

Upscaling Ecosystem-based Adaptation for Madagascar's Coastal Zones

Part I: Project Information

GEF ID

10939

Project Type

FSP

Type of Trust Fund

LDCF

CBIT/NGI

CBIT No

NGI No

Project Title

Upscaling Ecosystem-based Adaptation for Madagascar's Coastal Zones

Countries

Madagascar

Agency(ies)

UNEP

Other Executing Partner(s)

Ministry of Environment and Sustainable Development

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Adaptation, Climate resilience, Least Developed Countries, Livelihoods, Ecosystem-based Adaptation, Influencing models, Demonstrate innovative approach, Strengthen institutional capacity and decision-making, Transform policy and regulatory environments, Stakeholders, Communications, Awareness Raising, Behavior change, Type of Engagement, Information Dissemination, Consultation, Partnership, Participation, Beneficiaries, Private Sector, Individuals/Entrepreneurs, Financial intermediaries and market facilitators, Local Communities, Civil Society, Community Based Organization, Non-Governmental Organization, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Sex-disaggregated indicators, Women groups, Gender results areas, Capacity Development, Knowledge Generation and Exchange, Participation and leadership, Capacity, Knowledge and Research, Knowledge Generation, Workshop, Training, Knowledge Exchange, Peer-to-Peer, Field Visit, Learning, Theory of change, Indicators to measure change, Adaptive management

Sector

Mixed & Others

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 2

Duration

48 In Months

Agency Fee(\$)

675,064.00

Submission Date

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	LDCF	4,388,527.00	14,067,362.00
CCA-2	LDCF	2,717,409.00	7,075,088.00
	Total Project Cost (\$)	7,105,936.00	21,142,450.00

B. Indicative Project description summary

Project Objective

To enhance the resilience of local communities, livelihoods and ecosystems in four coastal regions of Madagascar to the adverse impacts of climate change

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
Component 1: Climate-resilient governance and planning in coastal zones of Madagascar	Technical Assistance	Outcome 1.1: Strengthened institutional capacity and policy and legislative framework for EbA in coastal zones	Output 1.1.1: Six (6) technical assistance and training sessions a year organized to support the National ICZM Committee, each of the four Regional ICZM Committees, and BNCC-REDD+ on mainstreaming EbA, and on developing partnerships and financial sustainability plans, for better coordination of adaptation action in coastal areas Output 1.1.2: Regulation developed to strengthen National and Regional ICZM Committees' legitimacy, mandate and sustainable financing Output 1.1.3: Twenty (20) Municipal Planning Schemes (SACs) that integrate EbA approaches developed or updated through a cross-sectoral and participatory process	LDC F	500,000.00	1,003,900.00

Component 2: Ecosystem-based adaptation in response to climate risks	Investment	Outcome 2.1: Enhanced community capacity and planning framework to plan and implement EbA approaches and locally manage natural resources to increase climate resilience	Output 2.1.1: Twenty (20) communal development plans (PCDs) that guide the implementation of EbA priorities and the sustainable management of natural resources developed or updated through a cross-sectoral and participatory process	LDC F	3,219,256.00	10,005,100.00
		Outcome 2.2: Enhanced environmental protection and rehabilitation by local authorities and communities for adaptation benefits	Output 2.1.2: Five (5) new locally managed marine areas established for increased climate resilience of marine ecosystems and related livelihoods			
			Output 2.1.3: Five (5) fisheries management plans developed for marine fisheries, including provisions for sustainable catches and fishing practices to increase ecosystem and livelihood resilience to climate change			
			Output 2.2.1: 3,000 ha of mangroves and coastal forests restored for adaptation benefits through community-based approaches			
			Output 2.2.2: 2,000 ha of degraded/deforested land rehabilitated upstream of degraded wetlands and small lakes through community-based approaches to increase climate resilience of ecosystems and communities			

<p>Component 3: Green Economy Approach for Resilient Ecosystem- based Livelihoods in Coastal Areas</p>	<p>Technical Assistance</p>	<p>Outcome 3.1: Increased diversification of income-generating activities and businesses to enhance communities' climate resilience</p>	<p>Output 3.1.1: 100 climate-resilient ecosystem-based cooperative businesses established, with a focus on women and youth, and sustainable business plans developed</p> <p>Output 3.1.2: A sustainable financing and investment platform for ecosystem-based businesses established and operationalized</p> <p>Output 3.1.3: Training/technical support and/or equipment provided to 3,000 entrepreneurs, including women and youth, to build capacity of ecosystem- based businesses</p>	<p>LDC F</p>	<p>2,236,293.00</p>	<p>8,726,667.00</p>
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Component 4: Awareness, monitoring and evaluation, and knowledge management for upscaling	Technical Assistance	Outcome 4.1: Strengthened awareness and knowledge of EbA approaches to support upscaling of project results across Madagascar's coastal zones	Output 4.1.1: A project communication strategy developed and implemented, including awareness raising strategy on climate change and EbA aimed at local stakeholders Output 4.1.2: A participatory M&E and learning framework developed and implemented Output 4.1.3: A coastal EbA upscaling strategy and knowledge sharing mechanism developed	LDC F	812,009.00	400,000.00
Sub Total (\$)					6,767,558.00	20,135,667.00
Project Management Cost (PMC)						
LDCF					338,378.00	1,006,783.00
Sub Total(\$)					338,378.00	1,006,783.00
Total Project Cost(\$)					7,105,936.00	21,142,450.00

Please provide justification

C. Indicative sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
Donor Agency	AFD and FFEM (RECOS)	Grant	Investment mobilized	1,539,000.00
Donor Agency	IFAD (DEFIS)	Grant	Investment mobilized	2,126,667.00
Donor Agency	GCF (EBA IO)	Grant	Investment mobilized	9,370,000.00
Donor Agency	GCF (Sustainable landscapes))	Grant	Investment mobilized	7,100,000.00
Recipient Country Government	MEDD	In-kind	Recurrent expenditures	1,006,783.00
Total Project Cost(\$)				21,142,450.00

Describe how any "Investment Mobilized" was identified

The co-finance projects categorized as "Investment Mobilized" were identified through a process of scoping and analyzing relevant projects that can contribute to the implementation and objectives of the proposed LDCF project, and that share a focus on improving the livelihoods of coastal communities of Madagascar through ecosystem-based approaches and resilience building. These projects include the following: Resilience of Indian Ocean Coastal Areas (RECOS) Project (FFEM / AFD, 2020-2025, US\$10.77M): The overall objective of the project, executed by the Indian Ocean Commission (IOC), is to strengthen the resilience of coastal populations and the ecosystems in which they live in the face of the harmful effects of climate change and in particular of extreme weather phenomena which affect the coastal areas of IOC Member States, including Madagascar. The RECOS project will contribute US\$ 1,539,000 in co-finance towards LDCF project Components 1 and 2, through its pilot project in Morondava (Menabe). Inclusive Agricultural Value Chains Development Programme (DEFIS) (IFAD, 2018-2027, US\$127.6M): The DEFIS programme, which is executed by the Ministry of Agriculture, Livestock and Fisheries, operates in eight regions in southern and centre-eastern Madagascar (including Vatovavy Fitovinany). The direct beneficiaries of DEFIS investments and services will be 320,000 family farms. Eight value chains – rice, maize, cassava, groundnut, coffee, onion, small ruminants and honey – have been selected, three in each region. The DEFIS Programme will contribute US\$ 2,126,667 in co-finance towards Component 3 of the LDCF project, through its intervention in Vatovavy Fitovinany. Sustainable Landscapes in Eastern Madagascar (GCF / CI, 2018-2028, US\$69.8M): The project goal is to implement sustainable landscape measures to enhance resiliency of smallholders, reduce GHG emissions and channel private finance into climate-smart investments in agriculture and renewable energy that transform livelihoods, and will be implemented primarily in the landscapes of the Ambositra Vondrozo Forest Corridor (COFAV) and the Ankeniheny-Zahamena Forest Corridor (CAZ), overlapping with the proposed LDCF project intervention areas. The GCF-funded project, implemented by CI, aims to demonstrate a replicable model for addressing smallholder vulnerability that mobilizes both the public and private sector. The Sustainable Landscapes Project will contribute US\$ 7,100,000 in co-finance towards Components 1 and 3 of the LDCF project. Ecosystem-based Adaptation in the Indian Ocean – EBA IO (GCF / AFD, 2021-2030, US\$ 49.2M of which

approximately US\$ 24.6M for Madagascar): The goal of the EBA IO Programme is to reduce the vulnerability of island populations by securing the critical ecosystem services they need to be resilient to climate change. The Programme will use tools and methodologies that the Critical Ecosystem Partnership Fund (CEPF) has developed over the last 20 years for strengthening and engaging civil society actors in ecosystem conservation. The Programme includes a component to achieve long-term sustainability and encourage replication of best EbA practice. The EBA IO project will contribute US\$ 9,370,000 in co-finance towards LDCF project Components 1, 2, and 4.

D. Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNEP	LDCF	Madagascar	Climate Change	NA	7,105,936	675,064	7,781,000.00
Total GEF Resources(\$)					7,105,936.00	675,064.00	7,781,000.00

E. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

200,000

PPG Agency Fee (\$)

19,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)	
UNEP	LDCF	Madagascar	Climate Change	NA	200,000	19,000	219,000.00	
					Total Project Costs(\$)	200,000.00	19,000.00	219,000.00

Meta Information - LDCF

LDCF **true**

SCCF-B (Window B) on technology transfer

false

SCCF-A (Window-A) on climate Change adaptation

false

Is this project LDCF SCCF challenge program?

false

This Project involves at least one small island developing State(SIDS).

false

This Project involves at least one fragile and conflict affected state.

false

This Project will provide direct adaptation benefits to the private sector.

false

This Project is explicitly related to the formulation and/or implementation of national adaptation plans (NAPs).

false

This Project has an urban focus.

false

This Project covers the following sector(s)[the total should be 100%]:*

Agriculture	0.00%
Natural resources management	40.00%
Climate information Services	0.00%
Costal zone management	60.00%
Water resources Management	0.00%
Disaster risk Management	0.00%
Other infrastructure	0.00%
Health	0.00%
Other (Please specify:)	0.00%
Total	100%

This Project targets the following Climate change Exacerbated/introduced challenges:*

Sea level rise	Change in mean temperature	Increased Climatic Variability	Natural hazards
true	true		true

Land degradation	Costal and/or Coral reef degradation	GroundWater quality/quantity
true	true	false

Core Indicators - LDCF

CORE INDICATOR 1	Total	Male	Female	% for Women
Total number of direct beneficiaries	91,000	45,500	45,500	50.00%
CORE INDICATOR 2				
Area of land managed for climate resilience (ha)	5,000.00			
CORE INDICATOR 3				
Total no. of policies/plans that will mainstream climate resilience	40			
CORE INDICATOR 4				
Total number of people trained	1,060	530	530	50.00%

Part II. Project Justification

1a. Project Description

1a.1 Adaptation problems, root causes and barriers

Socio-economic context

Madagascar is a Least Developed Country (LDC), with a Human Development Index (HDI) ranking it 164th out of a total of 189 countries in 2020 , and a population of approximately 27.2 million people with an annual growth rate of 3.01% . The World Bank estimates that 62% of the population resides in rural areas (2019), of which half are located within 100 km of the coast. For those rural populations, progress in terms of poverty alleviation has stagnated in recent years, with around 77% of rural populations living below the national poverty line , . However, economic growth had picked up in the four years prior to the COVID-19 pandemic, at which point all progress stalled. It is estimated that the combined impact of global trade disruptions and containment measures in Madagascar caused a GDP contraction of 4.2% in 2020, similar to that seen during the political crisis of 2009 . Nationally, almost 80% of livelihoods are entirely dependent on the exploitation of natural resources.

