the organized training</p> <p>Local plans (CDP, WSCDP, SDEA etc.) and the Water Code are effectively implemented</p> <p>Recurring reorganization and institutional instability</p> <p>CCA capacities are lacking in the key institutions involved in the project</p>
	<p>Sub-national plans and processes developed and strengthened to identify, prioritize and integrate adaptation strategies and measures</p> <p>(AMAT GEF-6 Indicator 13)</p>	<p>Climate change is not effectively considered in current rural development policy and strategy frameworks. CDP are no longer updated in the intervention regions and most date back to 2007. They do not include adaptation measures. WSCDP are not developed in all intervention regions. SDEA are recent but do not really integrate or disseminate CCA. The SN-CC-AEP has been finalized but not yet operationalized. The Water Code revision process is underway but implementation decrees have not yet been developed.</p>	<p>Integration of climate change and related budgetary frameworks in the CDP and WSCDP of the 11 target communes</p> <p>Integration of climate change in the 3 SDEA of Southwest, South-East and Midwest, and popularization of these SDEA</p> <p>1 Action Plan to implement the SN-CC-AEP</p> <p>Water Code implementation decrees integrating climate change</p>	<p>CDP, WSCDP, SDEA and Water Code implementation decrees Action Plan to implement the SN-CC-AEP</p> <p>Project monitoring and evaluation report</p>	

<p>Outcome 2: Agro-meteorological and hydraulic information has been structured and disseminated to effectively support the decision-making of relevant players and responsible ministries and communities in the Androy, Anosy, Atsimo Andrefana, Analamanga and Atsinanana regions</p>	<p>Number of people/geographical areas with access to improved climate information services</p> <p>(AMAT GEF-6 Indicator 7)</p>	<p>The DGM does not yet provide agro-meteorological advice for producers and the products it has developed are not adapted to national, regional or community users. Its current equipment is also in poor condition; they do not work well and do not provide the meteorological data needed to provide adapted agro-meteorological information and data.</p> <p>Finally, DGM personnel do not have the skills needed to provide agro-meteorological information and data or to develop agro-meteorological products that meet the needs of users.</p>	<p>75% of FFS beneficiaries have access to improved climate information</p> <p>17 additional stations set up and equipped</p> <p>Equipment needed to process data and to maintain the interregional meteorology service in Toliara</p> <p>1 service dedicated to the scientific bases of climate change created within the DGM</p> <p>The decision-makers of the project intervention regions have improved climate information services</p>	<p>Discussions within the DGM</p> <p>Site visits</p> <p>Document: Training Strategy</p> <p>Document: DGM Development and Product Dissemination Plan</p> <p>Project monitoring and evaluation report</p>	<p>The DGM is willing to follow the proposed restructuring process</p> <p>Unforeseen climate disaster disrupt the installation of equipment</p> <p>Recurring reorganization and institutional instability</p> <p>DGM personnel are willing to actively participate in the training</p>
<p>Effect 3: Adaptation measures and technologies have been transferred to, and implemented in, the 11 target communes of the Androy, Anosy, Atsimo Andrefana, Analamanga, and Atsinanana regions.</p>	<p>Number of producers benefitting from the adoption of CCA technologies</p>	<p>The communities in the 11 intervention regions do not have the adaptation technologies needed to deal with climate change</p>	<p>3,000 producers, including 1,200 women (40%), trained on adapted CCA technologies</p> <p>80 FFS trained, including 32 women (40%)</p> <p>Introduction of adapted seeds to FFS</p>	<p>Assessment and discussions at the community level</p> <p>FFS curricula</p> <p>Project monitoring and evaluation report</p>	<p>A sufficient number of producers have agreed to attend FFS and to disseminate and adopt climate-resilient practices.</p> <p>There are still areas in each commune where FFS could be set up over the intervention period; and</p> <p>Microfinance institutions remain present in the intervention regions.</p> <p>A new socio-political crisis in Madagascar disrupts the implementation of the project</p>

					<p>A lack of community involvement in some of the project intervention sites</p> <p>The non-adoption or weak adoption of Income Generating Activity alternatives and climate change-resilient technologies;</p> <p>Insufficient CCA capacities in the key institutions involved in the project</p>
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4 WORK PLAN

Outputs	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
Component 1: Strengthening of adaptation capacities of rural development Institutions						
Output 1.1: Technical authorities and services, i.e. 30 representatives from the Sectoral Regional Directorates (BNCC, DGM, DGAgri, DGE, SNGF), 30 representatives per Regional Directorate (DREAH, DRDR, DREEF, DRRHP, DIREL), 10 local administrators per commune, and 20 representatives per commune from professional and community organizations and NGOs that support rural development, will receive training and information on climate risk management.	Activity 1.1.1: Identify and implement a training programme for political decision-makers, senior managers and technicians from the Regional Directorates concerned.					
	Activity 1.1.2: Define and implement a climate change awareness programme for local governments, NGOs and community organizations that actively work in the 11 intervention regions					
Output 1.2: The local development plans of the 11 target communes and their related budgetary frameworks have been reviewed to incorporate climate risks and incentive measures fostering CCA.	Activity 1.2.1: Upgrade and/or support the development of Communal Development Plans (CDP) in the 11 target communes in order to integrate the climate change component					
	Activity 1.2.2: Develop CDP-related budgetary frameworks and investment plans that include a climate change component.					
Output 1.3: The Water and Sanitation Blueprints (SDEA) of Madagascar's Southwestern, Midwestern and Southeastern watersheds have been revised with a view to including climate risks and relevant adaptation options and their dissemination; and the Water and Sanitation Communal Development Plans (WSCDP) and related budgets have been developed in the 11 target communes (or revise if already existing) with a view to identifying, prioritizing and planning water and sanitation-related adaptation measures which include a climate change component at the communal level.	Activity 1.3.1: Revision and integration of a climate change dimension and operationalization/dissemination of the 3 SDEA developed in 2011					
	Activity 1.3.2: Include climate change in the development of WSCDP and their related budgets (or revise if already existing) in the 11 target communes.					
Output 1.4: The National Climate Change Strategy-Agricultural, Livestock and Fishing Sector (SN-CC-AEP) has been operationalized and a climate change perspective has been included in the implementation decrees of the revised Water and Sanitation Code.	Activity 1.4.1: Support the operationalization of the SN-CC-AEP: develop an action plan for its implementation					
	Activity 1.4.2: Support the development of Water Code's implementation decrees, including a climate change perspective.					
Component 2: Production and dissemination of Agro-meteorological and hydraulic information for appropriate decision-making in the area of rural development						
Output 2.1: Two agro-meteorological stations in Ampanihy and Amboasary-Sud, two synoptic stations in Betroka and Faux-Cap, three climatology stations in Behara, Beroroha and Sakaraha, and 10 hydrometric stations for the watersheds of the Mandrare,	Activity 2.1.1: Set up and equip 17 additional stations to support the implementation of the Global Climate Observing System (GCOS) based on the results of the Project Preparation Grant (PPG) and the regional plan to improve the network of agro-meteorological, synoptic, climate and					

Outputs	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
Menarandra, Linta, Onilay and Fiherenana rivers have been set up, and the interregional meteorology service in Toliara, strengthened.	hydrometric stations, which will be developed beforehand.					
	Activity 2.1.2: Set up and maintain equipment that can process data for the interregional meteorology service in Toliara to ensure it can serve as the regional data centre responsible for technical aspects, maintenance and data transmission to the DGM in Antananarivo.					
	Activity 2.1.3: Set up an ongoing data maintenance and quality control plan. The project will initially support maintenance costs, but these costs will be progressively included in the DGM's budget to ensure the sustainability of its financing at the end of the project.					
Output 2.2: A service dedicated to conducting downscaled climate change modelling and sector impacts analysis has been created within the DGM and its technical and human capacities have been strengthened.	Activity 2.2.1: Provide technical support to create a service dedicated to conducting downscaled climate change modelling and sector impacts analysis within the DGM.					
	Activity 2.2.2: Develop and implement a training and development strategy to increase the DGM's capacities.					
	Activity 2.2.3: Identify and set up technical infrastructures (computer material, software, printers, etc.) required by the DGM to conduct climate change analyses.					
Output 2.3: DGM and user capacities to analyze agro-meteorological and hydrological data have been strengthened.	Activity 2.3.1: Implement the capacity training and development strategy of the DGM and the target groups identified in Activity 2.2.2					
	Activity 2.3.2: Identify and set up technical infrastructures required by the DGM to meet the service demand.					
	Activity 2.3.3: Set up a platform of users identified as targets during the needs analysis study.					
Output 2.4: A system to produce and disseminate agro-meteorological information has been designed and put into service.	Activity 2.4.1: Conduct an analysis on: (i) the needs of target groups in regards to agro-meteorological products and services; and (ii) the needs of the private sector and the purchasing potential of agro-meteorological products and services.					
	Activity 2.4.2: Design the products and services to be developed by the DGM based on the needs analysis conducted in Activity 2.4.1					
	Activity 2.4.3: Create a development and dissemination plan for the DGM's different products					
	Activity 2.4.4: Develop and distribute support products and services (introduction to products, training, etc.), ensure that all the identified targets have received the products and that they meet the private sector demand, and gather feedback on the products to assess their impact					

Outputs	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
Component 3: Introduction of communal adaptation strategies to the Androy, Anosy, Atsimo Andrefana, Analamanga, and Atsinanana regions.						
Output 3.1: Climate-resilient agro-sylvo-pastoral, fishery and water management technologies, and advisory support services for resilient agricultural practices have been disseminated to 3,000 producers from the most vulnerable communities (of which 40% are women) in 11 pilot communes	Activity 3.1.1: Analyze climate-resilient, water-efficient agro-sylvo-pastoral and fishery technologies					
	Activity 3.1.2: Participatory development a training curriculum for agro-sylvo-pastoral, fishery and water management activities to be set up in FFS, including climate change considerations					
	Activity 3.1.3: Train 80 FFS facilitators (40% of whom are female), on climate change-resilient agro-sylvo-pastoral, fishery and water management techniques in the intervention regions;					
	Activity 3.1.4: Set up 120 FFS in the target communes (around 10 FFS per commune in function of the commune area and the number of <i>Fokontany</i> targeted), including FFS centered on fishing and aquaculture. Progressively train 3,000 producers (40% of whom are women) on the FFS approach, using the established project curriculum.					
	Activity 3.1.5: Disseminate and implement technologies and measures identified in Activity 3.1.1 within the FFS.					
	Activity 3.1.6: Set up quarterly/annual sessions to update the facilitators' skills and knowledge.					
	Activity 3.1.7: Facilitate communications between FFS through exchange visits and open house days.					
Output 3.2: An input supply chain promoting sustainable, climate-resilient agriculture, supported by seed multiplier groups, NGOs and community organizations, has been established.	<p>Activity 3.2.1: In partnership with active multiplier growing and distribution organizations (such as GRET/CTAS in the Androy and Anosy regions and the <i>Maison des Paysans</i> in the Atsimo Andrefana region) and existing seed producer/multiplier organizations):</p> <ul style="list-style-type: none"> (vi) Select and test plant varieties in FFS in partnership with FOFIFA and other partners; (vii) Progressively introduce in FFS, select adapted seeds already produced by GRET/CTAS and existing seed multiplier groups, including fodder seeds to increase the livestock sector's resilience; (viii) Conduct a study to identify barriers to the wide-scale adoption of adapted varieties and appropriate solutions; (ix) Obtain support from the private sector through a public/private partnership aimed at promoting the direct sale of seeds to FFS by seed producer cooperatives; and (x) Strengthen the existing seed multiplier network in the target regions through partnerships with existing organizations. 					

Outputs	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
	Activity 3.2.2: In partnership with animal species research organizations and in close collaboration with the General Directorate for Livestock: (iii) Help strengthen and improve animal genetics; and (iv) Support the development of improved feeding practices (salt blocks, fodder conservation, etc.).					
Output 3.3: The resilience of priority water and sanitation services in the 11 target communes of Androy, Anosy, Atsimo- Andrefana, Analamanga and Atsinanana has been strengthened and these communities have been made aware of basic sanitation measures and hydro-agricultural and drinking water conveyance facilities with a view to reducing their vulnerability to the expected impacts of climate change.	Activity 3.3.1: Conduct a feasibility study which includes a climate risk assessment and a cost-benefit analysis on infrastructures to modernize and rehabilitate.					
	Activity 3.3.2: Based on the feasibility study, strengthen the resilience and sustainable management of the following water supply services and hydro-agricultural and sanitation facilities.					
	Activity 3.3.3: Get the water point committees to provide technical support on the efficient management and maintenance of water and sanitation services in the intervention regions, through awareness sessions and training on selling water, maintaining infrastructures, etc., with a view to helping local communities more effectively manage climate risks.					
Output 3.4: The target vulnerable communities have appropriated the agro-meteorological products and services created and provided and have made them part of their agricultural and water management practices thanks to the support and advice provided by the FFS on resilient agriculture and water management practices	Activity 3.4.1: Integrate a training module on the use and application of agro-meteorological products and services (developed in Component 2) for local producers in the FFS curriculum					
	Activity 3.4.2: Set up meteorological and climate observation modules for producers within the FFS, which considers traditional areas of knowledge. The data and results obtained will also be reported in the national observation system of meteorological and climate data.					
Output 3.5: Access to adapted forms of credit from active microfinance institutions and access to markets by the target communities have been strengthened with a view to developing climate-resilient IGA alternatives for local producers.	Activity 3.5.1: In partnership with the Regional Fund for Agricultural Development (RFAD), Agricultural Service Centres (CSA) and the other players involved in the 11 target communes, identify climate change-resilient and promising IGA and sectors for groups/associations and individual producers (30% of them women) supported by FFS.					
	Activity 3.5.2: Analyze credit needs to increase the entrepreneurial capacities of these players and to foster the marketing of products generated, sectoral management, and market access.					
	Activity 3.5.3: Support microfinance institutions (Fivoy, Microcred, etc.) in order to develop financial products adapted to the needs of local producers, as identified in Activity 3.5.2.					
	Activity 3.5.4: Foster relationships between producers and their organizations and micro-credit agencies (Fivoy, Microcred, etc.). Regional project coordinators will help producers' groups and women's groups					

Outputs	Activities	Year 1	Year 2	Year 3	Year 4	Year 5
	access the new, adapted financial products developed in Activity 3.5.3.					
Output 3.6: A Public-Private Partnership (PPP) has been established to foster and promote the joint contributions of the public and private sectors in regards to CCA, in the areas of agriculture, meteorology, and water and sanitation in Madagascar.	Activity 3.6.1: Conduct a study to identify optimal conditions for collaboration between the private and public sectors in regards to CCA, in the areas of agriculture, meteorology, and water and sanitation in Madagascar, especially in terms of the availability of agricultural inputs and improved seeds, the maintenance of agro-meteorological facilities and water and sanitation infrastructures					
	Activity 3.6.2: Develop an action plan to set up the PPP based on the study conducted in Activity 3.6.1.					
	Activity 3.6.3: Support the implementation of the first steps identified in the action plan developed in Activity 3.6.2.					
Output 3.7: An effective Monitoring and Evaluation (M&E) system and the dissemination of best practices and lessons learned have been provided through the implementation of the project.	Activity 3.7.1: Develop and implement an M&E methodology with a performance evaluation framework, outlining roles, data compilation and collection frequency, and a procedural manual, in order to inform the project performance monitoring indicators.					
	Activity 3.7.2: Conduct midterm and final evaluations.					
	Activity 3.7.3: Collect, publish and disseminate project-related best practices and lessons learned.					