This project proposes to intervene in some of Madagascar’s most impoverished and vulnerable areas: the coastal zone located in the regions of Boeny, Menabe, Atsinanana and Vatovavy Fitovinany . The project builds on the experiences and results of the project “Adapting coastal zone management to climate change considering ecosystem and livelihoods” (known as “PAZC”), funded by GEF LDCF, and implemented in these four regions from 2014 to 2021, and upscales its best practices to further communes in the four regions.

The majority of Madagascar’s coastal economy relies on fishing and aquaculture, rainfed agriculture, and tourism. Small-scale artisanal fisheries are predominant on the west coast (including in the regions of Boeny and Menabe), comprise 72% of annual catches nationally, support 250,000 fishers around the country (with large numbers of fisherfolk are present in the proposed areas of intervention – see Figure 1), and rely primarily on coral reefs, seagrass beds, and mangrove forests. Marine fisheries largely focus on export products, such as crustaceans, holothurians and cephalopods, with men making up 97% of the workforce, while women are more involved in the aspects of transformation and local sales. The coastal economy has transformed from subsistence-based to trade-based in recent decades, following the rise of global markets for seafood products including octopus (primarily *Octopus cyanea*), sea cucumber (Holothuroidea), mangrove mud crab (*Scylla serrata*), and shark fin (Elasmobranchii) .

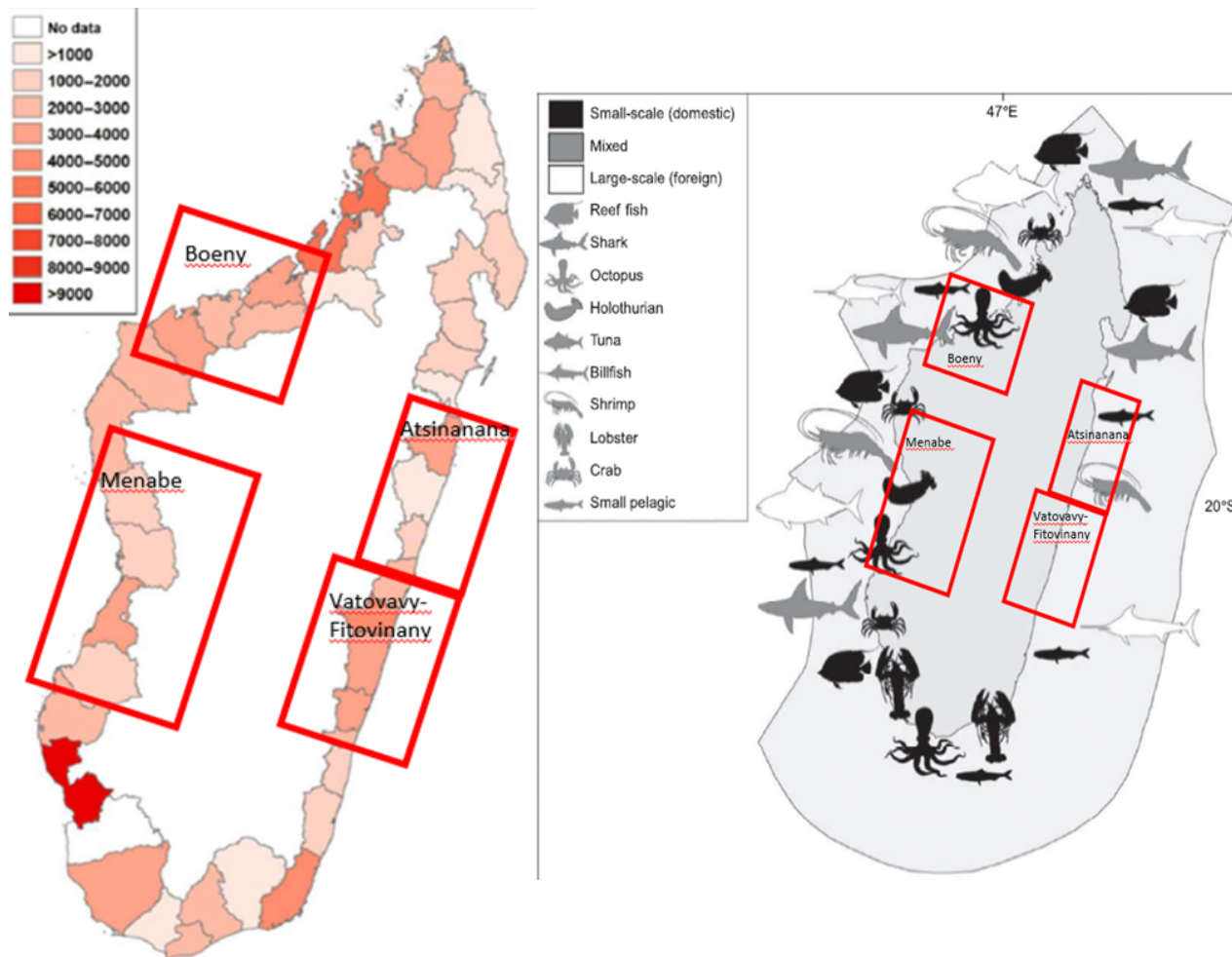


FIGURE 1 ESTIMATED DISTRIBUTION OF FISHERS (2011) (LEFT) AND FISHERIES (RIGHT) IN MADAGASCAR

Mangrove crabs form an important fishery in areas dominated by that ecosystem, and is based on traditional methods using simple gears, with fishers operating on foot or from small dugout canoes in the mangrove forests of the west and north-west coasts. Small-scale collectors and sellers operate locally, often within informal markets, and sell their produce to seafood export companies.

On the other hand, due to its geography (see Biophysical Context), the east coast mostly supports inshore fisheries (e.g. coastal lagoons). Marine fisheries potential on the east coast (Atsinanana, Vatovavy Fitovinany), including for demersal fish, is significantly lower than the west coast, and include a variety of fish, spiny lobster, tuna, shrimp, and shark fin. Other popular fisheries, in fresh or brackish waters, in Vatovavy Fitovinany include civelle (eel fry) and bichique (fry – various fish species), which are often caught with simple fishing nets by women or rudimentary boats by men. In Atsinanana, for instance, artisanal fishing is practiced with simple tools such as fishing nets and small pirogues, in all seasons. Almost all catches are destined for sale on the local market; local collectors, or those from the cities of Toamasina and Antananarivo, regularly come to buy fresh, dry or smoked fish.

Agriculture is the backbone of Madagascar's economy, accounting for 24.2% of GDP in 2018. The sector employed 64.2% of the total population in 2019 (8,739,000 people). Women make up a large share (46% in 2019) of the workforce in agriculture, fishery, and forestry. Of the total cultivable land (40.9 million hectares), only 3.6 million hectares were used for cropland in 2018, while 37.3 million hectares were under permanent meadows and pastures. The share of land that is equipped for irrigation is low, accounting only for 2.7% of agricultural land in 2018. The total production of primary crops in 2018 amounted to 13.7 million tons of which cereals (4.3 million tons), roots and tubers (4.1 million tons) and sugar crops (3.1 million tons) make up the majority. Rice production remains the dominant staple crop with 4.2 million tons produced in 2019. Other important food crops include cassava (2.9 million tons), sweet potatoes (1.1 million tons), groundnuts (585,000 tons), maize (219,220 tons), and beans (63,000 tons) (statistics from 2019). The total meat production in 2018 amounted to 347,000 tons, of which the biggest share comes from cattle (176,000 tons). Prevalence of undernourishment in the Malagasy population has been steadily increasing over the last years reaching 41.7% of the population between 2017 and 2019. More acutely, climate change caused in 2020-2021 the worst droughts the country has experienced in four decades, according to the World Food Programme, and compounded by the COVID-19 crisis pushed 1.14 million people to the edge of starvation.

In 33 of 43 communes in the Boeny region, rice is the main cultivated crop, often followed by cassava and corn. In addition to rice, market gardening (cucumbers, spring onions, peppers) and mango trees are important crops which are produced with semi-traditional techniques and limited inputs of organic/chemical fertilisers and pesticides. In Menabe, there are two distinct cropping seasons. The first period, called "asara", extends from December to March and is characterized by the cultivation of rice, corn, peanuts, cassava and market gardening. The second period, called "asotry", extends from April to August, with the main crops cultivated being rice, maize, beans, peanuts, tsiasisa, lentil and sweet potatoes. In the Atsinanana and Vatovavy Fitovinany regions, cash crops (e.g. coffee, cloves) play an important role in the economy, although food self-sufficiency is not achieved. Rice is the main cultivated crop in the region and among the common cropping systems are irrigated rice, rainfed rice and slash-and-burn cultivation. Thanks to its climatic conditions, the regions also cultivate tropical fruit species such as pineapples, bananas, litchis, oranges, breadfruit, jackfruit, etc. Farmers also practice livestock production including cattle, pigs, poultry and beekeeping.

The contribution of the tourism sector to GDP, prior to COVID-19, had been increasing from 6% in 2000 to 16.1% in 2019, with an average annual growth rate of 6.8%. In 2019, about 486,000 tourists visited Madagascar, with annual tourism spendings reaching more than US\$ 950 million. Tourism plays a crucial role in economic development and directly employed 197,500 people in 2011 (4.3% of population). This figure rises to 577,000 (12.5% of population) when factoring in total contributions to employment. Madagascar offers a high diversity of activities for tourism, including wildlife viewing, scuba diving, scenic hikes, beach tourism, adventure sports, and cultural encounters. Given this diversity, the average length of stay (21 days) and return rates (40%) among leisure tourists are high. The island's abundant biodiversity also makes it a unique tourist attraction. This being said, ecotourism has been struggling to take hold and grow at its full potential. In fact, the potential economic benefits of tourism throughout the protected area network are estimated at about \$28 million per year. All proposed project intervention regions comprise areas which are considered priority development areas for tourism (see Figure 2).