5 TOTAL BUDGET AND PURCHASE PLAN

Budget

Award ID:	00090256	Project ID(s): 00096109
Award Title:	PIMS 5228	
Business Unit:	MDG10	
Project Title :	Enhancing the adaptation capacities and resilience to climate change in rural communities in Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana in Madagascar.	
PIMS no.	5228	
Executing Agency	BNCC	

GEF Results/ Atlas Activities	Responsible Partner	Fund ID	Donor	Atlas Number	Atlas budget description	Amount year 1 (USD)	Amount year 2 (USD)	Amount year 3 (USD)	Amount year 4 (USD)	Amount year 5 (USD)	Total	Budget Notes
Outcome 1	BNCC		GEF/L DCF	71200	International Consultants	24,000.00	15,000.00	-	-	24,000.00	63,000.00	a
				71300	Local Consultants	18,000.00	15,000.00	21,000.00	-	9,000.00	63,000.00	b
				71600	Travel	52,000.00	48,500.00	45,000.00	38,500.00	44,500.00	228,500.00	c
				72100	Contractual Services - Companies	38,000.00	70,500.00	70,500.00	-	-	179,000.00	d
				74500	Miscellaneous Expenses	4,000.00	4,000.00	4,000.00	4,000.00	2,897.00	18,897.00	-
				Total Component 1						136,000.00	153,000.00	140,500.00
Outcome 2	BNCC		GEF/L DCF	71200	International Consultants	30,000.00	30,000.00	30,000.00	30,000.00	-	120,000.00	e
				71300	Local Consultants	18,000.00	18,000.00	18,000.00	18,000.00	12,000.00	84,000.00	f
				71600	Travel	8,750.00	13,750.00	13,750.00	8,750.00	1,500.00	46,500.00	g
				72200	Equipement and Furniture	150,000.00	200,000.00	30,000.00	20,000.00	5,000.00	405,000.00	h
				72100	Contractual Services - Companies	80,000.00	80,000.00	-	-	-	160,000.00	i
				74200	Audio Visual & Print Prod Costs	-	-	50,000.00	50,000.00	40,000.00	140,000.00	j
				72500	Supplies	10,000.00	10,000.00	-	-	-	20,000.00	-

GEF Results/ Atlas Activities	Responsible Partner	Fund ID	Donor	Atlas Number	Atlas budget description	Amount year 1 (USD)	Amount year 2 (USD)	Amount year 3 (USD)	Amount year 4 (USD)	Amount year 5 (USD)	Total	Budget Notes
				74500	Miscellaneous Expenses	5,000.00	5,000.00	5,000.00	5,000.00	4,500.00	24,500.00	-
Total Component 2						301,750.00	356,750.00	146,750.00	131,750.00	63,000.00	1,000,000.00	-
Outcome 3	BNCC		GEF/L DCF	72100	Contractual Services - Companies	160,000.00	120,000.00	120,000.00	120,000.00	120,000.00	640,000.00	k
				71200	International Consultants	18,000.00	24,000.00	24,000.00	12,000.00	12,000.00	90,000.00	l
				71300	Local Consultants	30,000.00	21,000.00	15,000.00	12,000.00	15,000.00	93,000.00	m
				71600	Travel	14,500.00	29,500.00	16,000.00	20,000.00	6,500.00	86,500.00	n
				72100	Contractual Services - Companies	184,000.00	536,500.00	536,500.00	536,500.00	526,500.00	2,320,000.00	o
				71400	Contractual Services - Individual	125,000.00	125,000.00	125,000.00	125,000.00	125,000.00	625,000.00	p
				72200	Equipment and furniture	50,000.00	-	-	-	-	50,000.00	q
				72500	Supplies	10,000.00	5,000.00	5,000.00	5,000.00	-	25,000.00	r
				75700	Training, Workshops & Conferences	10,800.00	800.00	800.00	800.00	800.00	14,000.00	s
				74500	Miscellaneous Expenses	20,652.00	20,652.00	20,652.00	19,652.00	17,652.00	99,260.00	-
Total Component 3						622,952.00	882,452.00	862,952.00	850,952.00	823,452.00	4,042,760.00	-
Project Management Costs	BNCC		GEF	71400	Contractual Services - Individual	55,800.00	55,800.00	55,800.00	55,800.00	55,800.00	279,000.00	t
						648.00	648.00	648.00	648.00	648.00	3,240.00	u
	Total Project Management						56,448.00	56,448.00	56,448.00	56,448.00	56,448.00	282,240.00
TOTAL PROJET						1,117,150.00	1,448,650.00	1,206,650.00	1,081,650.00	1,023,297.00	5,877,397.00	

Budget Note	Description
a	International consultants including: *Specialist in Climate Change Adaptation - CCA training modules and awareness raising kits; organisation of training sessions at national and regional levels : 40 days at USD600/day (total: USD 24,000) *Specialist in rural development policies and CCA - operationalisation of SN-CC-AEP: 25 days at USD600/day (total: USD 15,000) *International evaluators for final evaluation - 40 days at USD600/day (total: USD 24,000)
b	National consultants including *Specialist in Climate Change Adaptation - CCA training modules and awareness raising kits; organisation of training sessions at national and regional levels and awareness raising sessions at local level : 75 at USD300/day (total: USD 22,500) *Specialist in rural development policies and CCA - integration of CCA into PCD, and SN-CC-AEP operationalization 75 days at USD300/day (total: USD 22,500) *National evaluators - 60 days at USD300/day (total: USD 18,000)
c	Travel international consultants - USD2000/ticket - 3 tickets (total: USD 6,000) Travel National consultants - USD5000/year in year 1, 2 and 3 (total: USD 15,000) DSA International consultants - 60 days at 150 USD/day (total: USD 9000) DSA National consultants - 190 at USD75/day (total: USD14,250) Travel M&E Specialist & Communication Specialist: USD 8000 year 1; USD 10000 year 2, 3, 4 and 5 (total: USD48,000) DSA M&E Specialist & Communication Specialist - 100 days/year at USD75/day, and DSA officials - 50 days/year at USD75/day (total 150 days/year at USD75/day: USD56,250) Travel PM and CTA: USD 10,000 / year (total: USD50,000) DSA PM and CTA - USD 7500/year in years 1 and 5; USD5000/year in years 2, 3 and 4 (total: USD 30,000)
d	1. Framework Agreement with UNICEF for: - revision and dissemination of SDAE - USD 45 000 - Setting up of Water and Sanitation Municipal Development Plan - USD 10 000/commune - 11 communes (Total: USD 110,000) 2. LoA - Support DGEau and DREAU for revision of SDAE, PCDEA and code de l'eau - USD 24 000
e	International consultant specialist in agro-meterology services for: * Support for technical specifications of the agro-meteorology equipment procurement * Design of maintenance plan * Support to creation of CC science service within DGM * Development of capacity building strategy * Development of agro-met products and development of disseminations strategy - 50 days/year in years1, 2, 3 and 4 at USD600/day (total: USD 120,000)
f	National Consultant specialist in agro-meterology services for DGM restructuring and capacity and product development process - 280 days at USD300/day (total: USD 84,000)

g	Travel international consultants - USD2,000/ticket- 6 tickets (total: USD 12,000) DSA International consultants - 120 days at 150 USD/day (total: USD 18,000) DSA agro-meteorology specialist - 220 at USD75/day (total: USD 16,500)
h	Equipement for: *agro-meteorological stations *data processing maintenance in the interregional meteorology service of Toliara *climate change data analysis infrastructure for the DGM *technical infrastrure to respond to service demand for DGM
i	Installation of agro-meteorological equipment
j	Development of knowledge products, printing, layout, dissemination
k	Framework agreements with: *local organisations (CSA, MDP etc.) for FFS implementation * training of FFS facilitators *Regional Directorates for extension services for technical support to farmers
l	International consultants including: *Specialist in FFS - development of FFS curricula, training of FFS facilitator & implementation of FFS : 90 days at USD600/day (total: USD 54,000) *Specialist in micro-credit products: 60 days at USD600/day (total: USD 36,000)
m	National Consultants including: *Specialist in FFS - development of FFS curricula, training of FFS facilitator & implementation of FFS : 120 days at USD300/day (total: USD 36,000) *Specialist in micro-credit products: 90 days at USD300/day (total: USD 27,000) *Definition of M&E system and manual : USD 15,000 in year 1 *Annual Audit - USD 3,000/year (total: USD 15,000)
n	Travel international consultants - USD2000/ticket - 5 tickets (total: USD 10,000) DSA International consultants - 90 days at 150 USD/day (total: USD 13,500) Travel National consultants - USD5000/year in year 1, 2 and 3 (total: USD 15,000) DSA National consultants - 120 at USD75/day (total: USD 9,000) Travel exchange visits between FFS - USD 20,000 DSA exchange visists - USD 4,000 Site visits - USD 3,000 per year (total: USD 15,000)

o	<p>1.Farming technologies and inputs: USD 80,000</p> <p>2.Support to seed supply system (USD 220,000):</p> <ul style="list-style-type: none"> * Dissemination of adapted seeds within FFS * Support to private seed multipliers (Framework agreement) * Development and test of new seeds with FOFIFA (Framework agreement) <p>3.Framework agreements with UNICEF:</p> <ul style="list-style-type: none"> * Provision of sustainable water points in identified communities through rehabilitation of water systems : USD 1 085 000 * Water source protection/ GIRE implementation : USD 69 600 * Public sanitation and rain water drainage: USD 45 000 * Technical support to the project with 5 DREAUs and other Regional leaders involved in implementing sustainable strategies: USD 200 000 * Technical support to "Comités de point d'eau" regarding water infrastructure maintenance and elaboration of maintenance plan USD 200 000 * Recovery cost 8% (of programable and admin office cost) : USD 140 400 <p>4. Support to improved livestock feeding and genetic animal: USD 200,000</p> <p>5. Dissemination of agro-meteorology products (USD 80,000):</p> <ul style="list-style-type: none"> * Framework agreement with local radio * Service support to farmers field schools on agro-meteorology * Development of knowledge products, printing, layout, dissemination; rain gauges * Support to other dissemination means
p	<p>Project management salaries, including:</p> <ul style="list-style-type: none"> *Part time CTA: USD 25,000/year (total: USD125,000) *National M&E Specialist: USD 15,000/year (total: USD 75,000) *Communication Specialist: USD 15,000/year (total: USD 75,000) *Regional facilitators: USD 12,000/year - one regional facilitator per region over 5 years (total: USD 300,000) *Means of verification analysis - USD 5,000/year (total: USD 25,000) *Monitoring of project results - USD 5,000/year (total: USD 25,000)
q	<p>Project management unit equipment:</p> <ul style="list-style-type: none"> *One car for PMU at national level: USD25000/car *5 motorbikes: USD5000/motorbike
r	<ul style="list-style-type: none"> *10 computers *7 printers *Office equipment
s	<p>Inception workshop: USD 10,000</p> <p>Project Board Meetings: USD 4,000</p>
t	<p>Project management salaries, including:</p> <ul style="list-style-type: none"> *National Project Manager: USD 30,000/year (total: USD 150,000) *National Financial and Administrative Manager: USD 15,000/year (total: USD 75,000) *Full time driver at USD 5,400/year - 2 drivers (total: USD 54,000)
u	<p>Cost Recovery</p>

Co-financing

203. Co-financing agreements are confirmed for the partners listed in the table below. The letters of co-financing letters appear in Appendix 7.

Partners	Expected co-financing amount
UNDP	5,000,000 USD (in cash)
Ministry of Agriculture	47,009,500 USD (in cash)
UNICEF	2,365,000 USD (in cash)
Ministry of Transport and Meteorology	1,970,000 USD (1,770,000 USD in cash and 200,000 in kind)
Directorate General of Environment	1,017,170 USD (in kind)
Ministry of livestock	4,000,000 USD (in cash)

Procurement plan

Subject	Service provider	Amount (USD)
Revision and dissemination of SDAE	DREAH/UNICEF	45,000
Development (or revision) of WSCDP	DREAH/UNICEF	110,000
Support in revising and developing SDAE and WSCDP, and in formulating Water Code implementation decrees	DREAH, DREAH	24,000
Equipment for: <ul style="list-style-type: none">- Agro-meteorological stations- Data processing maintenance at the interregional meteorology service in Toliara- Climate change-related data analysis infrastructures for the DGM- Technical infrastructures for the DGM to meet the demand	Specialized companies	405,000
Installation of agro-meteorological equipment	Specialized companies	130,000
Development of knowledge products, printing, plans, dissemination	Specialized companies	140,000
<ul style="list-style-type: none">- Implementation of FFS- Training of FFS facilitators- Technical support for farmers	Local, regional and national organizations Regional outreach services	840,000
Agricultural inputs and technologies	Specialized companies	80,000

Support to the seed supply chain: - Dissemination of improved seeds through FFS - Support to seed growers - Development and testing of new varieties	Local and regional organizations Seed grower cooperatives FOFIFA	220,000
- Support the strengthening and improvement of animal genetics - Support the development of improved feeding practices (salt lick blocs, fodder conservation etc.)	FOFIFA Herders' associations	200,000
Provision of sustainable water points by strengthening the resilience of water and sanitation systems	Specialized companies DREAH/UNICEF	1,085,000
Protection of water resources and implementation of the IWRM	Public organizations (DREEF, SNGF)	69,600
Public sanitation and rainwater drainage	Specialized companies	45,000
Technical support to 5 DREAH and other regional directorates involved in the implementation of sustainable development strategies, including training on climate change aspects	DGEAU/UNICEF	200,000
Technical support to water point committees to maintain water infrastructures and formulate a maintenance plan	Public organizations	200,000
Dissemination of agro-meteorological products	Local radio stations Specialized companies Public outreach organizations	80,000
Vehicles for the Project Management Unit	Specialized companies	65,000
Office supplies	Specialized companies	25,000
TOTAL		3,963,600

6 INSTITUTIONAL ARRANGEMENTS

Implementation Modalities

204. The project will be implemented following the National Implementation Modality (NIM). The implementation institution in Madagascar will be the BNCC, the MEEMF agency that will coordinate the implementation of the project. The BNCC will work in close in collaboration with the MinAgri, the MinEL, the MRHP, the MTTM and the Ministry of Water, sanitation and hygiene, and with their respective Regional Directorates to implement local activities. A Project Management Unit will be set up within the MEEMF's General Secretariat or within the BNCC. The Director of the BNCC will serve as the National Project Director (NPD).
205. An independent micro-evaluation of the MEEMF was conducted in May 2015. It recommended “to UN Agencies to maintain the Direct Payment Modality to providers and other third parties for obligations incurred by the MEEMF according to activities planned under Annual Work Plans”. It also recommended “a stronger empowerment of the MEEMF in expenses execution processes (including design, implementation and evaluation) and the strengthening of its capacities for a better ownership of the project after its closure”.
206. To support implementation of certain project activities, UNDP will provide recruitment, procurement and contract management services. As requested by the Government of Madagascar, the UNDP Country Office will provide the following support services for the implementation of this project, and recover the actual direct and indirect costs incurred by the Country Office in delivering such services as stipulated in the Letter of Agreement (LOA) between the Government of Madagascar and UNDP (refer annex 9) and following the Universal Prices List :
- Payments, disbursements and other financial transactions
 - Recruitment of staff, project personnel, and consultants
 - Procurement of services and equipment, including disposals
 - Organization of training activities, conferences, and workshops, including fellowships
 - Travel authorization, Government clearances ticketing, and travel arrangements
 - Shipment, custom clearance, and vehicle registration
207. Full UNDP cost-recovery policy (based on the Universal Prices List) will be applied to those recruitments, procurement process and other services requested by BNCC to UNDP. UNDP, BNCC and the Ministry of Economy and Development Planning will enter into a Letter of Agreement for the provision of these services. For more details see Annex 9 (request from the Ministry of Economy and Development Planning for UNDP services).