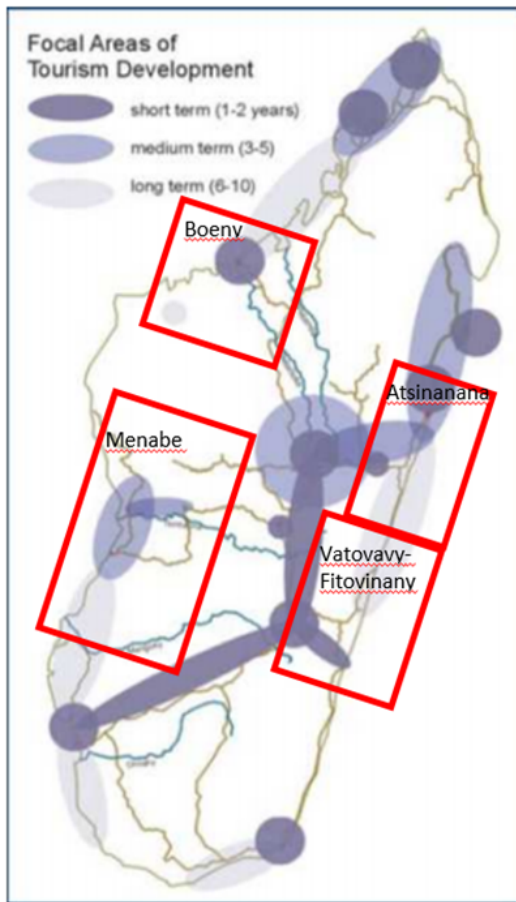


FIGURE 2 FOCAL AREAS OF TOURISM DEVELOPMENT IN MADAGASCAR

The complete halt of tourism in the wake of the COVID-19 outbreak has had an enormous impact on communities and ecosystem conservation. As employees in the tourism industry find themselves deprived of their livelihoods, they resort to (over)exploiting natural resources to feed their families. A lack of tourism thus leads to illegal deforestation, hunting wildlife for meat and unsustainable fishing. It will be challenging to make up for the lost gains under the pandemic, and tourism professionals are impatiently awaiting the reopening of the borders for foreign tourists.

Biophysical context of the country and areas of intervention

Madagascar's ecosystems include many types of forests, savannah, steppes, rivers, lakes, wetlands, mangroves, drylands and reefs. These ecosystems are home to roughly 12,000 species of vascular plants (96% endemic), 586 species of ferns (45% endemic), 194 species of palms (97% endemic), 1,000 species of orchids (85% endemic), 389 species of reptiles (90% endemic), 278 species of amphibians (100% endemic), 282 species of birds (37% endemic), 159 species of fish (66% endemic), 104 species and subspecies of lemurs (100% endemic), 60 species of non-flying small mammals (92% endemic), 43 species of bats

(73% endemic) and 13 species of carnivore (77% endemic). There are 752 coral fish species present in Madagascar, as well as 28 marine mammal species, including 27 cetacean species and one species of the order Sirenia (*Dugong dugon*) .

The coastal zones of Madagascar are characterized to the west by a wide continental shelf extending up to 90 km offshore, while the east coast is very steep with a narrow continental shelf and few estuaries . These geographical characteristics thereby determine the distribution of coastal ecosystems around the country: marine and shallow productive systems such as mangroves forests, coastal forests, coral reefs, and seagrass beds are predominantly located on the west coast and the northern tip of the island (see Figure 4). The east coastal zone hosts several coastal wetlands and small lake ecosystems (see Figure 3).

Madagascar is estimated to host 2% of the world's mangroves, representing the second largest extent of mangroves of any country in the western Indian Ocean . Mangroves are found primarily along the western coast of Madagascar, with 60,111 hectares in Boeny region in 2013 (with an annual deforestation rate of 0.05% between 2010 and 2013) and 13,000 hectares in Menabe in 2019 (where about 2.4% of mangrove forests have been lost from 2006 to 2016) . Only 2% of the island's mangroves are found on the east coast. In addition to being an important source of food (as key habitats for fish and arthropods) and livelihoods (from e.g. apiculture and ecotourism), mangroves play a key role in capturing sediment from the interior lands that threatens both reefs and seagrass beds. They protect coastal areas from the intensifying impacts of sea-level rise and the increased frequency and intensity of cyclones and storm surges, including protection from shoreline erosion, saltwater intrusion and inundation. Finally, mangroves represent a significant carbon sink due to year-round physiologically active foliage .



FIGURE 3 MAP OF WETLANDS IN MADAGASCAR (CIRCLES INDICATE SITES VISITED IN A 2017 STUDY)

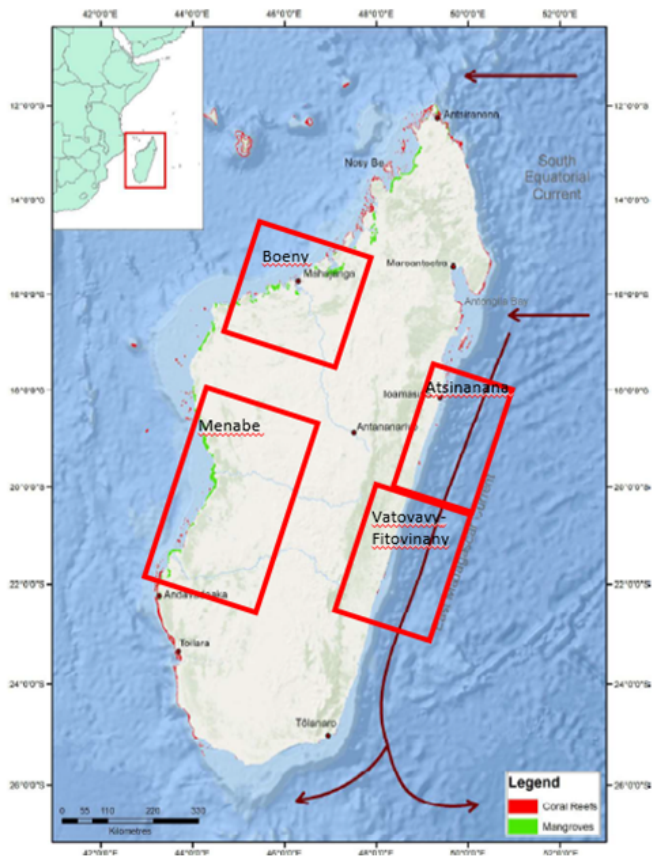


FIGURE 4 LOCATION OF PRODUCTIVE SHALLOW MARINE HABITATS

Madagascar also has a rich network of coral reefs (see Figure 4), with Northeast and Northwest Madagascar having similar levels of coral diversity, the highest recorded in the Western Indian Ocean . While the south-west has one of the largest barrier reef in the world, which has been widely studied, the north-west coast is also rich in nearshore fringing reefs, offshore coral banks, and patch reefs. On the north-east coast, from the northern tip down to Atsinanana, intermittent stretches of fringing reefs can be found.

The benefits provided by biodiversity are significant, as more than 18 million people are dependent on biodiversity for their subsistence needs, with 80% of the population entirely dependent on natural resources. The actual economic value of nature over the last 5 years is estimated in the order of US\$ 80 million in relation to hydrological services and in the order of US\$ 57 million related to ecotourism in protected areas .

Historical climate trends and projected climate change

Madagascar has historically faced significant climate threats, and is considered to be the country at highest exposure to, and risk of, cyclonic activity in Africa. Moreover, it has been experiencing sea-level rise at a rate of 7-8mm per year, which has been contributing to coastal erosion and retreating shorelines .

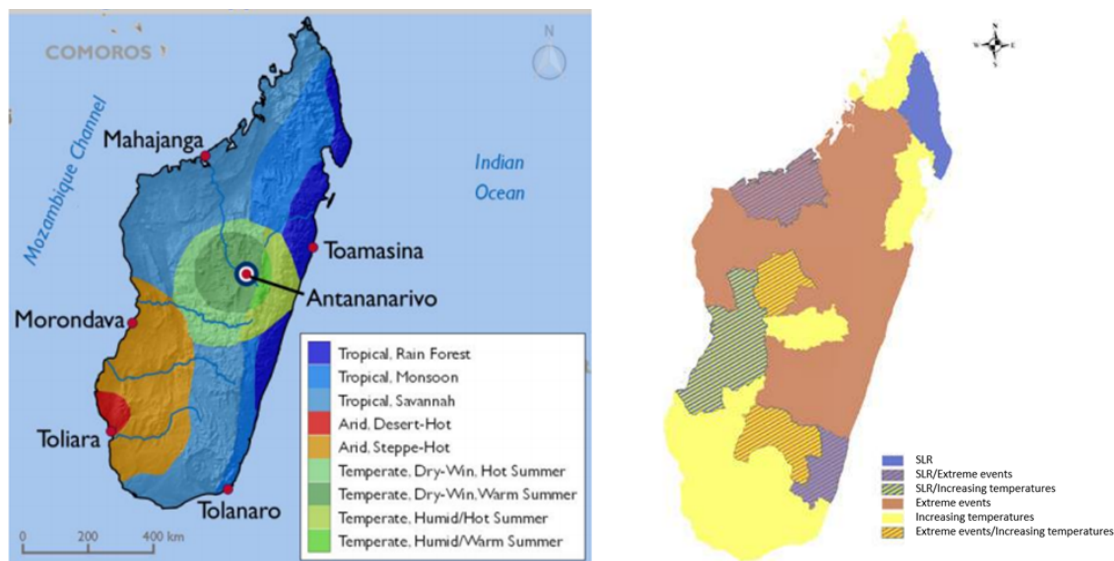


FIGURE 5 MADAGASCAR'S CURRENT CLIMATE CLASSIFICATIONS (LEFT) AND MAIN PROJECTED CLIMATE-INDUCED THREATS (RIGHT)

Madagascar's coastal areas are expected to continue facing multiple and greater climate threats, under both RCP4.5 and 8.5, such as: (i) an acceleration of average sea-level rise (SLR); (ii) increasing mean air temperatures likely ranging between 2.5-3°C; (iii) rising sea-surface temperatures (SST); (iv) increased intra-annual and intra-seasonal rainfall variability leading to droughts and floods; and (v) increasing intensity and frequency of extreme events, including cyclones and tropical storms. The projected sea level rise in the coastal regions of Madagascar could average between 34 cm and 48 cm by the end of the 21st century. Not all regions would be equally exposed: for example, the coast of Morondava (Menabe) would be highly exposed to an accelerated rise in mean sea level, of the order of 7.4 mm/year, with coastal retreat of 5-6 cm/year. On the coast of Mahajanga (Boeny), sea level rise would be less rapid, between 3 to 4 mm/year. It is also projected that the frequency and intensity of heat waves could increase in the four regions proposed to be targeted by this project – Boeny, Menabe, Atsinanana and Vatovavy Fitovinany (compared to the period 1981-2010). Moreover, the intensity of the maximum daily precipitation is expected to increase, a factor which has implications for the risk of flooding. Likewise, the duration of dry spells is expected to increase significantly in all coastal regions, which could have direct effects on water stress, including for crops and agricultural productivity. Most importantly, between 1964 and 2014, tropical cyclones accounted for ~85% of the average US\$ 100M loss/year experienced by Madagascar from all adverse natural events, a trend which is projected to be exacerbated by climate change.