Financial Modalities

208. According to the recommendation from the micro-evaluation of the MEEMF, the transfer of the project's financial resource will be done in compliance with the following modality: Direct Payments. Direct payments are where UNDP provides accounting and banking services, at the request of the MEEMF. Disbursements will be made by UNDP to vendors, for procurement done by the Ministry, according to government rules and regulations. As procurement government rules and regulations apply, expenditure is covered under the NIM audit regime.

Project Management Bodies

209. A Project Board (PB) will be created and will include representatives from the key institutions intervening in the project activities, as well as representatives from the recipient communes. The definitive list of PB members will be developed during the project inception phase after consulting with national and regional authorities.

210. The Board contains three distinct roles, including:

- An Executive: individual representing the project ownership to chair the group, which will be the MEEMF.
- 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. It will include the BNCC, DGM, DGE, SNGF, DREAH, DRDR, DREEF, DRRHP, DIREL, as well as civil society and NGO.
- 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. In this case, farmers from demonstration sites will be identified to act as Senior Beneficiary. It will include the Ministries as well as farmers.

The PB's roles and responsibilities are as follows:

- Representing the interests of key project stakeholders (including private sector and civil society stakeholders);
- Providing strategic project directions and orientations;
- Amending the project document during the project implementation period;
- Overseeing coordination between the project and the relevant national agencies and initiatives;
- Examining, validating and monitoring annual work plans and budget (AWPB);
- Tracking the progress of the project and the achievement of goals, and commenting on key reports or outcomes;
- Monitoring and evaluating the project;
- Meeting twice per year and on an ad hoc basis, where required; and
- Validating the interim report.

211. National Project Director (NPD). The Director of the BNCC will serve as the National Project Director (NPD). The NPD will ensure a continued cohesion between the project and the mandate of the MEEMF and provide additional linkages and interactions with high level policy components within the Government. He/she will follow up on, supervise and coordinate the contributions of the Government of Madagascar.

212. A Project Management Unit (PMU) will be created within the BNCC. This body will include:

- At the national level:
 - ✓ A national coordinator;
 - ✓ A Chief Technical Advisor (CTA);
 - ✓ A director of administration and finance;
 - ✓ A M&E expert
 - ✓ A communications expert; and
 - ✓ Two drivers.
- At the regional level, the PMU will be represented by 5 regionally-based facilitators, who will facilitate and support the implementation of communal activities.

The PMU will be responsible for:

- Developing AWPB;
- Implementing project activities and providing results-based management;

- Technical and financial reporting;
- Coordinating project interventions with ongoing initiatives;
- Monitoring and evaluating the project; and
- Communicating with technical and financial partners and recipients.

213. The National Project Coordinator within the PMU will be recruited nationally and will be responsible for the day-to-day management of the project, including monitoring and reporting. The main responsibility of the national coordinator is to implement orientations approved by the PB and to ensure that outcomes outlined in the project document are achieved. He/she will promote effective capacity-building and will be supported by 5 regional facilitators in the implementation of regional activities. The national coordinator will foster a fundamentally participatory approach and will encourage the wide-scale participation of stakeholders in activities to be implemented, while putting a special focus on women's participation. He/she will also provide coordination and effective partnerships with ongoing initiatives in the country. The National Coordinator will carry out all of the above functions under the direct supervision of the NPD. In addition, the National Coordinator will report to the UNDP CO on progress and challenges during execution.

214. The detailed Terms of Reference of the PB, the PMU, the National Coordinator and PMU personnel are presented in Appendix 2.

National Implementing Partners

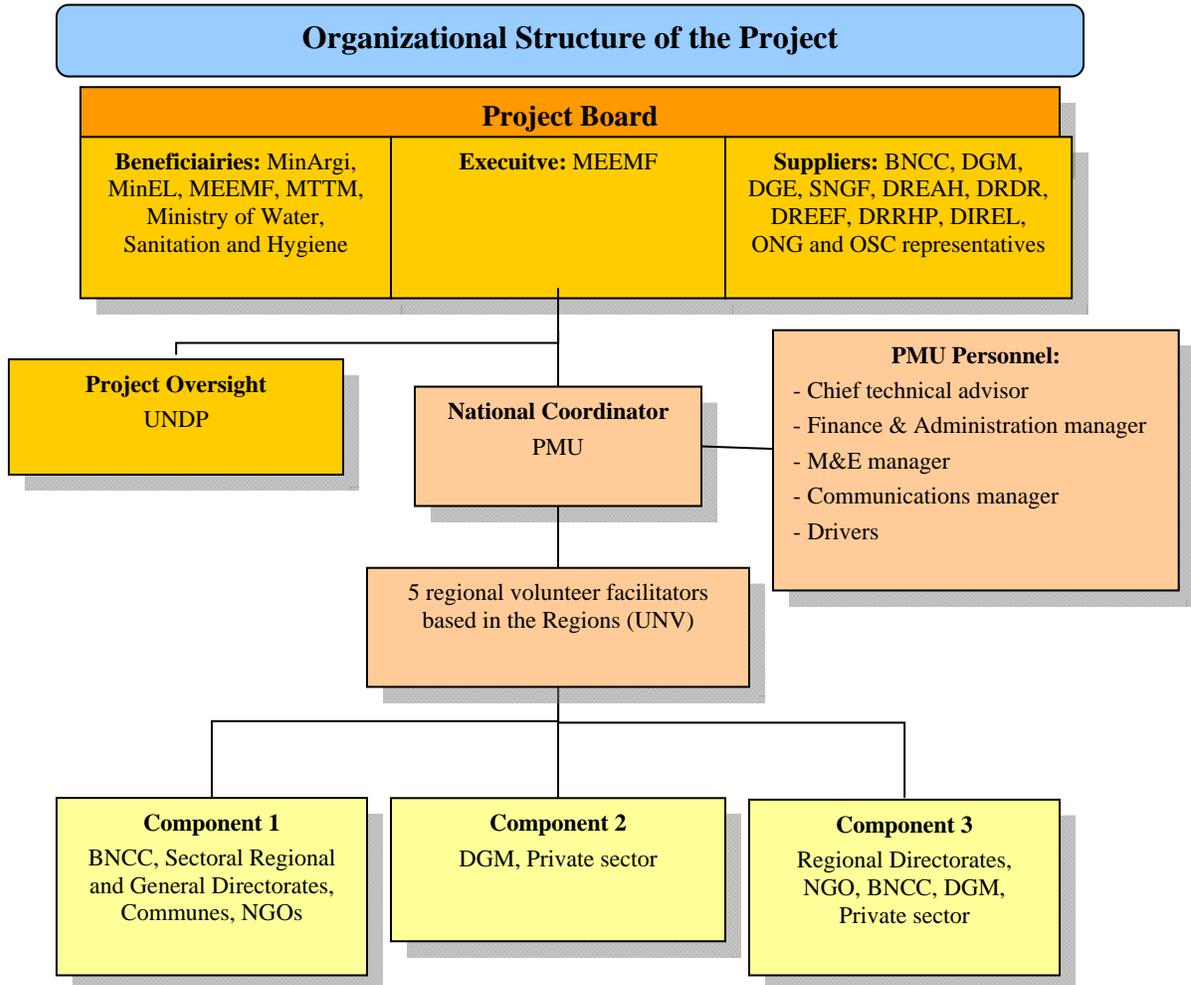
215. The MEEMF, the MinAgri, the MinEL, the MRHP, the MTTM, the Ministry of Water, Sanitation and Hygiene, other ministries, and their respective General Directorates, will be responsible for specific national activities (the specific responsibilities of each institution are listed in Section 2.9-Stakeholders' Analysis). These activities will be implemented through agreement protocols signed with the UNDP and/or the BNCC.

Regional and Local Implementing Partners

216. The Regional Directorates of the ministries concerned (DREEF, DRDR, DREAH, DIREL, DRRHP and regional meteorology services) will be responsible for implementing specific regional and local activities (the specific responsibilities of each institution are listed in Section 2.9-Stakeholders' Analysis). These activities will be also implemented through agreement protocols signed with the UNDP and/or the BNCC.

217. Other non-governmental implementing partners will also be involved in implementing local activities. For example, UNICEF will implement specific activities through an agreement protocol (see annex 9). NGOs, professional organizations and local associations such as the *Maison des Paysans* (MDP), GRET, the *Centre Technique Agro-écologique du Sud* (CTAS), Agricultural Service Centres (ASC), *Communautés de Base* (COBA), CARE, etc., will also be involved and will be recruited through calls for tender during the project intervention period. Finally, microfinance institutions such as Fivoy and Microcred will also be implementing partners recruited through calls for tender.

Organizational Chart



6.1 Oversight

218. The UNDP Sustainable Development and Resilience Unit will provide oversight at the UNDP Country Office level together with the UNDP-GEF unit. The Sustainable Development and Resilience Unit will support the Project Board, by carrying out objective and independent project oversight and monitoring duties and ensuring that project management milestones are managed and completed. Monitoring duties include risk log tracking, field visits and annual reviews and reports. M&E activity results will be shared with the Project Board. The UNDP-GEF unit will be providing support to the CO throughout the project cycle up until the project is financially and operationally closed.

6.2 Auditing

219. Project audits are under the purview of the UNDP Office of Audit and Investigation (OAI). The project audit regime is determined by the implementation modality. Expenditures incurred under the NIM modality may be subject to annual NIM audits, based on pre-determined risk and expenditure thresholds. Expenditures incurred under the DIM modality may be selected for audit by OAI based on annual risk assessments. The cost of audits will be included within the project budget.

220. Audit Clause

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

7 MONITORING AND EVALUATION FRAMEWORK

221. Project monitoring and evaluation will be conducted in accordance with established UNDP/GEF procedures and will be led by the PMU and the UNDP Country Office.
222. Project Monitoring and Evaluation (M&E) will be carried out following the activities and the budget presented below. The M&E framework presented in the logistical framework in Component 3 is consistent with the AMAT tool and UNDP's M&E framework. The project document, AMAT, logical framework and associated indicators and targets, will form the basis on which the project's Monitoring and Evaluation system will be built, as part of the project implementation plan to be developed at the project's inception workshop.
223. Key project executing organisations will be directly involved in monitoring and evaluating activities, outputs and outcomes, and all beneficiary and stakeholder groups will be consulted, using a gender sensitive approach. The monitoring process itself will serve as a learning and capacity building platform for the project's main executing agencies. The project will also train key implementing partners in monitoring and evaluation tools and techniques including for social and environmental impact assessment. Principles of adaptive management will be applied in undertaking six monthly and annual reviews of the effectiveness of project implementation mechanisms. Two key external independent evaluations will be commissioned, one at the mid term of the project, the other at the end of the project. Establishment of the project's monitoring and evaluation process will involve the following steps. Project monitoring and evaluations steps, roles and responsibilities and costs are summarised in table 3.

Project start:

224. A Project Inception Workshop will be held during the first two months of project start. It will be conducted with the full project team, key agencies involved in implementation at national and regional levels, representatives of relevant government, NGO and community based organisations, co-financing partners, UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as appropriate. It is important that all key local stakeholder agencies take part in the Inception Workshop to enable establishment of a common vision and ownership of the project execution strategy. This should include all NGOs, farmers associations and baseline projects at proposed project sites. The Inception Workshop is crucial to building ownership for the project results and to plan the first year annual work plan.
225. The Inception Workshop will provide an opportunity for all parties to understand and clarify their roles, functions, and responsibilities within the project's decision-making and implementation structures, including reporting and communication lines, and conflict resolution mechanisms. The project's decision-making and implementation structures and the Terms of Reference for project staff and the Project Board will be discussed, in order to clarify the responsibilities of each during the project's implementation phase.
226. A key task of the Inception Workshop will be the preparation of the project's first Annual Work Plan on the basis of the project's logframe matrix and the Project Document. Specific targets and progress indicators for the first year of implementation, together with their means of verification, will be developed and will form part of the Annual Work Plan. These should be Specific, Measurable, Achievable, Relevant and Timebound (SMART) and should help the project team and partners to assess whether project implementation is proceeding at the intended pace and in the right direction to meet logframe targets and indicators. Targets and indicators for subsequent years will be defined annually as part of the internal evaluation and planning processes undertaken by the project team in consultation with all key project stakeholders.
227. The logical framework (logframe) will also be reviewed at the Inception Workshop. Progress and performance indicators will be fine tuned in consultation with key stakeholders and with support from

UNDP-CO and assisted by the UNDP-GEF Regional Coordinating Unit. All indicators must adhere to the SMART criteria. The inception workshop report will clearly outline any changes made and why these have been proposed. An Output and Activity Monitoring and Evaluation Plan will also be developed at the Inception Workshop.