The projected changes in climate patterns described above are likely to have the following impacts on coastal areas: (i) increased coastal erosion due to SLR and intensifying tropical storms; (ii) direct fatalities and infrastructure losses associated with cyclones and storms, affecting all sectors including tourism; (iii) destruction of critical coastal ecosystems including mangroves and coral reefs (and associated habitats and species such as fish, arthropods, sea grass, etc) due to cyclones, floods, and sediment loading from exacerbated upstream erosion; (iv) decreasing crop and fisheries yields due to extreme events, increasing air and sea-surface temperatures and soil fertility loss (resulting in increased food insecurity); (v) flourishing dinoflagellate (resulting in increasing mortality from ciguatera fish poisoning); (vi) outbreaks of vector-borne diseases and pests; and (vii) a significant increase in ocean salinity, saltwater intrusion, and soil

salinization. Overall, the most significant climate impacts are expected to come from the increased intensity of cyclonic events, Madagascar being one of the regions of the world where the largest increases are expected .

Climate change impacts across the country have repercussions beyond the areas where they directly occur. For instance, the south-west of the country is particularly arid (see Figure 5) and has been experiencing recurring droughts that escalated into the current famine which hit that region the hardest. As a result, rural populations migrate northward to escape hunger, in search of more productive land for agriculture and/or other employment opportunities. The year 2020 has seen even higher rates of migration, linked to the COVID-19 pandemic. This is a problem for the proposed project intervention areas, as some populations migrate to other areas (including Menabe and Boeny), where they practice slash-and-burn agriculture that is fueling deforestation, triggering user conflicts, and further endangering endemic wildlife .

Root causes and drivers of climate vulnerability in the coastal landscape

Below the root causes and drivers of climate vulnerability in the coastal landscape are detailed.

Root causes

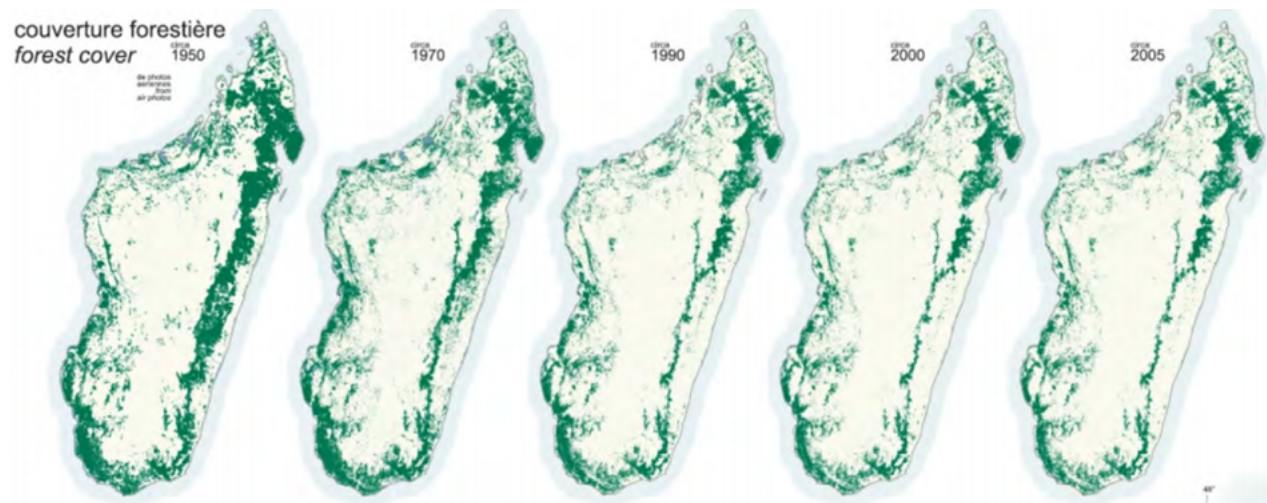
Population growth, extreme poverty, and other demographic pressures: Madagascar is experiencing rapid population growth (2.8% annually), and coastal communities in particular are experiencing extreme poverty. Hence, the landscape is facing growing anthropic pressures, including through urbanization (estimated at 4% rate per year), and reducing areas available for agricultural production. Population migration from the south to the north, due to economic and climatic woes, are also contributing to demographic pressures. Similar patterns of migration have been observed coastward of inland populations in response to climate change-driven agricultural failure, insecurity, and the attraction of perceived lucrative fishing opportunities . The lack of access to land for the new arrivals leads to competition over land and natural resources and creates user-conflicts, as both formal and informal settlements expand, including into Protected Areas. Growing populations also increase demand for a number of resources, be it for fish as a central source of protein, or charcoal to power stoves and smoke fish (for example). This is driving environmental degradation as people adopt unsustainable practices, and renders communities and ecosystems increasingly vulnerable to various shocks.

Rising global demand for seafood: As stated above, there has been a rising demand at the local level for seafood. In addition, there has been an emergence of new international export markets, and as a result many of Madagascar's fisheries have transitioned from subsistence- to market-oriented in recent decades. For example, market demand for live crabs for export to China has grown significantly in recent years, leading to price increases of 500% since 2011 and subsequent pressure on wild stocks. In 2014, national production reached 3,087 Tons of which 75% was exported to China . Hence, high market demand and high prices for seafood, combined with lack of regulations, are driving the overexploitation of resources. Indeed, recent observations have shown that industrial vessels continue to expand in both extractive capacity and spatial range, fueling concerns over foreign industrial fishing occurring within the marine territories of Madagascar, both legally and illegally (e.g. there is growing evidence that illegal industrial fishing occurs frequently nearshore, including in MPAs and LMMAs) .

Drivers of vulnerability

Overexploitation of natural resources and poor natural resources management in the coastal zone: Local communities rely heavily on the exploitation of natural resources for household consumption and for their livelihoods. This is a core factor contributing to environmental degradation, and the further increase in climate vulnerability of coastal populations. For instance, households rely heavily on mangrove charcoal for energy as there is less than 20% electrification in many areas. In addition, there is high demand from urban areas for charcoal from coastal zones. Combined with timber extraction and illegal logging, fuelwood collection, and agricultural expansion, 21% of Madagascar's mangrove forests have been deforested between 1990 and 2010 . There are also a number of more recent trends of concern for mangrove cover. For instance, recent research has shown that (perhaps counterintuitively) increasing household incomes associated with the commodification of marine products such as octopus, seaweed and sea cucumber, is driving demand for mangrove wood. This is associated with its use in kilns to produce lime from seashells to render houses, a practice which improves durability, and is considered a status symbol. Across coastal watersheds, forests are also being overexploited for wood energy, a problem which has been occurring for several decades, and which contributes to high levels of sediment loading downstream (see also below, Unsustainable agricultural activities). Wood energy extraction is estimated to contribute 5-20% of deforestation annually .

Around the country, deforestation and forest degradation continue at a steady pace despite reforms that have been taken since the 1990s. Between 1990 and 2000, a deforestation rate of 0.83% was recorded, which decreased to 0.53% (2000-2005) and then increased to 1.4% for the period 2005 to 2010. In the last ten years, the country has lost about 90,000 hectares of forest per year. Forest now covers an area of only 8,716,519 hectares , as more than 80% of the country's original forest cover has been lost, with the remaining primary forests covering only 12% of the country. According to projections, the loss will accelerate over the coming decade due to, amongst others, agricultural expansion for livestock farming, uncontrolled fires, illicit logging, wood exports, and excessive consumption of wood energy. The problem is particularly acute in coastal areas of the East coast of the country (see Figure 6), and in sensitive ecosystem types such as coastal dry forests and mangroves. Given the high rate of endemism, this deforestation and degradation has a more considerable effect on biodiversity loss than elsewhere. According to the IUCN Red List , Madagascar has 681 critically endangered species, 1,771 endangered species, 13 extinct species and 1,230 vulnerable species.



Source: MEFT, USAID & Conservation International, 2009

FIGURE 6 CHANGE IN FOREST COVER IN MADAGASCAR BETWEEN 1950 AND 2005

Unsustainable agricultural activities and low adoption of improved management practices: Poor agricultural management practices, and rapidly expanding cropping areas, are commonplace in the coastal zone. For example, farmers widely use shifting cultivation and “slash-and-burn” practices, and have been clearing forests at alarming rates. In fact, slash-and-burn agriculture is estimated to contribute 80-95% of forest loss annually across the country. This is causing extreme degradation, including severe erosion, and sediment loading downstream. The COVID-19 crisis has exacerbated forest clearing, which has been taking place increasingly in protected areas as new migrants come in, but also to make space for high value crops such as vanilla (northeast), and for illegal crops including marijuana (e.g. in the northern part of the country). Other unsustainable practices include for instance improper soil and water management, and agricultural productivity remains low at the landscape level. In fact, while not as polemical as deforestation, erosion is a central problem for productivity in a country with already one of the lowest soil productivity in the world .

Overfishing and destructive fishing practices: Madagascar is experiencing an escalating demand for seafood for subsistence . All small-scale fisheries have been assessed as being at risk of overexploitation, with over-fishing, particularly of sea cucumber and shellfish, continuing to go unchecked. A recent study in the Menabe region has confirmed that overfishing is taking place in small-scale fisheries, and that lack of data and resulting poor fisheries management are to blame. In fact, fish species caught in the small-scale fisheries of the Menabe region had a large proportion of individuals (in some cases 100%) being caught before they reached maturity, very few species were fished at their optimal size, and there were low numbers of large individuals (mega-spawners) in catches. For 13 of the 20 most common species, fishing mortality exceeds natural mortality. Illegal, unreported and unregulated (IUU) fishing has also spiked with the onset of the COVID-19 crisis. Finally, poor infrastructure means that there are significant post-harvest losses, further requiring fishers to capture larger numbers of fish than would otherwise be required. Traditional fishing practices can also be highly destructive to marine habitats, with practices such as gleaning for octopus being a leading cause of reef destruction, or bottom trawling for shrimp being associated with severe declines in their population. The degradation of the marine environment caused by these practices increases coastal communities’ vulnerability to climate change, as income sources decline and coral reefs lose their capacity to act as effective barriers to reduce wave energy associated with tropical storms. Moreover, evidence shows that fish physiological processes and life events are shifting due to climate change, meaning that current fishing practices could have greater detrimental effects on stocks and biodiversity, unless the timing and location of fishing are adapted to take into consideration these changes.