228. The Inception Workshop will also: (i) enable discussion between project staff and all key project stakeholders (including organisations and baseline projects); (ii) detail the support services and complementary responsibilities of UNDP-CO and RCU staff vis à vis the project team; (iii) provide the opportunity for a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, mid-term and terminal project evaluations and the GEF LDCF Adaptation Monitoring and Assessment Tool (AMAT). The Inception Workshop will also provide an opportunity for UNDP to inform the project team and national counterparts and partners of project related budget reviews, planning and mandatory budget re-phasing. It will provide the basis on which the project team will develop an operational plan.
229. 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.

Monitoring responsibilities and events

230. A detailed schedule of project review meetings will be developed by the project management team, in consultation with project implementation partners and stakeholder representatives. This will be incorporated in the Project Inception Report. Such a schedule will include: (i) tentative time frames for Tripartite Reviews, and Project Board Meetings, and (ii) project related Monitoring and Evaluation activities.
231. Day to day monitoring of implementation progress will be the responsibility of the National Coordinator based on the project's Annual Work Plan and its indicators, and the project document and logical framework. The national coordinator will inform UNDP CO and UNDP RCU of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion. He will also inform UNDP CO and RCU of any significant change of circumstance which impacts upon project rationale or approach. Measurement of Outcome indicators may require specific studies to be undertaken.

Quarterly Monitoring:

232. 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.
 - Other ATLAS logs can be used to monitor issues, lessons learned etc... The use of these functions is a key indicator in the UNDP Executive Balanced Scorecard.

Annual monitoring:

233. 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). This progress assessment could follow Randomized Control Trial (RCT) principles for outputs 3.1, 3.2 and 3.3, measuring project effectiveness by comparing outcomes of those (individuals and communities) who received the project against those who did not⁴⁰.
- Project outputs delivered per project outcome (annual).
- Lesson learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. GEF focal area tracking tools) are used by most focal areas on an annual basis as well.

234. Annual review of project budget and expenditures will also be undertaken by the Project Coordinator, with support from UNDP CO and the national technical assistant. These will assess levels of project expenditure and co-financing contributions over the year to make sure that these are on track.

235. Tripartite Review (TPR) is the highest policy-level meeting of the parties directly involved in the implementation of a project. It will be held with the Project Board (PB). The project will be subject to Tripartite Review at least once every year. The first such meeting will be held within the first twelve months of the start of project implementation. The Project Coordinator will prepare an Annual Project Report (APR), with support from the Chief Technical Advisor and will submit it to UNDP-CO, UNDP-GEF RCU and subsequently to the PB at least two weeks prior to the TPR for review and comments. APR/PIR will be used as one of the basic documents for discussions in the TPR meeting. The project coordinator will present the APR/PIR to the TPR, highlighting policy issues and recommendations. Separate reviews of each project component may also be conducted if necessary. The TPR has the authority to suspend disbursement of funds if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on the logframe, project implementation plan, proposed delivery rates, and processes for assessing achievement of outputs.

Periodic Monitoring through site visits:

236. UNDP CO and the UNDP RCU 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.

Mid-term:

237. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation 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

⁴⁰ For more info on RCT, please visit: <http://www.povertyactionlab.org/methodology>

project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The relevant GEF Focal Area Tracking Tools will also be completed during the mid-term evaluation cycle.

End of Project:

238. An independent Final Evaluation will take place three months prior to the final Project Board meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final 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.
239. The Terminal Evaluation will use RCT principles for assessing impact achievements. A Randomized Evaluation is a type of Impact Evaluation that uses random assignment to allocate resources, run programs, or apply policies as part of the study design. Like all impact evaluations, the main purpose of randomized evaluations is to determine whether a program has an impact, and more specifically, to quantify how large that impact is.
240. 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 Centre (ERC). The relevant AMAT will also be completed during the final evaluation.
241. The terminal tripartite review (TTR) is held in the last month of project operations. The project coordinator is responsible for preparing the Terminal Report (TR) with support from the Chief Technical Advisor. The TR will be submitted to UNDP-CO, UNDP GEF's Regional Coordinating Unit and subsequently to the Project Board (PB). It shall be prepared in draft at least two months in advance of the TTR meeting in order to allow for full review of the document, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the LDCF GEF project has achieved its stated Objective, Outcomes and Outputs and has contributed to the broader development goal. The TTR meeting decides whether any actions are still necessary to achieve the project Objective, particularly in relation to the sustainability of project results. It acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation or formulation.

Project Monitoring Reports

242. The Project Coordinator, with the support of the Chief Technical Advisor, and in conjunction with the UNDP-GEF CO and RCU will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a) through (f) are mandatory and strictly related to monitoring, while (g) through (h) have a broader function and the frequency and nature of these reports is to be defined and agreed throughout implementation.

a) Inception Report

243. A Project Inception Report will be prepared immediately following the Inception Workshop, to be submitted within 3 months of the project start-up date. It will include a detailed First Year/ Annual Work Plan divided in quarterly time-frames, detailing the activities and progress indicators that will guide implementation during the first year of the project. Alongside key activities, this Work Plan will include

the dates of specific field visits by the UNDP-CO and/or the Regional Coordinating Unit (RCU), as well as time-frames for meetings of the project's decision making structures. The Report will also include a detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan. This will include monitoring and evaluation activities to enable effective measurement of project performance during the targeted 12 months time-frame.

244. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related partners, as agreed in the Inception Workshop. It will outline progress to date on project establishment and start-up activities. It will also include an update of any changed external conditions that may effect (positive or negative) project implementation or that change the project baseline. It will highlight any new opportunities for project partnership / co-financing and propose an approach to ensure that the project works to maximise partnership opportunities. It will also confirm the status of risks and assumptions. As an annex to the Inception Report, the project manager will prepare a draft Reports List, detailing the technical reports that are expected to be prepared during the course of the Project, and tentative due dates. When finalized, the Inception Report will be circulated to UNDP Country Office and to the UNDP-GEF Regional Coordinating Unit, who will review it, and provide comments within two weeks. The report will then be circulated to all key project executing and stakeholder organisations who will be given a period of one calendar month in which to respond with comments or queries.

b) Annual Project Report (APR)

245. The Annual Project Report (APR) is a UNDP requirement and part of central oversight, monitoring and project management. It is a self-assessment report by project management to UNDP CO and provides input to the country office reporting process, as well as forming a key input to the Tripartite Project Review (TPR). An APR will be prepared by the project coordinator supported by the national technical assistant, on an annual basis, to reflect progress achieved in meeting the project's Annual Work Plan. The APR also assesses overall project performance towards achieving Outcomes through Outputs, to achieve intended GEF LDCF project 'additionality' to the baseline, supporting climate change adaptation in the agriculture sector. The APR will be submitted to PB / TPR members at least two weeks prior to the TPR meeting.

246. The format of the APR is flexible but should include the following:

- An analysis of project performance over the reporting period, including activities undertaken, results achieved and information on the status of progress towards achieving Outputs and Outcomes.
- The stakeholder groups involved in the project during the year and how they were involved.
- Identification of key beneficiary groups and how they benefited, as well as assessment of any unintentional negative impacts of the project.
- The constraints experienced in progress towards results and the reasons for these. Identification of the three major constraints to achievement of results. Remedial action proposed to overcome these constraints in the next year's work plan.
- The status of risks and assumptions identified in the Project Document and identification of any new risks or assumptions.
- Analysis of any change of circumstance / change to the project baseline that may affect (positive or negative) project implementation.
- The identification of new opportunities for project partnership or co-financing and a proposed approach to ensure that the project works to maximise partnership opportunities.
- An overall assessment of the levels and types of expenditure in relation to that outlined in the Project Document / budget and in the Annual Work Plan / budget and the reasons for any derivations from

budget levels and types planned. Remedial action proposed in the next year's work plan. AWP, CAE and other expenditure reports (ERP generated).

- As assessment of the level of co-financing committed to the project during the year, indicating levels of co-financing and agency / organisation and comparison with levels committed to the project.
- Lessons learnt. How the project will build on successes and learn from failures.
- An assessment of the likelihood of sustainability of project results and how the project implementation approach is working to achieve sustainable results. Any changes proposed to the project approach, to increase the likelihood of sustainable impact.
- Clear recommendations for future project orientation.

c) Project Implementation Review (PIR)

247. The Project Implementation Review (PIR) is an annual monitoring process mandated by the GEF. It is an important management and monitoring tool for project managers. Once the project has been under implementation for a year, a Project Implementation Review report must be completed by the UNDP CO together with the project management team. The PIR should however be agreed upon by the project management team, the executing agency (BNCC), UNDP CO, UNDP RCU and the PB. It should be discussed at the PB / Tripartite Review TPR meeting.

248. PIRs are collected, reviewed and analyzed by the RCU who provide comments and ensures that they have been filled in correctly. They are then sent to the focal area clusters at the UNDP/GEF headquarters. The focal area clusters supported by the UNDP/GEF M&E Unit analyse the PIRs by focal area, theme and region for common issues/results and lessons. The focal area PIRs are then discussed in the GEF Interagency Focal Area Task Forces in or around November each year and consolidated reports by focal area are collated by the GEF Independent M&E Unit based on the Task Force findings. In light of the similarities in content of both APR and PIR, UNDP/GEF has prepared a harmonized format for reference.

d) Quarterly Progress Reports

249. Short reports outlining main updates in project progress and key issues/constraints encountered will be provided quarterly by the project coordinator, in consultation with the national technical assistant and relevant stakeholders. It will then be sent to the local UNDP Country Office and the UNDP-GEF RCU. Quarterly reports form the basis for discussions with UNDP CO.

e) Periodic Thematic Reports

250. As and when called for by UNDP, UNDP-GEF RCU, the Project Board, the project team will prepare Specific Thematic Reports, focusing on specific issues or areas of activity. The request for a Thematic Report will be provided to the project team in written form by UNDP and will clearly state the issue or activities that need to be reported on. These reports can be used as a form of lessons learnt exercise, for specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. UNDP is requested to minimize its requests for Thematic Reports, and when such are necessary will allow reasonable timeframes for their preparation by the project team.

f) Project Terminal Report

251. During the last three months of the project, prior to the Terminal Evaluation (TE) the project team will prepare the Project Terminal Report. This comprehensive report will:

- Summarize all activity areas and associated Outputs implemented by the Project, the results achieved, or not achieved, in relation to those intended in the Project Document (reporting against Output and Outcome statements, targets and indicators);

- Any changes made to project implementation following the mid term evaluation, why these changes were made and whether proposed results were achieved;
- The implementing agencies, key project stakeholders and the project beneficiaries - how they were involved and what impact the project has had for them;
- How the project worked in synergy with associated baseline activities;
- Lessons learnt;
- Project implementation approach structures and systems;
- The likelihood of sustainable impact from project impacts and analysis of any potential risks to sustainability;
- An assessment of project expenditure per Output and per Outcome over the life of the project, based on the annual audits prepared as part of annual project reports (APR). Any changes in levels and types of expenditure in comparison to those proposed in the Project Document and in associated Annual work plans will be fully explained;
- An assessment of the level of co-financing committed to the project, over the life of the project, indicating levels of co-financing and agency / organisation; and
- Any further steps that may need to be taken to ensure sustainability and replicability of Project results prior to the end of the project, and by national partners, following the end of the Project.

g) Technical Reports (project specific)

252. Technical Reports are detailed documents covering specific areas of analysis within the project. As part of the Inception Report, the project team will prepare a draft Reports List, detailing the technical reports planned during the course of the Project, and tentative due dates. Where necessary this Reports List will be revised and updated, and included in subsequent APRs. Technical Reports are often prepared by external consultants and should be comprehensive, specialized analyses of clearly defined areas of research or analysis within the framework of the project. These technical reports will represent, as appropriate, the project's substantive contribution to the information and knowledge base, and may be an important part of the project's overall contribution to developing tools, approaches, best practice and lessons learnt at local, national and international levels.

h) Project Publications (project specific)

253. Project Publications whether written or visual can form an important mechanism through which the project disseminates results and achieves impact. 'Publications' may be scientific, technical or informational documents, journalistic articles, multimedia publications, training or documentary films, and radio programmes. Publications may be summaries or compilations. The project management team will determine the most appropriate mechanisms for publication and dissemination, based on the Project Document, intended impact and stakeholder consultations. Key considerations will be intended beneficiaries/audience, their levels of literacy, their information needs and the likely impact of publications in meeting those needs.

Learning and knowledge sharing:

254. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums.

255. 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 through lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and

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

Audit

256. The project will be audited in accordance with UNDP Financial Regulations and Rules and applicable audit policies.

Communications and visibility requirements

257. Full compliance is required with UNDP's Branding Guidelines. These can be accessed at <http://intra.undp.org/coa/branding.shtml>, and specific guidelines on UNDP logo use can be accessed at: <http://intra.undp.org/branding/useOfLogo.html>. 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: http://www.thegef.org/gef/GEF_logo. The UNDP logo can be accessed at <http://intra.undp.org/coa/branding.shtml>.

258. Full compliance is also required with the GEF's Communication and Visibility Guidelines (the "GEF Guidelines"). The GEF Guidelines can be accessed at: http://www.thegef.org/gef/sites/thegef.org/files/documents/C.40.08_Branding_the_GEF%20final_0.pdf. 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. Where other agencies and project partners have provided support through co-financing, their branding policies and requirements should be similarly applied.