Problem description

The coastal communities of Madagascar, including in the four target regions, rely on coastal ecosystems and the goods and services they provide for livelihoods and well-being, as well as for the attenuation of climate change impacts. Malagasy coastal ecosystems support the livelihoods of more than 75% of the local population by, for example, providing natural habitats for marine species of importance for small-scale fisheries; as a source of commercially valuable non-timber forest products (NTFPs); to support crop and livestock production; etc. Coastal ecosystems also contribute to protecting coastal zones and livelihoods from the adverse impacts of climate change, via the provision of a range of services: for example, mangroves protect coasts from storm surges, erosion, flooding; and healthy coral reefs provide the first line of coastal defense by reducing wave energy by an average of 97% ; etc.

The problem that the proposed LDCF project seeks to address is that communities in the coastal regions of Madagascar remain highly vulnerable to the impacts of climate change, including impacts of sea-level rise, increased temperatures, and increased frequency and intensity of droughts, floods and tropical storms and cyclones. This is due to a range of both biophysical and socio-economic factors (as described above).

The continued degradation of the coastal ecosystems due to human activities and climate change increase the vulnerability of the coastal areas and populations. For instance, terrestrial and mangrove deforestation, compounded by intensifying tropical cyclones, contribute significantly to the increased vulnerability of coastal zones to flooding and coastal erosion. Associated soil erosion across watersheds also leads to sedimentary changes downstream in marine and freshwater bodies, causing important losses in benthic biodiversity, thereby threatening human health, food security, and livelihoods. The interactions between climate change threats and the non-climate drivers of vulnerability are summarized in Figure 7 below (Problem Tree).

At the same time, interventions to reduce the vulnerability of the coastal zones of Madagascar through the rehabilitation of coastal ecosystems have, to date, taken place mainly at a small pilot scale. In the past, these measures have also been insufficiently supported by enabling factors, such as institutional engagement, sustainable management plans and community ownership to ensure their long-term sustainability and potential for upscaling.

The proposed solution is to reduce the vulnerability and build the climate-resilience of communities in the coastal areas of Madagascar through the upscaling of Ecosystem-based Adaptation (EbA) approaches. The project will focus on improving the state of key ecosystems in four vulnerable coastal regions, and supporting institutional and community-based structures, plans and strengthened capacity for the long-term sustainable management of ecosystems and the upscaling of EbA approaches in other coastal areas of Madagascar. Moreover, it will work on economic activities around ecosystem-based value chain development (e.g. apiculture) and ecotourism, to strengthen livelihoods and ecosystem health, with a focus on women and youth entrepreneurs. Supporting coastal communities in the shift towards sustainable livelihood strategies that allow degraded ecosystems to be regenerated will strengthen the climate resilience of both the ecosystems as well as the communities that rely on their services for livelihoods, well-being and protection.

Barriers to climate change adaptation

Through its interventions, the project will also address the following barriers to the implementation of the proposed solution and to climate change adaptation in the four target regions:

Barrier 1: Limited institutional capacity, limited coordination, and weak governance mechanisms

Systemic and cross-sectoral approaches are needed to achieve significant advancements in terms of climate resilience. There is currently limited capacity of national level institutions, including the national climate change office (BNCC-REDD+), to engage in climate change adaptation, including EbA. For the coastal zones of Madagascar, an obvious entry point at the institutional level are Integrated Coastal Zone Management (ICZM) Committees. ICZM Committees, at the national and regional levels, have the potential to make significant contributions to adaptation objectives through their inherent cross-sectoral nature, yet still lack the capacity to fully engage with climate change issues. At the national level, there is limited understanding of EbA and how it can be scaled up, while at the regional level the ICZM Committees which do exist have a role which is currently broadly limited to awareness raising. The latter committees lack sustainable financial resources to broaden the scope of their activities, as well as the mechanisms to effectively coordinate with the national level to contribute to policy-making and the implementation of policy priorities. Despite several policies and strategies aimed at environmental and coastal management, the institutional bases for implementation of environmental management are weak. There is a lack of cross-sectoral integration of policies which have implications for climate change adaptation (e.g. environment, agriculture, forestry, fisheries, tourism, water). Once properly capacitated, the ICZM Committees could have an important role in supporting local and regional development planning (and the integration of EbA), including by leveraging their capacity to engage local actors across sectors.

Barrier 2: Limited awareness of climate risks and EbA for resilience planning

The adoption and implementation of good management practices, be it for fisheries, agriculture, or more broadly natural resources, is severely impeded by a lack of awareness of the linkages between climate, ecosystem health, and livelihoods. Importantly, there is no information which can be derived on the potential interactions between the current state of ecosystems and the potential impacts of climate change on those. The situation is particularly dire for marine ecosystems in the country. Communities, without such information, are therefore unable to make evidence-based decisions regarding the management of natural resources and adaptation. Good natural resources and fisheries management, with community-led efforts, is low cost and effective and can improve the resilience of coastal communities to climate change by ensuring the long-term provision of ecosystem services, including for adaptation. However, it cannot be achieved without increased awareness of climate risks to the sectors and how to integrate EbA solutions. In fact, the lack of knowledge and awareness is so important that it affects decision-making not only at the local level, but is also reflected by the absence of policies targeting small-scale fisheries specifically. This lack of capacity has also affected the ability to monitor the sector, whereby, specific species remain overexploited. Improved access to information and strengthened knowledge could, however, enable communities and policy makers to monitor ecosystems and understand relationships with climate change and anthropogenic behaviors, and make decisions on how to manage resources for the long term.

Barrier 3: Limited access to markets, EbA-based business opportunities, and diversified livelihoods

Coastal communities still rely heavily on single sources of income, predominantly agriculture or fisheries, which can be supplemented by products from unsustainable value chains (e.g. mangrove charcoal), thereby making them particularly vulnerable to climate shocks. This reliance on these limited sources of income is also resulting in the overexploitation of natural resources and degradation of ecosystems, which is further increasing the communities' vulnerability. Alternative climate-resilient livelihoods are very limited, as are opportunities to develop new business opportunities based on EbA, including as it relates to NTFPs, agriculture, or fishery value chains. Women in particular face significant barriers in engaging with climate-resilient value chains.

In the fisheries sector, there is limited transformation of marine products and limited value addition, caused by a lack of processing equipment and facilities, as well as technical knowledge. There is also poor infrastructure for storing fresh products, leading to significant post-harvest losses. At another level, the dispersed nature of small-scale fisheries means fishers rely on private sector collectors to access markets, and post-harvest actors hold disproportionate negotiating power. Hence, incentives to adopt climate-resilient and improved management practices are limited for fishers, as economic benefits end up in the hands of other actors higher in the value chain. To address these imbalances, it is critical to empower fishers, improve their representation in management processes, and address data deficiencies to enhance transparency and provide an evidence base for decision-making (see Barrier 2). Lack of post-harvest infrastructure for storage and processing also affects agricultural and horticultural value chains (e.g. fresh fruit such as mangoes, cashew nuts), leading to significant post-harvest losses and the limited ability to add value to products.

Poor organization of producers and other actors of the other value chains, reflected through low membership to cooperatives and producer organizations (in particular for women) also contributes to limiting market access, and to the inability to get fair prices for various products. Moreover, where these organizations do exist, they often lack the capacity (technical, financial, human) to scale up operations or to invest in the development of new EbA-based products. This is reflected, amongst others, in the absence of sustainable business plans, as well as technical and hardware support for those organizations.

In the tourism sector, there exist significant opportunities for ecotourism, as the country's natural landscape and culture are highly sought after. However there is a lack of skilled labor, weak infrastructure, and poor international accessibility in comparison to other tourist destinations in the country. The risk of cyclones and tropical diseases have been identified as constrictive to the activity as well.

Barrier 4: Limited community level and participatory natural resources management, weak land tenure arrangements, and lack of enforcement of the regulatory frameworks in place to support adaptation

There is growing evidence that weak regulation and a failure to effectively transfer natural resources management to local communities are also key contributors to the inefficacy of multiple restoration efforts undertaken in the coastal zones of Madagascar, and the continued mismanagement of natural resources in coastal areas. The regulatory frameworks for climate change adaptation and natural resources management are poorly enforced in coastal areas. This is largely due to the fact that the mechanisms in place have not been effectively transferred into the hands of local communities, thereby reducing ownership and compliance. Control over land and natural resources is often unclear, which reduces the effectiveness and long-term sustainability of restoration efforts. There are limited local sustainable management plans developed and enforced.

To address this, there have been recent efforts by different projects to work on land use planning at the local level, including GIZ-funded PAGE project (2015-2020). They have focused on taking a highly participatory approach for integrating EbA and good natural resources management practices (e.g. SLM) into local development plans (PCDs), including through participatory mapping exercises. However, this has been done on a very limited scale and the majority of communes do not have updated plans and sub-plans.

For marine resources, there is evidence that Locally Managed Marine Areas (LMMAs) can be effective mechanisms to ensure the sustainable management of resources, although community management alone is unlikely to be successful and must be supported by state and other actors to ensure resilient governance, ... An informal network of those LMMAs (over 80 nationally), called MIHARI, has had significant success, including in implementing no-take zones. However, LMMA numbers remain limited. It has been estimated that there is a need to increase their coverage of inshore and coastal areas from 12% to 30-40% to significantly improve resilience benefits.

The project Theory of Change is summarized in Figure 8, below.

The proposed project will build on the experiences and results of the project "Adapting coastal zone management to climate change considering ecosystem and livelihoods" (known as "PAZC"), funded by GEF LDCF, and implemented from 2014 to 2021. The proposed project will upscale some of the best practices identified by the PAZC project, specifically in the areas of ecosystem (mangrove) rehabilitation, and livelihood diversification. The PAZC project reached xx beneficiaries, in xx communes of the four regions. The proposed LDCF project will be upscaling this number to 91,000 direct beneficiaries (and another 241,000 indirect beneficiaries), covering xx additional communes. In particular, the proposed project will further consolidate and solidify the institutional frameworks established for the coordination and mainstreaming of adaptation efforts in coastal areas, in particular the Regional ICZM Committees.

The project will also focus on addressing several key intervention pathways that were not included in the PAZC project, and were identified as key priorities during stakeholder consultations. In particular, the proposed project have a focus on supporting the resilience of marine ecosystems and related livelihoods. It

will also aim to build awareness and community engagement for longer-term behavioural change. As a result, the four selected regions will have in place an institutionally and financially sustainable comprehensive approach to strengthening the climate resilience in coastal areas

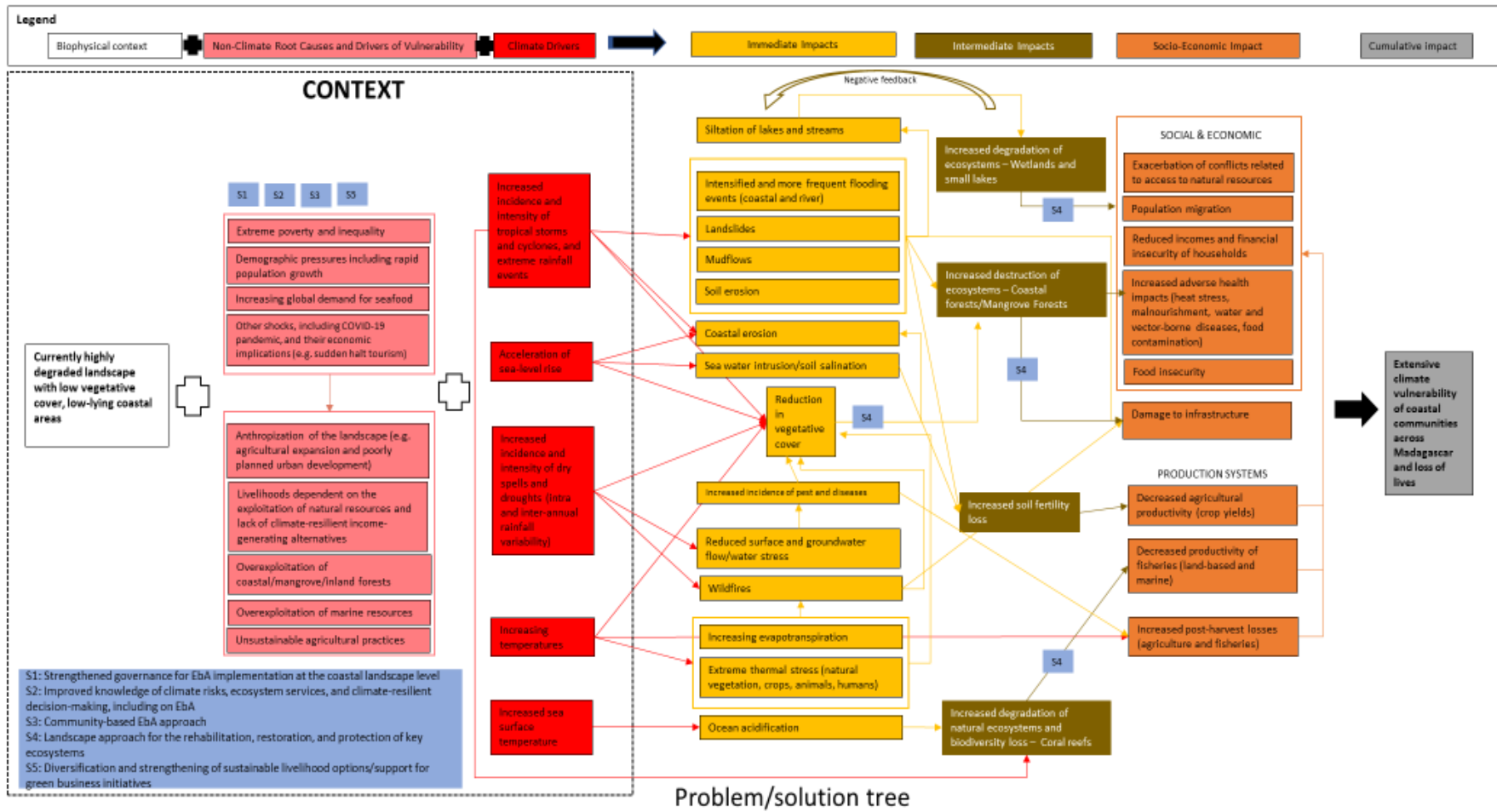


Figure 7. Problem tree (with proposed solutions)

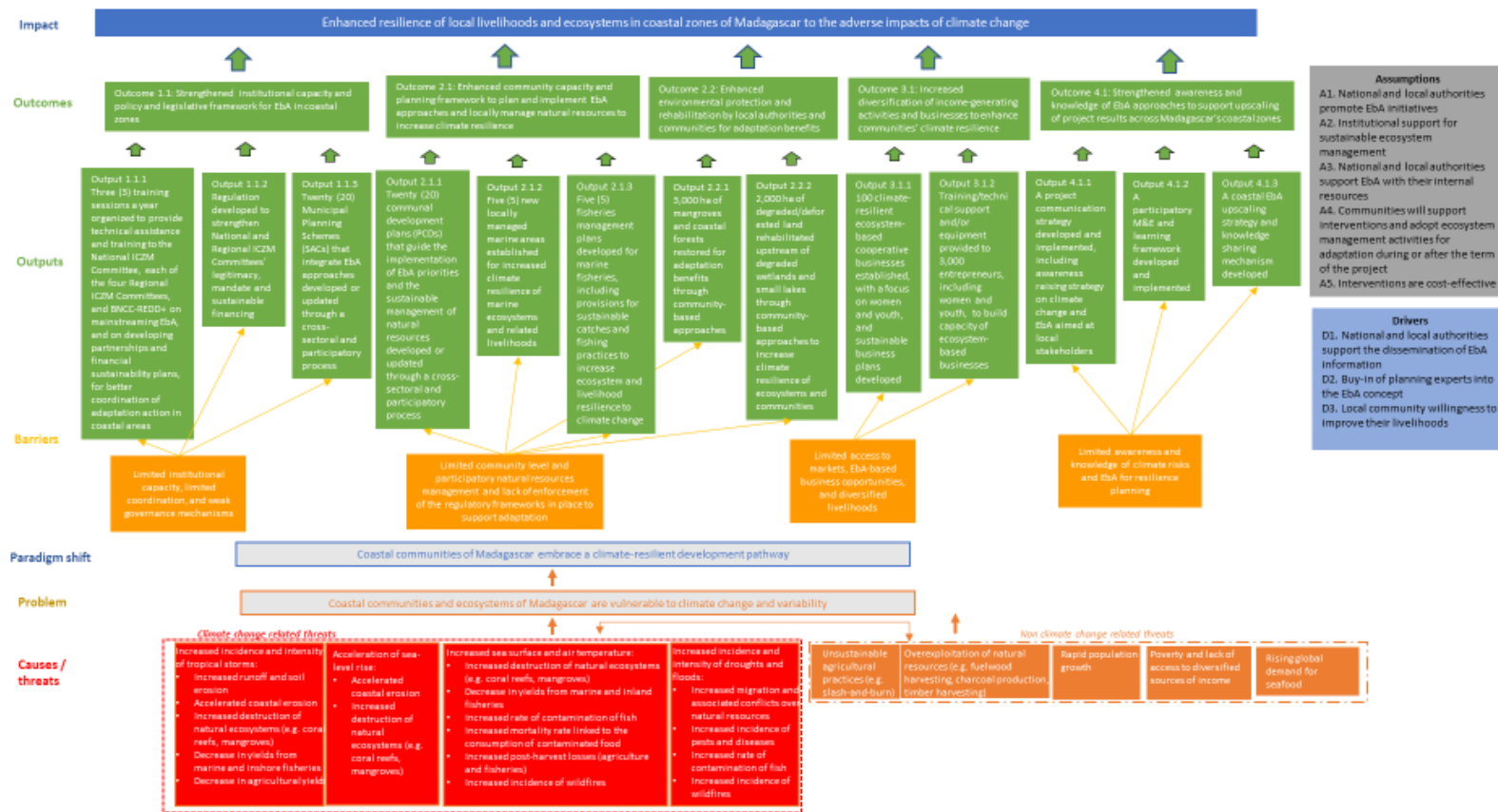


Figure 8. Theory of Change

1a.2 Baseline scenario and baseline projects

The baseline scenario, as it relates to each component of the proposed project, is described below.

Component 1: Climate-resilient governance and planning in coastal zones of Madagascar

Business-as-usual scenario:

Climate change is recognized as a major threat to the coastal areas of Madagascar, and to the well-being and socio-economic development of coastal populations. Addressing the impacts of climate change in coastal areas has been identified as a priority in a number of national adaptation strategies and

plans. However, the institutional, policy and legislative frameworks at national, regional, and communal (municipal) levels do not provide an adequate supporting environment for a comprehensive and continued integration of adaptation (including EbA) considerations in the development of Madagascar's coastal zones or the implementation of scaled up adaptation initiatives in these areas.

More specifically, there is a continued lack of multi-sectoral and multi-stakeholder coordination which is necessary for adaptation planning and implementation in coastal areas. This results in inefficiencies in accessing finance and in missed opportunities for synergies between initiatives. To address this part of the issue, the PAZC project successfully established Regional ICZM Committees in three of the target regions and strengthened the existing one in Menabe region. These structures can act as coordinating platforms for adaptation action in coastal areas, in close collaboration and coordination with BNCC-REDD+ as the national coordinating structure for climate change (including adaptation). Each of the Committees was supported to develop an ICZM Action Plan for the period 2018-2022, integrating climate change considerations and adaptation priorities. These Regional Action Plans informed the revision of the National ICZM Action Plan (2018-2022), which integrates adaptation measures. However, despite their significant potential, the Regional ICZM Committees still lack sufficient institutional legitimacy, capacity, and secure sources of long-term funding for their operations. Moreover, their functions are currently largely limited to awareness-raising. Indeed, there is a lack of technical capacity for the implementation of those policies and plans that have been put in place. Furthermore, capacity is also lacking at national institutions, including the national climate change office (BNCC-REDD+), to support and engage in the coordination, planning, implementation and monitoring of adaptation interventions, including EbA, in coastal areas.

On the other hand, a systematic approach for the integration of adaptation considerations and EbA approaches in policy and planning processes for coastal zones is lacking at present. As a result, while multiple adaptation measures have been piloted in the coastal zones of Madagascar, including in the target regions, these initiatives have been at a relatively small scale and followed a piece-meal, localized approach. To address this, the PAZC project as well as the GIZ-funded PAGE and ProSOL projects contributed to revisions to the Regional Development Plans (Plan régional de développement; PRD) of each of the four target regions to include climate change adaptation considerations. The PRD is the translation into concrete activities for the next ten years of the land use planning axes defined in the Regional Land Use Plan (Schéma régional d'aménagement du territoire - SRAT). The capacity of regional institutions, including Regional Directorates, to implement prioritized adaptation actions remains limited, and the role of various partners and stakeholders is not always defined clearly enough to result in effective institutional action. Financing for the implementation of the identified actions is also limited.