Type of M&E Activity	Responsible Party	Budget excluding staffing costs (USD)	Calendar
Inception workshop and report	<ul style="list-style-type: none"> ▪ National coordinator ▪ PMU ▪ UNDP CO, UNDP GEF 	Estimated cost: 10,000	During the first 2 months of implementation
Development of an M&E framework and procedural manual	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP GEF RTA/Project coordinator 	Estimated cost: 15,000	
Analysis of means to verify the achievement of outputs	<ul style="list-style-type: none"> ▪ UNDP GEF RTA/Project coordinator ▪ PMU, responsible for M&E 	To be defined during the inception workshop Estimated cost: 20,000	Launch, midterm and end-of-project
Analysis of progress made in terms of the project outputs and implementation	<ul style="list-style-type: none"> ▪ PMU ▪ External consultants (evaluation team) 	To be determined in the annual Work Plans Estimated cost 25,000	Annually, before the ARP/PIR and in the annual work plans
APR/PIR	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP CO ▪ UNDP RTA ▪ UNDP EEG 	0	Annually
Progress report	<ul style="list-style-type: none"> ▪ Project coordinator 	0	Quarterly
Midterm evaluation	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External consultants (evaluation team) 	Estimated cost: 30,000	Midterm

Final evaluation	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP CO ▪ UNDP RCU ▪ External consultants (evaluation team) 	Estimated cost: 45,000	3 months before the end of the project
End-of-project report	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP CO 	0	3 months before the end of the project
Audit	<ul style="list-style-type: none"> ▪ PMU ▪ UNDP CO 	Estimated annual cost: 3,000 (15,000 in all)	Annually
Site visits	<ul style="list-style-type: none"> ▪ UNDP CO ▪ UNDP RCU ▪ Government representatives 	Paid on UNDP fees and management costs Estimated cost: 15,000	Annually
Total estimated cost Excluding project personnel and UNDP agent costs and travel expenses		175,000 USD (+/- 2% of the total GEF budget)	

Table 3: Project Monitoring and Evaluation

8 LEGAL FRAMEWORK

259. This document, along with the CPAP signed by the Government and the UNDP which is incorporated by reference, constitute a Project Document, as referred to in the SBAA, and all CPAP provisions apply to this document.
260. Consistent with Article III of the Standard Basic Assistance Agreement, 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, lies with the implementing partner.
261. The implementing partner shall:
- 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; and
 - Assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.
262. The UNDP reserves the right to verify whether such a plan is in place and to suggest modifications to the plan, where necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.
263. 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.

APPENDICES

Appendix 1: Risk Matrix

Project Title: Enhancing the adaptation capacities and resilience to climate change in rural communities in Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana	Award ID:	Date: November 2014
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#	Description	Date Identified	Type	Impact & Probability (1-5)	Countermeasures / Mngt response	Owner	Submitted, updated by	Last Update	Status
1	Resurgence of the socio political crisis: Madagascar is currently recovering from several years of socio political crisis. While the situation is currently calm, the political and social situation is still fragile and could be disturbed again with the new coming election.	November 2013 (PIF)	Political	I=4 P=3	A document analyzing other projects implemented during the period of instability and gathering lessons learned will help define strategies to tackle this risk	UNDP			
2	Institutional reorganization after election and recurrent institutional instability : the principal risk for the proposed LDCF project would be the change of the agenda of the new appointed ministers and senior officers and the lack of coordination between the key Ministries	November 2013 (PIF)	Institutional and organizational	I=4 P=4	The project will raise awareness towards decision and policy makers on the relevance of addressing climate change concerns. This will contribute to maintain climate change in the agenda of the high-level policy makers and officers.	MEEMF/UNDP		During the preparation of this project, high-level decision-makers have shown a high degree of commitment for this project. Furthermore, through the multi-level design of the project, this commitment has been built and will be nurtured at different levels.	
3	Lack of community involvement in some project sites	November 2013 (PIF)	Strategic	I=4 P=2	The assessment of available community workforce and cash-for work-modalities in target sites prior to project	BNCC; Regional Directorates, partners			

					inception combined with raising awareness on project benefits for communities' livelihoods could contribute to raise their interest to participate in the project activities.				
4	The non-adoption of alternative income-generating activities and climate resilient technologies by villagers because they do not see the benefit of new practices or social conflicts hinder taking up the practices	November 2013 (PIF)	Strategic	I=4 P=2	The risk of non-adoption of alternative income generating activities (IGA) and climate resilient technologies could be related to the lack of interest for these activities, lack of capacities and knowledge to implement these activities, financial support, incentives mechanisms like the existence of a market and marketing supports. However, this risk is low given that the project is responding to a demand driven request for development of alternative income generating activities and climate resilient technologies. Moreover, the IGAs and climate resilient technologies will be developed in full consultation with communities in a participatory including raising awareness of targeted communities about options for strengthening livelihood resilience. This will allow targeted communities to identify and select themselves the alternative IGA (based on climate risk assessment information), and it will be combined with capacity development efforts.	BNCC; Regional Directorates, partners		It should not be assumed that the villagers will automatically change their livelihood practices as a direct result of the project intervention. However, consultations, interviews and field visits which took place during the PPG have shown a high commitment of locally elected, communities' representatives and villagers interviewed. Thus, it is expected that this commitment will remained high during the implementation of the project.	
5	Unusual and catastrophic climatic events in project sites during project implementation such	November 2013 (PIF)	Environmental	I=4 P=2	Unusually difficult climatic circumstances could threaten the projects field activities. Although the overall mitigation strategy is to diversify	BNCC			

	as cyclones, floods, etc.				livelihoods options and build climate resilient agro-sylvo-pastoral and water supply and sanitation systems, major natural disasters could hamper the local level activities. In addition, community-level field observation capacities will be fostered to anticipate climate change related disruption. The project will also support access and use of climate data which will allow better planning. As the project intervention is planned over a five years' time period, annual variations should be accounted for. Furthermore, UNDP is supporting the government in this specific area including shifting the emphasis more towards prevention, not only recovery measures.				
6	Inadequate capacities regarding CCA in institutions involved for appropriate implementation of project activities	November 2014 (PPG)	Institutional and organizational	I=4 P=4	Capacity building activities will be implemented in the framework of the project and will benefit to key institutions at the national and local levels.	UNDP/MEEMF, Regional Directorate partners			
7	Political will at national and commune level does not remain constant during project duration	November 2014 (PPG)	Political	I=4 P=2	The project will ensure political involvement by organization training and awareness raising sessions at regional and national level	UNDP/MEEMF, Regional Directorate partners			

Appendix 2: TORs for Project Coordination Mechanisms and Personnel

I. Project Board (PB)

Tasks and Mandate

The PB will be responsible for overall support, policy guidance and overall supervision of the project. The PB is specifically responsible for: validating key project outputs, notably annual work plans, budgets, technical reports and progress; monitoring and evaluating project progress against the LDCF Council approved outcomes.

Other key tasks of the PB include:

- Facilitate coordination with similar projects and programmes;
- Ensure the PMU has access to data and information from other sources in-country;
- Examine and approve annual work plans;
- Examine and approve monitoring reports;
- Examine and approve activity and progress reports;
- Ensure that the PB recommendations are enacted;
- Review the performance of the PMU, and make recommendations for implementation; and
- Review proposed changes to outputs that are to be implemented under the project.

Organization and membership

The PB meets at least once per year, and when convened by the Chair.

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 four distinct roles, including:

- 1) An Executive: individual representing the project ownership to chair the group;
- 2) 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;
- 3) 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; and
- 4) 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.

II. Project Management Unit (PMU)

Introduction

The Project Management Unit is responsible for day-to-day implementation and management. It is notably responsible for technical support to all activities, and establishing technical working relationships with a range of projects and programmes and activities throughout Madagascar.

Tasks

- Preparing Annual and Quarterly work plans;
- Preparing Financial and progress report;
- Preparing TOR for all activities, inputs and services;
- Overseeing the identification, selection and supervision of all service providers;
- Providing technical support to the implementation of climate-resilient income generating activities and specific adaptation measures at the community level. This includes regular visits to communities' areas to observe and advise on all local activities;
- Providing technical support and direct inputs to all capacity development activities at local, communal and regional levels. This includes the design and implementation of training programmes;
- Prepare policy papers, recommendation, as appropriate and necessary;
- Ensuring coordination with all related projects in the sector and related sector;
- Arrange and ensure the smooth implementation of all PB meetings;
- In-between PB meetings, ensure the PB members are informed of all major developments and reports on a regular basis as specified by the PB (note: this should take place at least twice a year other than planned PB meetings);
- Building working technical partnerships;
- Overseeing lesson learning and lesson dissemination;
- Providing training in line with work plans and budget;
- Implement the M&E plan;
- Oversee communications: website, newsletters, leaflets, etc.;
- Ensure that appropriate accounting records are kept, and financial procedures for NIM are followed;
- Facilitates and cooperates with audit processes at all times as required;

Staffing

The PMU will consist of one National Project Manager (PM), one Chief Technical Advisor (CTA), one M&E expert, one Communications expert, one Finance and Admin Manager, and support staff (two drivers). The PM will be supported by national and international consultants as needed.

Detailed TOR for each of these will be prepared prior to the Inception Workshop, approved by the PB and by UNDP/GEF.

III. National Project Manager (PM)

Reports to: Project Board

Timing/Duration: This is a full-time position for the five years of the project.

Objective/scope:

This is a high level policy/leadership position to oversee the project implementation.

- The initial objective is to establish the PMU and oversee the recruitment of its staff and its operationalization.
- The next objective is to ensure regular work planning, adaptive management and monitoring of project progress towards project objectives and goals, and management of all PMU staff.
- The third objective is to ensure the PMU interacts functionally with all partners, national and international, at high levels. This includes developing joint objectives and activities with international partners and other projects.

He/she will be a locally recruited national selected based on an open competitive process. He/She will be responsible for the overall management of the project, including the mobilization of all project inputs and the supervision of project staff, consultants and sub-contractors. He/she will report all substantive and administrative issues to the DNP at BNCC. The PM will report to the Project Board (PB) on a periodic basis and will be responsible for meeting the project's government obligations under the national implementing modality (NIM). He/She will act as a liaison between the Government, UNDP and other UN Agencies, NGOs and project partners, and will maintain close collaboration between the project and other co-financing donor agencies.

Tasks (these include, but are not limited to):

PMU Management and Planning

1. Assumes operational management of the project in consistency with the project document and UNDP policies and procedures for nationally executed projects;
2. Oversees preparation and updates of the project work plan as required; and formally submits updates to UNDP and reports on work plan progress to the PB and UNDP as requested but at least quarterly;
3. Oversees the mobilization of project inputs under the responsibility of the Executing Agency;
4. Oversees the recruitment of all consultants and sub-contractors;
5. Ensures that appropriate accounting records are kept, and financial procedures for NIM are followed, and facilitates and cooperates with audit processes at all times as required;
6. Ensures all reports are prepared in a timely manner;
7. Assists in the finalization of TORs and the identification and selection of national consultants to undertake the rapid assessment;
8. Assists in the planning and design of all project activities, through the quarterly planning process and the preparations of TOR and Activity Descriptions;
9. Supervises the project staff and consultants assigned to project;
10. Throughout the project, when necessary, provides advice and guidance to the national consultants, to the international experts and to project partners; and
11. Assists in the dissemination of project findings, notably to relevant governmental departments and internationally.

Partnerships

1. Oversees development and implementation of communication strategy;
2. Oversees development and implementation of the M&E monitoring system;
3. Builds working relationships with national and international partners in this sector; and
4. Ensures the coordination of project activities work with related work of partners.

Qualifications

The PM will have nationally renowned expertise in at least one of the following fields: Agricultural or rural development; Natural resources management, and climate change adaptation. In addition, the following qualifications will be key to the project success:

- Appropriate University Degree in natural resources management, agriculture and/or climate change adaptation;
- Substantial experience and familiarity with the ministries and agencies in Madagascar;
- Verified excellent project management, team leadership, and facilitation;
- Ability to coordinate a large, multidisciplinary team of experts and consultants; and
- Fluency in English.

IV. Supported staff within PMU

The **chief technical advisor** will be an internationally recruited expert that will be involved part-time throughout the implementation of the project. He/She will be responsible for providing overall technical backstopping to the project. He/She will provide technical support to the National Project Manager (PM), staff and other government counterparts. The CTA will provide the following services: i) quality assurance and technical review of project outputs (e.g. studies and assessments); ii) assist in drafting TORs for technical consultancies and supervision of consultants work; iii) assist in monitoring the technical quality of project M&E systems, including annual work plans, indicators and targets; iv) advise on best suitable approaches and methodologies for achieving project targets and objectives; v) provide a technical supervisory function to the work carried out by other technical assistance consultants hired by the project; and vi) assist in knowledge management, communications and awareness raising. The CTA will report to the PD and will participate in the meetings of the PSC as a resource person.

The **M&E Expert** will be a national expert. He/She will:

- Provide technical expertise and guidance to all project components, and support the CTA in the coordination of the implementation of planned activities under the LDCF project as stipulated in the project document/work plan;
- Be specifically responsible for the technical input into the development of a M&E framework and its implementation and follow-up with all relevant stakeholders at national, county and demonstration site level, in line with the project results framework in section III of the project document and in line with the GEF tracking tool for LDFC project AMAT and GEF M&E guidance;
- Ensure that technical contracts meet the highest standards; provide input into development of Terms of Reference for sub-contracts, assist with selection process, recommend best candidates and approaches, provide technical peer function to sub-contractors; provide training and backstopping were necessary;
- Provide technical inputs into the work of the PB, and other relevant institutions implicated in the project management and implementation arrangements; and
- Undertake regular reporting in line with project management guidelines.

The **Communication Expert** will be a national expert. He/she will:

- Be responsible for the communication work under all project components;
- Be responsible for the dissemination of project lessons through the Adaptation Learning Mechanism (ALM);
- Develop guidelines for the documentation and codification of lessons learned, best practices, and experiences that did not work;
- Systematically, e.g. through the M&E component and special studies, document lessons learned;
- Develop a ‘plan’ for the type of knowledge to be generated, and how, including a dissemination plan;
- Share knowledge with international community e.g. through UNDP Adaptation Learning Mechanism (ALM);

The **Finance and Admin Manager** will be a national expert. He/she will:

- Set up and maintain project files;
- Collect project related information data;
- Update plans;
- Administer PB and other relevant meetings;
- Administer project revision control;
- Establish document control procedures;
- Compile, copy and distribute all project reports;
- Responsible for the financial management tasks under the responsibility of the PM;
- Provide support in the use of Atlas for monitoring and reporting;
- Review technical reports;
- Monitor technical activities carried out by responsible parties.

Two **drivers** will also be recruited for the entire duration of the project.

In addition, **short-term local and international consultants** will support the PMU for the implementation of the project activities. The detailed profiles of these consultants will be defined during project implementation, but will include expertise in: adaptation to climate change; agro-meteorology; supply value-chain; microfinance and credit; small-scale irrigation techniques and water management; and communication.

Capacity Assessment (Report in Annexe 11)

An independent micro-evaluation of the MEEMF was conducted in May 2015. It recommended “to UN Agencies to maintain the Direct Payment Modality to providers and other third parties for obligations incurred by the MEEMF according to activities planned under Annual Work Plans”. It also recommended “a stronger empowerment of the MEEMF in expenses execution processes (including design, implementation and evaluation) and the strengthening of its capacities for a better ownership of the project after its closure”.