Similarly, at the local level, there is low capacity for adaptation and development planning. The main planning instruments in Madagascar are the Communal Land Use Plans (Schéma d'aménagement communal; SAC), and the Communal Development Plans (Plan communal de développement; PCD). At the municipal level, the SAC is a reference document that sets out fifteen-year guidelines for land use planning, and it aims above all to strengthen the capacity of the communes in the management of their territory and to meet the needs related to development and environmental protection. It constitutes the basis for the medium-term objectives and activities to be identified in the PCD. The PCD is a four-year framework describing the development goals, strategy, programmes and projects, and means of implementation. It is accompanied by an investment and capacity building plan. There are currently only a few municipalities which have been supported to mainstream adaptation in these plans through recent or ongoing adaptation initiatives, including most recently in 2020 the PAGE/GIZ project having supported twenty communes for their SAC development. Part of the SAC process piloted previously included setting up Communal Development Committees (or CCD) to ensure the effective participation of the commune's citizens in the development of the PCD or SAC.

Component 2: Ecosystem-based adaptation in response to climate risks in coastal areas

Business-as-usual scenario:

The continued unsustainable use and degradation of the coastal zone ecosystems result in their reduced capacity to provide the goods and services that coastal communities rely on for their livelihoods and wellbeing. Furthermore, they increase the vulnerability of coastal communities to the impacts of climate change, further reducing agricultural and fisheries yields and thus increasing food insecurity and poverty, which in turn result in further pressure on the already-degraded ecosystems. While pilot ecosystem rehabilitation interventions, including those of the PAZC project, have resulted in promising results, there is an urgent need to upscale and institutionalize these good practices. Without management plans and mechanisms for the transfer of natural resources management to local communities, and the empowerment of communities to implement, monitor and enforce these plans, the degradation of coastal ecosystems will continue and coastal populations will remain highly vulnerable to climate change impacts.

In the project areas, mangroves suffer from increasingly high levels of degradation due to fuelwood collection, timber extraction and agricultural development , as well as overfishing and sediment loading associated from upstream deforestation. Some mangrove areas have been converted to rice farming and salt production, while others have been cleared for the development of urban areas. Sea-level rise, changing precipitation patterns, more frequent and intense cyclones and flooding events associated with climate change are also threatening mangroves, all of which are reducing their capacity to provide key adaptation services. Similar challenges are faced by highly fragmented coastal forests present in all four target regions, which are decreasingly able to play their key role in erosion and flood prevention.

Watershed degradation and erosion upstream, largely a consequence of poor agricultural practices, also affect coastal and marine environments through sedimentation and siltation, particularly on the west coast of Madagascar . Coral reefs, for example, suffer not only from bleaching events due to higher temperatures and pressures from unsustainable or excessive fishing (from both industrial and small-scale fisheries), but also from siltation from the accumulation of excess sediment in bays, in some case due to upstream erosion. Wetlands and small coastal lakes are also severely affected, yet they have received little conservation or research attention and their current status is largely unknown .

Local land use plans (PCDs) can be an effective tool for addressing these issues, when combined with the development of adequate sustainable resources management strategies or sub-plans, and when land tenure issues can be tackled. While guidelines have been produced in 2016 for the inclusive development of PCDs, only a limited number of communes have benefited from their implementation. Moreover, there remain significant needs to apply more participatory approaches in PCD processes, as well as to integrate sustainable resources management sub-plans and EbA approaches within them.

Another way to empower communities to manage their local natural resources are Locally Managed Marine Areas (LMMAs). These have grown significantly in number in Madagascar since the first one was established through Blue Venture more than 15 years ago, reaching more than 170 by 2019, according to the MIHARI network.

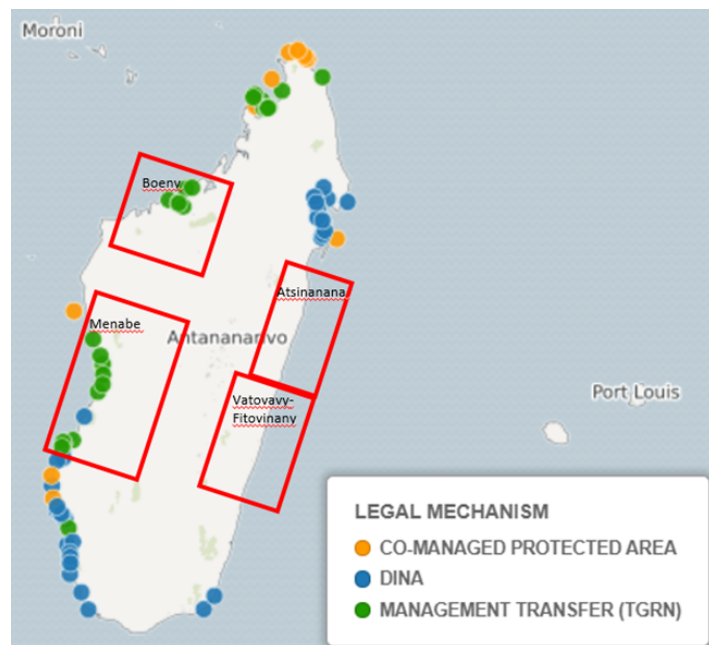


FIGURE 9 LOCATION OF MIHARI NETWORK LMMAS

LMMAs require adequate legal mechanisms to transfer the management of natural resources to local communities, thereby building ownership and improving compliance with laws. Such mechanisms are currently lacking in many coastal areas. While the government of Madagascar has progressively decentralised the governance of natural resources to local levels, this is not widely implemented. An avenue proposed to reduce conflict between national laws and traditional community regulations to manage natural resources (known as dina), is to establish contractual management transfers and co-managed protected areas defined within dina, which can then be legally recognised. To be effective, the dina should not be in contradiction with pre-existing national law, be aligned with community aspirations, and be developed through a fully participatory, inclusive approach.

Component 3: Green economy approach for resilient ecosystem-based livelihoods in coastal areas

Business-as-usual scenario:

Coastal communities continue to rely on the unsustainable exploitation of ecosystems and natural resources for livelihoods (e.g. unsustainable agricultural practices, overfishing and destructive practices, poorly managed tourism, overexploitation of wood and unsustainable harvesting of NTFPs), resulting in environmental degradation, and further increasing the communities' vulnerability to the impacts of climate change. Hence, there is a need for local communities to be supported in deploying more productive, resilient, and sustainable livelihood strategies in the face of climate change. In order to effectively implement livelihood diversification and value chain strengthening, communities need further: (i) access to knowledge, technologies, equipment and materials / inputs for production and value-addition; (ii) capacity for the processing or transformation of products for value-addition and their commercialization; (iii) access to finance / investment; (iv) experience on cooperative approaches; and (v) financial and business management skills.

Past livelihood diversification interventions have usually been at a small scale, and focused heavily on provision of equipment for production. Capacity building for value chain strengthening, and in particular interventions that extend beyond the production phase to also address the transformation and commercialization of products, have been very limited despite being great interest in these. Today, the limited transformation and commercialization of existing agricultural and fisheries products is restricting the income they can bring. Though at a very small scale, PAZC support for small producers and producers organizations, including training on group sales and valuation and transformation techniques and the provision of basic materials to assist sales, were found to bring benefits to local stakeholders.

On specific value chains, such as apiculture, there have been numerous interventions to encourage the adoption of improved techniques and increase production (including PAZC). Yet, there is still a need to catalyze the transfer of knowledge and skills from successful producers to the wider community, and to develop other parts of the value chain including commercialization.

Ecotourism is an important potential economic activity for Madagascar to explore, in particular as an approach for payment for ecosystem services. Generation of income through ecotourism can greatly contribute to the conservation, rehabilitation and sustainable use of ecosystems that play a key role in supporting adaptation to climate change and reducing the vulnerability of coastal communities. The potential for ecotourism in the Boeny, Menabe and Vatovavy Fitovinany regions was scoped by the PAZC project, which also piloted at a small scale the establishment of ecotourism operations in these three regions. Indeed, ecotourism was identified as an opportunity by several stakeholders during consultations, and assessments conducted during the PAZC implementation showed that the practice was already growing rapidly. Consultations for the development of the PIF indicated that there is an urgent need for setting up ecotourism associations and developing business plans that benefit not only private sector operators, but also the local communities. Other needs identified included: (i) conducting ecological inventories to identify suitable sites; (ii) promotion and advertising; (iii) training of local guides and kitchen/hotel staff; and (iv) various materials and tools.

Component 4: Awareness, monitoring and evaluation and knowledge management for upscaling

Business-as-usual scenario:

In order for local natural resources management to be effective, government institutions and communities alike must have a sufficient understanding of climate change, its projected impacts, their role in ecosystem degradation and its impacts on their well-being, as well as potential solutions such as EbA. At the community level, this knowledge can empower changes in attitudes and behaviours towards more the sustainable use and conservation of ecosystems, while at the institutional level it serves to establish strategic priorities and mainstream adaptation concerns. Training, outreach, as well as effective knowledge management systems which include participatory natural resources mapping processes, can help build ownership and empower the communities to track the status of their environment and livelihoods. However, all of these are woefully lacking in coastal areas of Madagascar, and communities continue to lack the tools required to develop adequate sustainable management plans, as well as to implement them.

Baseline initiatives

The proposed LDCF project will build on multiple baseline projects that share a focus on improving the livelihoods of coastal communities of Madagascar through ecosystem-based approaches and resilience building.

a. Co-finance projects

Indicative co-finance projects, to be explored further during the PPG phase, are outlined below. Information on the contributions of these projects to the implementation and objectives of the LDCF project are detailed in Section 1a.5 (Additional Cost Reasoning).

1. Resilience of Indian Ocean Coastal Areas (RECOS) Project

(FFEM / AFD, 2020-2025, US\$10.77M)

The overall objective of the project, executed by the Indian Ocean Commission (IOC), is to strengthen the resilience of coastal populations and the ecosystems in which they live in the face of the harmful effects of climate change and in particular of extreme weather phenomena which affect the coastal areas of IOC Member States (Madagascar, Mauritius, Seychelles, and Comoros). The specific objectives of the project are to: a) Strengthen regional and national governance of coastal and marine ecosystems; b) Develop a framework for cooperation and a base of scientific knowledge on these ecosystems; c) Implement innovative and varied projects for the restoration and sustainable exploitation of coastal and marine ecosystems. The bulk of the project budget will be allocated under the last objective. The project is structured in the form of 4 components: 1) Strengthening the management of marine and coastal ecosystems at regional and national scales; 2) Regional scientific cooperation on coastal ecosystems - Scientific support and capitalization; 3) Implementation of activities for the restoration and sustainable management of coastal ecosystems: pilot projects for nature-based solutions and integrated management of coastal areas; and 4) Communication, awareness, capitalization and promotion of good practices. The RECOS project will contribute US\$ 1,539,000 in co-finance towards LDCF project Components 1 and 2, through its pilot project in Morondava (Menabe).