Special Clauses

In case of government cost-sharing through the project which is not within the CPAP, the following 10 clauses should be included:

1. The schedule of payments and UNDP bank account details.
2. The value of the payment, if made in a currency other than United States dollars, shall be determined by applying the United Nations operational rate of exchange in effect on the date of payment. Should there be a change in the United Nations operational rate of exchange prior to the full utilization by the UNDP of the payment, the value of the balance of funds still held at that time will be adjusted accordingly. If, in such a case, a loss in the value of the balance of funds is recorded, UNDP shall inform the Government with a view to determining whether any further financing could be provided by the Government. Should such further financing not be available, the assistance to be provided to the project may be reduced, suspended or terminated by UNDP.
3. The above schedule of payments takes into account the requirement that the payments shall be made in advance of the implementation of planned activities. It may be amended to be consistent with the progress of project delivery.
4. UNDP shall receive and administer the payment in accordance with the regulations, rules and directives of UNDP.
5. All financial accounts and statements shall be expressed in United States dollars.
6. If unforeseen increases in expenditures or commitments are expected or realized (whether owing to inflationary factors, fluctuation in exchange rates or unforeseen contingencies), UNDP shall submit to the government on a timely basis a supplementary estimate showing the further financing that will be necessary. The Government shall use its best endeavours to obtain the additional funds required.
7. If the payments referred above are not received in accordance with the payment schedule, or if the additional financing required in accordance with paragraph () above is not forthcoming from the Government or other sources, the assistance to be provided to the project under this Agreement may be reduced, suspended or terminated by UNDP.

8. Any interest income attributable to the contribution shall be credited to UNDP Account and shall be utilized in accordance with established UNDP procedures.

In accordance with the decisions and directives of UNDP's Executive Board:

The contribution shall be charged:

- (a) [...]cost recovery for the provision of general management support (GMS) by UNDP headquarters and country offices
 - (b) Direct cost for implementation support services (ISS) provided by UNDP and/or an executing entity/implementing partner.
9. Ownership of equipment, supplies and other properties financed from the contribution shall vest in UNDP. Matters relating to the transfer of ownership by UNDP shall be determined in accordance with the relevant policies and procedures of UNDP.
 10. The contribution shall be subject exclusively to the internal and external auditing procedures provided for in the financial regulations, rules and directives of UNDP.

Appendix 3: Summary of Studies Conducted during the PPG

The following key reports, which include the results of the VRA conducted during the field mission, were produced as part of the PPG phase, based on detailed TORs developed during the inception of the PPG phase. They are available in French.

PPG report 1: Climate Change Sectoral Report

PPG report 2: Agriculture, Livestock Raising and Forest Sectoral Report

PPG report 3: Water and Sanitation Sectoral Report

PPG report 4: Agro-meteorology Sectoral report

Appendix 4: Presentation of the Communes Selected to Take Part in the Project

264. The section below describes the 11 communes selected to take part in the project, based on the site visits made during the PPG phase and consultations with local governments and local communities. The sites visited with the commune selection criteria are presented in Appendix 2.

Atsimo Andrefana Region

265. Analamisampy Commune

- Population: 26,986 residents in 23 *Fokontany* (4,000 residents in the *Fokontany* of Soahazo)
- Access to drinking water: access to water is a major challenge in this commune. It has a PDWCS (Pump-based Drinking Water Conveyance System) with 2 water towers and 9 standposts, but 2 boreholes are non-operational and the power generator that runs the pumps does not work. People must travel 6 km to obtain drinking water (a 20 L canister costs 200 MGA), and there are no Hand Pump Water Wells (HPWW) in this commune.
- Specificities of the commune: The Communal Development Plan (CDP) dates back to 2003 but is no longer used. This commune primarily grows cotton; other crops include corn, lima beans, peanuts, manioc, lentils and beans. Vulnerability to climate variability in this commune is quite high. The commune is dealing with declining rainfall amounts and increasingly chronic droughts. Cotton and corn yields used to be 3t/ha and were 250-300 kg/ha in 2014. Local producers have stated that 10 years ago, the rainy season extended from October to April/May but now only extends from January to March, with irregular rainfalls. People's current capacities to deal with climate change includes shifting from corn crops to cotton crops, which have a shorter production cycle and require less water. Residents have access to cotton inputs through Tianli, a Chinese company that loans those inputs and money to finance the labour needed for soil preparation and weeding.

266. Manombo Commune

- Population: 31,250 residents in 19 *Fokontany*
- Access to drinking water: A new water tower has just been built but has cracks. The old water tower is no longer in service because the borehole was put onto the new water tower. The commune is suing the company that built the water tower. This water tower has 17 new standposts. Existing HPWW are broken and access to water is achieved through seals. There are latrines at the local hospital and schools but most of the residents do not have access to them.
- Specificities of the commune: This is a coastal commune (the Vezo people), mostly made up of fishers. The Communal Development Plan (CDP) is no longer used. The biggest problem facing Manombo is silting. The people have difficulty growing crops; bean yields have fallen by 75% over 40 years. Local awareness of climate change is relatively high. The needs expressed by this population include: poultry, goat and pig farming, support for small businesses, improved access to agricultural inputs (fertilizer and pesticides). The main crops include lima beans, manioc, lentils and corn. People can only access microfinance institutions (MFI) for small businesses.

267. Miary Commune

- Population: 12,704 residents in 11 *Fokontany*
- Access to drinking water: The commune gets its drinking water and electricity from JIRAMA.
- Specificities of the commune: This commune is located outside Tulear. Its plains can be irrigated through a canal whose water intake is on the Fiherenana River, but the canal is now silted and dry. It is over 50 years old and around 30 km long, and once irrigated over 600 ha. The gates are also

broken at the water intakes and along the canal. Crops grown within this commune include cotton and vegetable crops. This commune, like Tuléar, experiences droughts.

Androy Region

268. Imongy Commune

- **Population:** 53 *Fokontany* and a population of 27,976 residents.
- **Access to drinking water:** The commune has 9 impluviums across 9 *Fokontany*. These impluviums have an average capacity of 12 m³ and provide water for about a month when full. In terms of the seat of the commune, there are 3 wells (1 dating back to colonization, which is still functional, and 2 others dating back to 2013, which are non-functional). Administrative buildings are also equipped with a system to recover and store rainwater in tanks.
- **Specificities of the commune:** This commune is located in a very arid area which has very limited rainfall (only one month of rain per year). The lack of rainfall leads to the proliferation of cattle and goat parasites and diseases. The closest veterinarian lives in Tsiombé, some 20 km from the commune. The commune is also subject to *Tioka Atsimo* (dry ocean winds that lead to silting). The commune is currently dealing with the start of a famine. People here are extremely vulnerable to climate risks and have minimal resilience capacities. The commune is also dealing with a major issue involving red cactuses, which invade local crops, spread very quickly and easily adapt to drought conditions. The commune was hit by a series of especially difficult droughts in 1986, 1991 and 2003. The crops produced in this commune include manioc, corn, beans, lima beans, lentils and sweet potatoes. The Agro-Ecological Technical Centre of Southern Madagascar (CTAS) is working with a group of seed producers in this commune and has a point of sale there. The Agricultural Service Centre (CSA) of Tsiombé is also active in this commune.

269. Tranovaho Commune

- **Population:** 13,280 residents in 28 *Fokontany*
- **Access to drinking water:** Access to water is achieved by using a converted well which can take people a half-day to access, on average, in the dry season.

Specificities of the commune: The commune is located in a semi-arid area, with annual precipitation amounts of less than 400 mm. The commune is quite remote; it takes 25.5 hours to get from the commune to the nearest town centre, and 26 hours to get from the seat of the commune to the seat of the district in the rainy season. The forest area of the commune has shrunk by 10-25% in the past 10 years. Farming fields make up 30% of the commune, and the average field is around 1 ha per household. Agriculture and livestock represent the most common Income Generating Activities in this commune. The commune's adaptation capacity is weak, its exposure to unpredictable weather conditions is high, and its vulnerability is significant.

Anosy

270. Sampona Commune

- **Population:** 20,554 residents in 31 *Fokontany*
- **Access to drinking water:** The commune is dealing with problems accessing drinking water. In the seat, there is an impluvium dating back to 1961 that is in fair condition. An impluvium was built in the *Fokontany* of Vahavola with BMZ funds but is not working because the liner of the catchment area was stolen. Another was built in Ankilimitraha with USAID funds. Residents with the means build private tanks while others, knowing it takes around 9 hours to bring back water back from the river, buy water pumped from the Mandrare River at a cost of 800 MGA for a 20L canister.

- Specificities of the commune: Sampona is the region's leading producer of manioc, potatoes and lentils. The commune is dealing with a red cactus invasion. In 2010, heavy rains resulted in good crops, which lowered prices. But since 2012-2013, there has been little rainfall and crops have been extremely poor, causing prices to climb. The commune has access to seeds from GRET/CTAS, which are sold at 4 points of sale, and farmers receive support from CARE to buy seeds. The commune does not have access to inputs in this area, but the land is fertile. In terms of agricultural advice, GRET/CTAS has disseminated Direct Seeding, Mulch-Based Cropping Systems (DSMCS) and has introduced Mucuna-style cover plants and the use of fodder as wind-breaking hedges. There are 57 more or less structured associations in the commune. These date back to over 10 years and recently obtained institutional support from GRET/CTAS and CARE. CARE has also set up 16 FFS in 7 *Fokontany*, but no exchange visits have yet been organized. Training sessions are held once a week, and exchange visits are organized.

271. Tanandava Commune

- Population: 22,962 residents in 30 *Fokontany*
- Access to drinking water: The commune has wells but the water is briny. There is a HPWW in the seat of the commune but the pump is broken. Lake Anony is located some 2.5 km away, but its water is briny. CARE has just invested in a rainwater catchment tank, but its retention capacity is weak due to chronically low rainfall amounts.
- Specificities of the commune: This commune is located outside a large sisal plantation, which monopolizes the land. The commune is also dealing with advancing dunes and the possibility of silting in the village. Some partners, including CARE in collaboration with WFP and the WWF, helped stabilize the dunes in 2011. Tanandava is quite vulnerable to droughts. In 1993, 700 people died from lack of food and water.

Atsinanana Region

272. Eastern Ilaka Commune

- Population: 10,032 residents in 8 *Fokontany*
- Access to drinking water: The commune has a PDWCS that was built by CARE in 2011 to serve the seat of Eastern Ilaka. The commune has a well with an immersed pump system, a 10m³ capacity water tower, and 3 one-piece units with 3 standposts, 3 washhouses, and 3 latrines with 4 compartments.
- Specificities of the commune: This commune mainly lives off rice crop, fishing and corn crop activities. Its coffee tree plants are already old and should be renewed. The signs of climate change can be seen in overdue rainfalls, which disrupt the commune's growing calendar.

273. Betsizaraina Commune

- Population: 5,415 residents and 12 *Fonkontany*
- Access to drinking water: The commune has a PDWCS which was built by the Ministry of Energy and Mining in 1984. It features a tube well, an immersed pump, a power generator, a concrete water tower and 20 standposts. The PDWCS has not worked in over 20 years: the tube well is in poor condition, the immersed pump no longer works, the power generator has disappeared, the water power is in fair condition, and the standposts are in poor condition. There are no sanitation facilities. Betsizaraina obtains its water downhill from the village, making it unfit for human consumption.
- Specificities of the commune: This commune is known for its swamp rice crops. Most of the people live off freshwater fishing activities. The signs of climate change can be seen in overdue rainfalls, which disrupt the commune's growing calendar.

Analamanga Region

274. Betatao Commune

- **Population:** 10,032 residents in 8 *Fokontany*
- **Access to drinking water:** 7 Gravity-based Drinking Water Conveyance Systems (GSDWCS) have been built in this commune. The water sources supplying these GSDWCS can become depleted during low-water periods, as they are not protected. Catchment intakes and supply pipes or networks can clog, making make the GSDWCS non-functional.
- **Specificities of the commune:** The rural commune of Betatao is characterized by an average temperature of 17 °C. The rainy season extends from December to March and the dry season extends from August to November. The commune produces rice, corn, manioc and beans. The 7 watersheds supplying the gravity-based drinking water catchment sources are bare due to repeated brush fires. The 7 retention tanks can become silted and congested due to the significant amounts of solid waste that accumulate during heavy rains.

275. Ambatolotarakely Commune

- **Population:** 10,800 residents in 5 *Fokontany*
- **Access to drinking water:** a GSDWCS was built by Water Aid in 2013 to serve the seat of Ambolotarakely. It includes a retention dam, a retention tank, a catchment intake, a 6 m³ capacity water tower, three standposts and a washhouse. This GSDWCS is functional and in good condition.
- **Specificities of the commune:** The rural commune of Ambolitarakely has suffered in the wake of climate variability and change. Rain patterns have changed to the point where it no longer rains in January, when rice germinates. As a result, crops have failed, forcing most of the locals to eat manioc. The lack of rain has led to the loss of 30-40% of the commune's crops. If the situation continues, the people would benefit from finding a more climate-resilient activity to practice. As is the case in all communes in the District of Ankazobe, bush fires go hand in hand with the insecurity caused by zebu thieves, who use brush fires to hide the stolen oxen's footprints.

Appendix 5: Methodology and Result of the Vulnerability Reduction Assessment (VRA)

I. General Methodology

Important considerations to conduct a VRA activity:

- It is essential that both a woman's group and a men's group be led separately and for the former the facilitator be a local woman. Ideally both facilitators will have an assistant to take notes while the facilitator leads the discussion. The questions should also ideally be translated into the local dialect.
- Potential H-Form Question modifications: These questions are meant to serve as a basis for a larger discussion where the facilitator can probe deeper and reformulate the questions should he/she see that the question was not understood. Questions A represent the original H Form Questions while Questions B represent alternatives. Depending on the literacy levels of the group, rocks or sticks can be used to rank their priorities.
- Additionally, instead of using the negative and positive columns, the exercise will rank their answers by priority in order not to lead the answers.

The following table presents the four VRA indicators, as well as examples of VRA questions and the logic per indicator.

VRA Indicator	VRA Question In these examples, we consider the case of a community facing increasing drought risks	Logic
1. Vulnerability of livelihood/welfare to existing climate change and/or climate variability.	<i>Example: What happens when there is drought? How does this affect you and your community?</i>	<ul style="list-style-type: none"> • Addresses present climate-related development issues – often the main climate concern of the community. • Prepares community for the following question that is specific to anthropogenic climate change by grounding that discussion in a framework that relates it to present impacts. • During the second VRA meeting and onwards, this question will measure any immediate impacts that project outputs may have had in reducing short-term weather related risks ("no regrets" adaptation measures).
2. Vulnerability of livelihood/welfare to developing climate change risks.	<i>Example: What would happen if drought was twice as frequent? How would this affect you and your community?</i>	<ul style="list-style-type: none"> • Once present context of variability has been discussed, this question focuses the community on their perceptions of likely impacts of climate change. • This question relates to "likely" risks, as identified in the project proposal and CPS. • Allows the community to begin to consider long-term viability of livelihood practices in the face of climate change, leading to the following question. • During the second VRA meeting and onwards, this question will also measure the impact of project outcomes, with respect to long-term climate change risks – confidence that measures in place will help the community to manage future acute or slow-onset climate impacts.
3. Magnitude of barriers (institutional, policy, technological, financial, etc) barriers to adaptation.	<i>Example: What stands in the way of adapting to increasing drought? What means do you or your community have to manage events occurring more frequently?</i>	<ul style="list-style-type: none"> • This question will qualify the above question, and focus on the needs of the community to successfully adapt. • This question will identify policy and practical barriers, forming useful lessons for the country and global programmes. • This question links project outputs to their respective outcomes in vulnerability reduction – given that projects aim to reduce barriers to adaptation, this question measures whether project outputs have been implemented, and if so, if they have had their desired impact.
4. Ability and willingness of the community to sustain the project intervention	<i>Example: Rate your confidence that the (project activity) will continue after the project period.</i>	<ul style="list-style-type: none"> • This question measures project sustainability and community buy-in to the project intervention.

The generic methodology to be used for the H-Form is the following⁴¹:

The following is a generic procedure for measuring a single VRA indicator using the H-form:

- 1) Sketch the H-form on a large sheet of paper or on a page of a flip chart.
- 2) Write the question across the centre-top of the form. The questions will be formulated in such a way as to be answerable on a scale of 1-5.
 - Depending on the community and on the question, it may be sensible to reverse the order of the scores – making a response of “1” into a favourable score and “5” into an unfavourable score. If done, this would need to be reversed later, so as to avoid confounding the averaged VRA score.
 - Write guiding text to correspond to each of the scores – for example 1=“very bad,” 3=“moderate,” 5=“very good,” etc, depending on the question to be asked. Once determined, a consistent framework must be used in all VRA meetings so that comparison is possible between projects locally and globally.
- 3) Pose the question to the community, and lead a discussion about it. For example, in question 1 ask the community the VRA question as it is written, then ask it in a variety of other wordings, especially if it seems like participants may not have understood the question. Ask the community for initial responses, letting them explain how it affects them. Facilitate a discussion based on this question, jotting down information on the various sides of the H-form as people are speaking – positive, negative, and constructive comments on the various sides. Facilitate discussions if necessary and follow up statements with clarifying questions as appropriate.
- 4) Once the general discussion is ready to close, ask participants to rank their answer to the question on a scale of 1 to 5. This can be done either by:
 - Simply asking community members to provide a numerical score, or
 - Asking the question based on the textual guides for the scores. For example: “how many of you think that _____ is very bad,” “how many of you think that _____ is somewhat bad?” and so on (with the questions to be posed dependent on the VRA question, and the relevant textual guide). Count the number of people that raise their hand for each option, and then mark the number above each option.

The final VRA score from any one community meeting is simply the average of the scores of the four questions. In itself, the score is meaningless – two different communities with objectively identical adaptive capacities might arrive at different scores based on the numbers chosen. Therefore, the final VRA scores – that which is measured to show the impact of our projects – will be comprised of a degree of change from an initial VRA score with a subsequent measurement. Thus, as adaptive capacity increases through project interventions, VRA index scores are expected to increase. By converting the difference between baseline and subsequent scores into a percentage, a VRA change score is arrived upon.

⁴¹ Taken from: http://www.undp-adaptation.org/projects/websites/docs/CBA_VRA_Guide_Dec_08.pdf

Sample Blank H Form

Reasons for negative response	Question written here	Reasons for positive response
Reason	Unfavourable score Favourable score Very Bad Bad Moderate Good Very Good 1 2 3 4 5	Reason
Reason	How could this score be improved?	Reason
Reason		Reason
	Comment	Reason
	Comment	

II. Results

Criteria used to select the intervention sites and communes most vulnerable to climate change by region.

Three criteria were used to select the intervention sites and communes most vulnerable to climate change in each region:

1. The level of exposure of the intervention site to the negative effects of climate risks,
2. The level of vulnerability to the harmful effects of climate change of activities undertaken by rural communities, as expressed by the vulnerability index
3. The Climate Change Adaptation and resilience capacity of the site

The vulnerability index of sites was determined on a scale of 1 to 5, as defined below:

1. Not vulnerable: the communities will not be affected by the expected impacts of climate change, and have high resilience capacities
2. Not very vulnerable: climate change will only minimally impact the livelihoods and activities of the target communities and these communities have good resilience capacities
3. Moderately vulnerable: climate change will significantly impact the livelihoods and activities of the target communities and these communities have moderate resilience capacities
4. Vulnerable: climate change will significantly impact the livelihoods and activities of the target communities and these communities have weak resilience capacities
5. Very vulnerable: climate change will disrupt the livelihoods and activities of the target communities and these communities have no resilience capacities.

Following meetings and focus groups with local representatives from the Analamanga, Atsinanana, Atsimo-Andefana, Androy and Anosy regions, the results obtained after applying these criteria are as follows:

Vulnerability Indexes of Intervention Sites and Vulnerable Communes

Regions	Districts	Communes	Vulnerability Reduction Assessment (VRA) Index
Analamanga	Anjozorobe	Betatao	3
	Ankazobe	Ambolotarakely	3
Atsinanana	Vatomandry	Ilaka Est	3
	Mahanoro	Betsizaraina	3
	Brickaville	Anivorano atsinananaa	2
Atsimo-Andrefana	Toliara II	Manombo	3
		Soahazo-Analamisampy	3
		Ankilimalinika	3
		Miary	3
		Andranovory	3
	Betioky	Tongobory	4
		Tameantsoa	4
Androy	Tsiombe	Imongy	5
	Ambovombe	Marovato-Befeno	5
	Beloha	Tranovaho	5
Anosy	Amboasary-Sud	Sampona	4
		Tanandava	3
		Andranobory	3
	Taolaniaro II	Manantenina	1

Appendix 6: Additional Information on the National Network of Meteorological, Climate, Synoptic and Hydrometric Stations

[Extracted from the PPG sectoral report on Agro-meteorology]

National network of weather, climate, synoptic and hydrometric stations

The national network of currently operational weather and climate observatories is limited, and hydrometric stations are absent in most river basins in Madagascar. Historically, a national network of 25 climatic stations was set up (see Figure 1), mostly in 1973. The stations at Tamatave, Majunga (Mahajanga), Fort Dauphin and Diego-Suarez were established in 1949, and the station at Antananarivo's Ivato airfield in 1952.



	Name of station	Global identification No.	Altitude	Coordinates	Start of archive	Timezone	Type of station	Comment
1	Andapa	67022	473 meters	14.65 ° S 49.62 ° E	January 2, 1973	Indian / Antananarivo	METAR / SYNOP	Not in operation
2	Antalaha	67025	87 meters	14.88 ° S 50.25 ° E	1 January 1973	Indian / Antananarivo	METAR / SYNOP	In operation
3	Antananarivo / Ivato	67083	1279 mètres	18,80°S 47,48°E	1er août 1952	Indian/Antananarivo	METAR/SYNOP	In operation
4	Antsirabe	67107	1523 mètres	19,82°S 47,07°E	15 mars 1973	Indian/Antananarivo	METAR/SYNO	In operation
5	Atsohihy	67020	23 mètres	14,88°S 47,98°E	2 janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
6	Besalampy	67037	38 mètres	16,75°S 44,48°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
7	Diego-Suarez	67009	114 mètres	12,35°S 49,30°E	1er janvier 1949	Indian/Antananarivo	METAR/SYNOP	In operation
8	Farafangana	67157	8 mètres	22,80°S 47,83°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
9	Fascene Nossi-Be	67012	10 mètres	13,32°S 48,32°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
10	Faux-Cap	67194	22 mètres	25,55°S 45,53°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	Not in operation
11	Fianarantsoa	67137	1115 mètres	21,45°S 47,10°E	1er janvier	Indian/Antananarivo	METAR/SYNOP	In operation

					1973			
12	Fort-Dauphin	67197	8 mètres	25,03°S 46,95°E	1er janvier 1949	Indian/Antananarivo	METAR/SYNOP	In operation
13	Maevatanana	67045	76 mètres	16,95°S 46,83°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	Not in operation
14	Mahanoro	67113	5 mètres	19,83°S 48,80°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
15	Maintirano	67073	23 mètres	18,05°S 44,03°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
16	Majunga	67027	26 mètres	15,67°S 46,35°E	1er janvier 1949	Indian/Antananarivo	METAR/SYNOP	In operation
17	Mananjary	67143	5 mètres	21,20°S 48,37°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
18	Morombe	67131	5 mètres	21,75°S 43,37°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	Not in operation
19	Morondava	67117	7 mètres	20,28°S 44,32°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
20	Ranohira	67152	824 mètres	22,55°S 45,40°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
21	Sainte-Marie Aerodrome	67072	2 mètres	17,08°S 49,82°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
22	Sambava	67023	5 mètres	14,28°S 50,17°E	2 janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
23	Tamatave	67095	5 mètres	18,12°S 49,40°E	1er janvier 1949	Indian/Antananarivo	METAR/SYNOP	In operation
24	Tulear	67161	8 mètres	23,38°S 43,73°E	1er janvier 1973	Indian/Antananarivo	METAR/SYNOP	In operation
25	Vohemar	67017	6 mètres	13,37°S 50,00°E	2 janvier 1973	Indian/Antananarivo	METAR/SYNOP	Not in operation

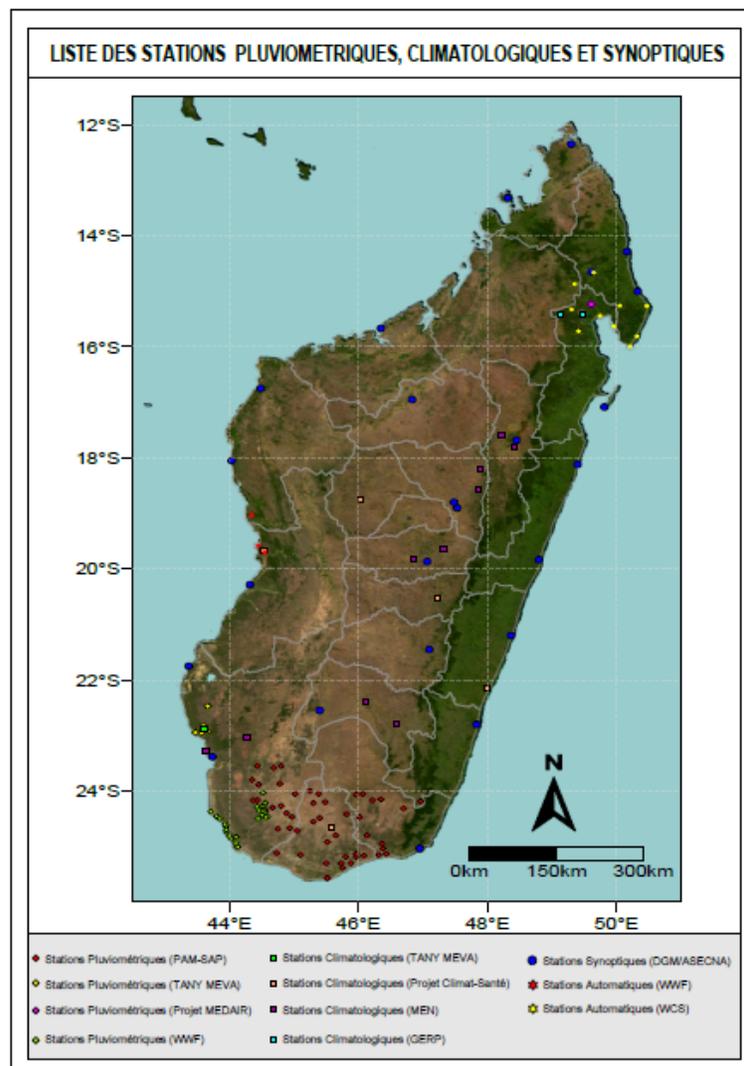
Figure 1: Table of official weather/climate stations in Madagascar.
Source: <http://www.infoclimat.fr/observations-meteo/temps-reel/faux-cap/67194.html>

ASCENA, the national aviation organization currently maintains four stations at their main airfields (see above, Tamatave, Majunga, Fort Dauphin and Ivato). All these stations are highly staffed and equipped and cover most climate/weather parameters in their measurements. At Fort Dauphin a senior manager is situated, as well as five technicians are employed to maintain readings of the weather data on an hour basis. Data of key parameters are transmitted directly to the ASECNA central office at Antananarivo's Ivato airfield, and passed on to DGM. More comprehensive readings such as the monthly hydrograph charts are submitted via the Ivato office to DGM on a monthly basis. DGM holds the national data bank for climate information, and ASECNA submits all their data to DGM.



Figure 2: Images of the ASECNA managed weather station at Fort Dauphin air field

An overview map of all weather and climate related stations, including the setting up of local rain gauges by projects in certain areas, has been created by DGM (see Figure 3). New stations are being added to this as they are being established⁴². Although the coverage seems much better taking into account all these established stations, it is clear that several stations and rain gauges have been set up for specific purposes which may not qualify them as contributors to the national network, as they do not always meet standard requirements. For example, a rain gauge set up by the PAM-SAP (PAM/FAO) project in Sampona is situated in the middle of some huts in a village, admits some larger trees, which may influence rainfall readings – if they should be required for national purposes. The information may be suitable for local level decision-making, however. It is also observed that the long-term established synoptic station at Ivato airfield in Antananarivo is being surrounded by new buildings (still under construction) – this will surely influence the quality of the data at this site, probably rendering it unsuitable for maintaining the long term record at the site.



⁴² For example GIZ reported the sighting of new stations during September 2014, but exact locations could not be confirmed.

Figure 3: Network of climate-related stations in Madagascar. Many of these stations are set up and maintained through projects and institutions outside of DGM, but may submit data. Several of the stations indicated are currently not operational. Source: DGM

According to the PIF, the DGM has already installed 6 weather stations in Ihosy - Ihorombe - Atsimo Andrefana, 24 rainfall stations and 24 other standardizations in the Systeme Mondial d'Information et d'Alerte Rapide Sur l'Alimentation et l'Agriculture (SAP) programme of FAO and WFP (SAP area) in the Southern part of Madagascar, 2 climatological stations installed in the Mikea area, a climatological station and a hydrological station in the Fivondronana of Ampanihy, 1 climatological station and 7 rainfall stations installed in the South Western area. This information was confirmed by DGM during the PPG phase.

There are now hydrometric stations installed currently that would provide relevant water run-off information, nation-wide. However, due to increased climate change related flooding and change in run-off/ drying up threats impose a new urgency to set such meter up.

Although these devices allow to provide relevant information to support decision making in the management of climate and weather risks, the current network of weather stations does not cover all the project intervention areas and will not enable collecting enough climate and weather data in the required quantity, quality and scope to efficiently support decision-making in the sectors vulnerable to climate risks. At this time there is no national plan that would set out the minimum preferred development of a national climate data related observatory system, and it is clear that a well-managed multi-stakeholder process would be needed to achieve such a plan. Key constraints seem not to lay so much in the setting up of stations, but rather in the long-term commitment to actually maintain them.

Appendix 7: Co-Financing Letters

Appendix 8: Preliminary Responses to GEF CEO's Feedback received at PIF approval

	Comments received from GEF SEC	Initial Response
1	<p>By CEO endorsement (11/18/2013): Please provide more information on the 'additional' adaptation aspects of activities mentioned in Component 3.2. Dredging, de-silting etc., are not adaptation measures in and of themselves. The PIF does provide further relevant information on climate resilience aspects of these activities but only later in the document. Please ensure that the additional adaptation elements are clear also in Table B.</p>	<p>Activities in output 3.3 are mostly focused on rehabilitation of already existing water supply infrastructures. When it comes to de-silting or dredging canals or ponds, the idea is to reduce the risk of flooding by ensuring a better flow of water during intense rainfall. Reducing the risk of flooding contributes to increasing the resilience capacities of vulnerable communities.</p> <p>Regarding the irrigation canal in Miary, dredging the canal will contribute to ensure a better water management by local communities Since the irrigation potential of this canal is huge (600 ha), its rehabilitation through dredging will allow local communities to grow vegetables and cotton in the irrigated area, which will reduce their vulnerability to climate change and extreme climate events such as droughts and floods.</p> <p>Output 3.3 has been re-worded to better show the link between rehabilitation and reduced vulnerability to climate change.</p>
2	<p>By CEO Endorsement, please provide details on 2-way engagement with communities (e.g., drawing on community advice and traditional knowledge to guide project design; building capacity at community level so that they can ensure sustainability of project activities and outcomes in the long term, etc.).</p>	<p>The two-way engagement with communities is clearly mentioned in the project document.</p> <ul style="list-style-type: none"> • Local communities have been consulted and gave advice on the project design through the VRA and interviews conducted during the PPG. As part of the PPG, focus groups were conducted in all targeted communes. • Communities will be highly involved and will benefit from the FFS approach which will strengthen their capacities in terms of adaptation to climate change. The project will directly train at least 80 facilitators and 3,000 farmers through the FFSs. In each case the training will be designed in a participatory manner to respond to the needs and resources of the beneficiaries, it will be a focused, demand-driven, needs-driven training. The FFS approach is based on a learning-by-doing process and the recipients of the training are well placed to immediately apply the contents of the training to their work. By making the training useful, there is strong reason to believe it will be used after the project is finalized. FFS are “grass-root labs” that, through using participatory monitoring, will increase local leadership and strengthen long-term farmers’ capacities in the adaptive management of their land. • Communities’ advice and knowledge will also be taken into account while assessing the needs for climate and meteorological data and information.
3	<p>Recommended action by CEO endorsement (11/18/2013):</p>	<p>Seven projects will be cofinancing the project (MSD, AROPA, FORMAPROD, UNICEF WASH, Zzebu Industry and</p>

	<p>The project includes several sub-components, encompassing 7 baseline projects. Please discuss risks pertaining to execution/coordination across the project.</p>	<p>Emergency projects). The cooperation between these different initiatives and their respective executing agencies will be facilitated through regular meetings between implementation partners and sharing lessons learned and best practices between cofinancing projects and the LDCF project.</p>
4	<p>Sustainability: The project contains many elements/sub-components spanning several baseline projects, and many proposed activities are community-based. More information is needed by CEO Endorsement stage on how project activities will be coordinated, maintained, and communities kept engaged.</p>	<p>It is proposed that a project coordinator is recruited at national level. He will be supported by 5 regional facilitators based in each of the 5 Regions of interventions to ensure the coordination of activities at local level. Furthermore, the number of targeted communes has been limited to 11 in order to reduce the risk of dispersion. In every region, the geographic proximity of the targeted communes was also one of the selection criteria.</p> <p>Through the FFS approach, local communities will be engaged throughout the project as this is a learning-by-doing process and the recipients of the training are well placed to immediately apply the contents of the training to their work.</p>
5	<p>By CEO endorsement stage (11/18/2013): Please explain more fully the measures that will be taken to ensure sustainability of project actions and outcomes.</p>	<p>The sustainability section of the prodoc provides a more detailed answer to this comment.</p> <p>The sustainability of project actions and outcomes will be ensured by building institutional and technical capacities at national, regional and local level that will remain available after the end of the project. Integrating climate change in existing national and local development policies will ensure that this aspect keeps being taken into account in future initiatives, even after project's end. The implication of relevant stakeholders in the revision of policy documents and development plans will help them build ownership of the revised documents.</p> <p>The restructuring of the DGM will enable the institution to be fit for purpose and deliver quality and demand-driven information for the country to be able to react properly to climate change. The project will also support and advocate for the integration of maintenance costs and quality control of the equipment provided by the project into the DGM budget to ensure the sustainability of the equipment provided. The project will develop a dissemination system to ensure that relevant stakeholders can access and use the data produced by the DGM in the long term.</p> <p>The FFS approach, by training local facilitators on CCA resilient practices, will strengthen local capacities and ensure that knowledge will remain locally available even after the end of the project.</p> <p>By facilitating reliable access seeds and inputs, the project will ensure producers keep adopting resilient agricultural practices in the long term.</p> <p>The project will also help producers develop income-generating activities to reduce their vulnerability in the long</p>

	<p>term by facilitating their access to credit through reliable financial mechanisms.</p> <p>Finally, the public private partnership developed by the project should secure funding from the private sector to continue some of the initiative originally put in place by the project after this one has ended.</p>
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	Comments received from US Government	Initial Response
6	How will UNDP maintain and operate the monitoring equipment that the project will procure and install	<p>Maintenance and operation of all stations are included as key activities in the project design, and will be costed. As maintenance has been a problem even of recently established stations, it has been agreed with DGM to improve the internal/national budgeting allocation for essential maintenance activities in the future. Furthermore, the procurement of this equipment will include training of DGM's staff on how to maintain it. It is realized that there are risks associated with this, as political will beyond DGM may not easily be solicited (e.g. at Finance Ministry), but a dedicated process will be actively pursued through output 2.2 of this project, integrated in the design.</p> <p>The project will develop a public private partnership that should secure the involvement of the private sector in the financing and maintenance of agro-meteorological infrastructures.</p>
7	How the climate and weather monitoring network could contribute to the Global Climate Observing System (GCOS) and the Global Framework of Climate Services (GFCS)	<p>Linkages with international service and programs already exist. Data can be accessed routinely and links are to be established through international collaborations. Activity 2.1.1 specifically focus on strengthening international collaboration with GCOS, and activity 2.3.3 aims at setting up a users' platform for climate services in support to GFCS..</p>
8	How it will involve users both in the design of the agro-meteorological and climate information system and in deciding what information is produced from the system as well as how information will be disseminated	<p>Specific outputs relating to this aspect are included both under outcome 2 and outcome 3 (especially 2.3, 2.4 and 3.4). DGM is realizing a new role as information and knowledge product service provider (output 2.2), and aims to reform their approaches to service delivery including through demand articulation and participatory scoping of services and products. Such approaches are now being mainstreamed throughout the project design. The consultations during the design phase already scoped some of the demand in more detail, which led to the updating of the project design since PIF stage.</p> <p>Activity 2.4.1 is specifically dedicated to analyzing the needs in terms of agrometeorological products and services of targeted groups. This study will serve as a basis for the conceptualization of the products and services to be developed by DGM in the framework of the project.</p>

	Comments received from Germany	Initial Response
9	<p>With regard to the first outcome (“institutional and technical capacities”) Germany asks to elaborate on the role of existing farmer’s organisations in capacity building. In Atsimo-Andrefana for example, there is a farmer’s organisation (Maison des Paysans - MdP) that engages in the entire region. In this context, Germany also suggests getting in touch with other donors and NGOs who are already working with farmers’ organisations. The French NGO AVSF, for example, has a project with MdP to increase the farmers’ resilience. The environment program implemented by GIZ (Programme German-Malgache pour l’Environnement) supports MdP via two technical assistants that work on the adaptation of agricultural techniques to climate change.</p>	<p>Farmers’ organizations such as MDP will be highly involved in capacity building activities throughout the project. MDP in Tulear was consulted during the PPG field mission. Other NGO such as CARE, GRET were also consulted during the field mission. These organisations will benefit from a climate change awareness-raising programme intended for local governments, NGOs and community-based organizations, implemented under output 1.1. Their capacities will also be strengthened by being involved in the development of the FFS network and the input supply chain for local producers, which will be implemented under component 3 of the project.</p>
10	<p>Possible synergies in implementation should be considered in a perspective of integrating climate change into strategic regional documents. Before the political crisis, GIZ had started supporting the elaboration of a Regional Land Use Plan of Atsimo-Andrefana. It might be opportune for the GEF project to integrate adaptation initiatives (the same would be possible for the national land use plan).</p>	<p>Component 1 of the GEF project will ensure that climate change considerations are integrated into national (code de l’eau), regional (SDEA) and local (PCD, PCDEA) strategies and development plans. To do so, it will collaborate and create synergies with on-going initiatives such as the MSD project.</p>
11	<p>Finally, for the third outcome (“adaptation measures”), there seem to be possible synergies with the GIZ project “Developing value chains in the South East of Madagascar”. The project is working on agricultural income generation activities in the regions Androy, Anosy and Atsimo Atsinanana</p>	<p>The GIZ project will not co-finance the GEF project but both project will benefit from each other by sharing best practices and lessons learned.</p> <p>The developing value chain projects supports the honey, castor oil plant, goat and bean sectors. The LDCF project will create synergies with this project by supporting in priority the same sectors in the FFS that will be implemented in the regions Anosy, Androy and Atsimo Andrefana.</p> <p>This project coordination unit was consulted in Fort Dauphin during the PPG field mission.</p>

Appendix 9: Letter of agreement between the Government of Madagascar and UNDP for direct project implementation support

Appendix 10: Letter of agreement with UNICEF

Appendix 11: Capacity Assessment Report

Appendix 12: Signature Page



United Nations Development Programme

Country: Republic of Madagascar

PROJECT DOCUMENT

Project Title: Enhancing the adaptation capacities and resilience to climate change in rural communities in Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana in Madagascar.	
UNDAF 2015-2019 outcome:	Outcome 1: Vulnerable population in targeted areas access to income and employment opportunities, improve their resilience capacities and contribute to inclusive and equitable growth for sustainable development.
Primary outcome of the UNDP Strategic Environment and Sustainable Development Plan: Growth and development are inclusive and sustainable, incorporating productive capacities that create employment and livelihoods for the poor and excluded	
Secondary outcome of the UNDP Strategic Plan: Countries are able to reduce the likelihood of conflict and lower the risk of natural disasters, including from climate change	
Expected Outcome of the UNDP Country Programme:	
Outcome 2. National and local institutions and players have adopted appropriate systems providing for the structural transformation and strengthening of sustainable production capacities, favouring the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth.	
Outcome 4. Territorial and local communities have developed the capacities, means, institutional structures, operational frameworks and skills to foster resilience in the face of a crisis (economic, climate change, natural disasters), to effectively deal with its aftermath, and to promote local development by meeting publicly expressed needs.	
Expected Outcomes of the Country Programme Action Plan (CPAP):	
Outcome 3. “National and local institutions and players are now using tools and mechanisms to facilitate the achievement of MDG/SDG and to promote more effective development.”	
Outcome 4. “Structural transformation, strengthened sustainable production capacities, and sound environmental governance have effectively fostered the creation of jobs and livelihoods for poor or vulnerable populations, especially women and youth.”	
Implementation Agency: UNDP	
Execution Agency/Responsible Partner: Ministry of Environment, Ecology, Sea and Forests/National Climate Change Coordination Office	
Summary Description	
In Madagascar, the economic sectors most affected by the harmful effects of climate change are agriculture, livestock, forestry, water resources, fishing and health. To enjoy sustainable livelihoods in a context of climate change, the local populations of the Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana regions must find a way to strengthen their adaptation and resilience capacities, which is the goal set by the proposed project. To this end, several barriers must be overcome, such as anthropic pressure on natural resources, the lack of financial and technical capacities, the difficult access to credit and inputs, the lack of water and sanitation infrastructures, the lack of agro-meteorological and climate information to inform climate change adaptation decision processes, the lack of awareness regarding climate change impacts and potential adaptation options on the part of decision-makers and the lack of	

coordination for adaptation interventions among sectors.

This project serves to address these various obstacles by achieving three main outcomes. The first outcome aims to increase the awareness and strengthen the capacities of decision-makers, technicians and vulnerable communities in terms of Climate Change Adaptation (CCA). This awareness raising support will contribute to build a solid political framework, including CCA aspects, and to build a critical technical capacity upon which the implementation of other project components can be based. This first outcome will enable setting up the institutional, structural and technical foundations needed to disseminate and appropriate adaptation measures and technologies. The second outcome aims to ensure the collection and production of reliable climate and meteorological information. Disseminating this information in a manner that meets the needs of end users will foster informed decision-making in regards to climate and meteorological conditions. Finally, the third outcome aims to transfer adaptation measures, options and technologies to vulnerable communities in the selected regions using a participatory approach, building on the strengthened capacities achieved through the first component, and the agro-meteorological information and forecasts produced through the second component.

Programme period:	2015-2019	Total Resources Allocated	USD 67,239,067
Atlas Award ID:	00090256	• Regular (LDCF)	USD 5,877,397
Project ID:	00096109	• Other Total	USD 61,361,670
PIMS #	5228	○ UNDP MSD	USD 5,000,000
Start date:	September 2015	○ Min of Agri	USD 47,009,500
End date:	August 2020	○ UNICEF WASH	USD 2,365,000
Institutional arrangements:	NIM	○ Min of Transp	USD 1,970,000
PAC Meeting Date	_____	○ Direc of Env	USD 1,017,170
		○ Min of Liv	USD 4,000,000

Accepted by (Government):

Date/Month/Year

Accepted by (Execution Agency):

Date/Month/Year

Accepted by (UNDP):

Date/Month/Year