2. Inclusive Agricultural Value Chains Development Programme (DEFIS)

(IFAD, 2018-2027, US\$127.6M)

The DEFIS programme, which is executed by the Ministry of Agriculture, Livestock and Fisheries, operates in eight regions in southern and centre-eastern Madagascar (including Vatovavy Fitovinany). The direct beneficiaries of DEFIS investments and services will be 320,000 family farms, at least 30 per cent of them headed by women or young people. Eight value chains – rice, maize, cassava, groundnut, coffee, onion, small ruminants and honey – have been selected, three in each region. In addition, support will be provided for value chains of special interest, such as sorghum and millet, that can build the resilience of production systems for family farms in semiarid zones. The DEFIS Programme will contribute US\$ 2,126,667 in co-finance towards Component 3 of the LDCF project, through its intervention in Vatovavy Fitovinany.

3. Sustainable Landscapes in Eastern Madagascar

(GCF / CI, 2018-2028, US\$69.8M)

The project goal is to implement sustainable landscape measures to enhance resiliency of smallholders, reduce GHG emissions and channel private finance into climate-smart investments in agriculture and renewable energy that transform livelihoods, and will be implemented primarily in the landscapes of the Ambositra Vondrozo Forest Corridor (COFAV) and the Ankeniheny-Zahamena Forest Corridor (CAZ), overlapping with the proposed LDCF project intervention areas of the East coast of Madagascar. The GCF-funded project, implemented by CI, aims to demonstrate a replicable model for addressing smallholder vulnerability that mobilizes both the public and private sector. The project's following components are particularly well aligned with the proposed LDCF project: Outcome 1. Strengthened adaptive capacity and reduced exposure to climate risks (and in particular Output 1.6. Critical ecosystems providing essential

ecosystem services to smallholder farmers communities in current and future climate conditions are identified, assessed and managed (protected or restored) as ecosystem-based adaptation measures); Outcome 2. Strengthened awareness of climate threats and risk-reduction processes (Output 2.1. Capacity of government employees, local conservation and development NGOs, farmer groups and local communities to implement mitigation and adaptation measures to achieve Climate-Smart Landscapes is strengthened; and Output 2.2. Knowledge of the CAZ and COFAV population (including school children) about climate change issues and responses proposed by the project is improved); and Outcome 3. Strengthened institutional and regulatory systems for climate-responsive planning and development (Output 3.1. Strategies and actions identified in national climate change policies are integrated into decentralized planning at regional and local levels; Output 3.2. Intervention capacity on climate change issues of decentralized technical services is strengthened; Output 3.3. The monitoring and evaluation system for Climate-Smart Landscapes is operational and informs adaptive management; and Output 3.5. Lessons learned and best practices regarding Climate-Smart Landscapes are integrated into relevant documents and relevant structures (environment, agriculture, land-use planning, Communes, Regions etc.)). The Sustainable Landscapes Project will contribute US\$ 7,100,000 in co-finance towards Components 1 and 3 of the LDCF project.

4. Ecosystem-based Adaptation in the Indian Ocean – EBA IO

(GCF / AFD, 2021-2030, US\$ 49.2M of which approximately US\$ 24.6M for Madagascar)

The goal of the EBA IO Programme is to reduce the vulnerability of island populations by securing the critical ecosystem services they need to be resilient to climate change. The Programme will use tried-and-tested tools and methodologies that the Critical Ecosystem Partnership Fund (CEPF) has developed over the last 20 years for strengthening and engaging civil society actors in ecosystem conservation. CEPF's current model, which prioritizes biodiversity conservation, will be modified to direct investments to geographic and thematic areas of highest priority for EbA. The Programme will work through CSOs, help to build their capacity and help them develop partnerships with the private and public sector. The Programme includes a component to achieve long-term sustainability and encourage replication of best EbA practice. The Programme has three components: Component 1: Developing strategic plans for EbA in the small island biodiversity hotspot that are well aligned with national climate change strategies; Component 2: Supporting EbA activities through grants to CSOs; Component 3: Ensuring long-term sustainability and replicating success through knowledge products and tools for EbA. The EBA IO project will contribute US\$ 9,370,000 in co-finance towards LDCF project Components 1, 2, and 4.

5. Program for the Protection and Sustainable Use of Natural Resources Phase II (PAGE II) – to be confirmed

(GIZ, 2020-2023, US\$ to be confirmed)

The second phase of PAGE intervenes in the Boeny and Diana regions of Madagascar, with the following objective: Sustainable use of natural resources is improved around selected protected areas in Madagascar. The project focuses on two aspects to preserve local biodiversity: a) contributing to legal alternatives to illegal timber availability, so that local needs for firewood and timber are covered; and b) livelihood diversification through support for a range of value chains (e.g. wood products, honey, cashew, pink pepper and moringa). To sustain its investment, the project also promotes the improvement of the administrative and technical framework surrounding the sustainable management of natural resources. The PAGE II project will contribute US\$ (amount to be confirmed) in co-finance towards LDCF project Component 3.

6. In-kind co-financing from Ministry of Environment and Sustainable Development (MEDD)

As the project Executing Agency, the Ministry of Environment and Sustainable Development (MEDD) will provide in-kind co-financing of approximately US\$ 1,006,783 to the project (amount to be confirmed in PPG phase). This co-financing will include staff time to support the implementation of the project, including administrative and logistical support for project operations, technical expertise and advice, as well as high-level engagement and direction from

MEDD senior management. Staff time contributions also include coordination between the LDCF project and other MEDD initiatives to enhance synergies and collaboration where relevant. Furthermore, MEDD will contribute office space and furniture for the Project Management Unit. The co-finance also includes event spaces provided by MEDD for the organization of training sessions and workshops in the regions, as well as the supplies and materials MEDD will provide to support the organization of these events.

b. Other baseline initiatives / investments (not co-finance) which the project will build on

Second South West Indian Ocean Fisheries Governance and Shared Growth Project (SWIOFish2)

(World Bank IDA Credit (US\$ 65M) / IDA Grant (US\$ 9M) / GEF Grant (US\$ 6.4M)/ JPHRD Grant (\$2.73M), 2018-2023)

The objectives of the project, executed by the Ministry of Agriculture, Livestock and Fisheries, are to support the improvement of the governance of priority fisheries for their national and community sustainable management, support the adoption of sustainable management of target fisheries, and promote alternative activities and support target fishermen to facilitate and access these alternative activities. The project is planned to be implemented in the following high-priority intervention areas: Ambaro-Ampasindava Bay in the Diana Region; Antongil Bay in the Analanjirofo Region, the Melaky Region, and in the priority areas of the Atsimo-Antsinanana Region and the Androy Region. The priority sectors concern crab, shrimp, lobster, octopus, demersal fish (living above the seabed on a non-permanent basis), sea cucumber and tuna. The proposed LDCF project aligns with Components 2 and 3 of SWIOFish2 (i.e. Component 2. Strengthening capacities for priority fisheries management and Component 3. Strengthening capacities for engagement in alternative fishing practices and livelihoods activities, for which grant financing is about \$18.13M), and will therefore be able to capitalize on the results of those interventions and replicate best practices where relevant.

Madagascar Agriculture Rural Growth and Land Management Project (CASEF)

(World Bank / IDA, 2019-2022, US\$ 52M)

This additional financing to the initial CASEF project will target the issuance of 2 million additional land certificates through systematic registration by June 2022 and will support 309 additional Communal Land Offices, bringing the total under the project from 191 to 500. With a total target of delivering 2.5 million certificates, CASEF will support the largest land intervention to date in Madagascar. This project will also aim at tackling the existing gender gap in women's land rights, by registering rights under women's names (either alone or jointly) on 1.1 million parcels. The project areas under the component "Support to land policy and land rights registration" will expand from the initial seven regions to nine additional regions: Diana, Sava, Boeny, Betsiboka, Sofia, Alaotra Mangoro, Bongolava, Haute Matsiatra, and Amoron'i Mania. The additional financing will furthermore support the production of basic agricultural statistics. An important focus will be on improving information on value chains. A data warehouse will be designed and developed to support the integration and harmonization of agricultural data. The changes in land tenure enabled through this project will contribute to supporting the objectives of the proposed LDCF project, in particular as the project will seek to support the integration of EbA into land-use planning, including the development of Communal Development Plans (PCDs) and Municipal Planning Schemes (SACs) (Outcome 1.1 and 2.1). The improved information of value chains will be capitalized by the proposed LDCF project for the selection of targeted value chains, and the design of interventions (Outcome 3.1).

Implementation of the Strategic Action Programme for the protection of the Western Indian Ocean from land-based sources and activities (WIO-SAP)

(Nairobi Convention, GEF, 2016-2022, US\$ 10.9M)

The project, executed by the Ministry of Environment and Sustainable Development, Ministry of Agriculture, Livestock and Fisheries, and UNEP has the following four components: A: Sustainable Management of Critical Habitats: Critical habitats such as coral reefs, mangroves, and seagrasses have enormous

ecological and economic value for the region—but are more vulnerable than ever. Outcomes under this component will include a) critical habitat management through pilot interventions and b) the development and adaptation of tools and methods to support coastal planning and management. B: Improved Water Quality: Untreated wastewater and effluents are causing a decline in water quality in the region, threatening public health and ecosystems. Outcomes under this component will include improved quality of coastal “receiving” waters through pilot interventions and a framework for monitoring and managing these pollutants. C: Sustainable Management of River Flows: Human activities and climate variability have altered the drainage systems of many rivers in the region. Such alterations threaten coastal habitats, shorelines, public health, and livelihoods. Outcomes under this component will include environmental flow assessments (EFAs) and implementation of EFA plans in the region, including through pilot interventions. D: Governance and Regional Collaboration: The degradation of critical marine and coastal ecosystems in the region can be partially attributed to inadequate governance frameworks. Activities under this component will include an improved knowledge management system (see the Nairobi Convention’s Clearing House Mechanism) and exchange mechanisms, as well as updated policies and stronger institutions. The LDCF project will review and where applicable replicate best practices piloted through WIO-SAP in critical habitats, especially mangroves, while always taking into account climate change vulnerability.

1a.3 The proposed alternative scenario

The adaptation alternative and the proposed project Components, Outcomes and Outputs to achieve this are described below:

Component 1: Climate-resilient governance and planning in coastal zones of Madagascar

Adaptation scenario:

The project proposes to address the gaps in the enabling environment for climate-resilient planning and development at the national, regional, and local levels, by supporting the integration of adaptation considerations in relevant policies and plans, and by building capacity of national, regional, and local actors to engage with, and implement, EbA.

The National ICZM Committee will be strengthened, and its capacity built, so that it can provide long-term support to the upscaling of Regional ICZM Committees as a coordination platform for adaptation mainstreaming in coastal areas across Madagascar, in close collaboration with the national climate change office (BNCC-REDD+). Simultaneously, the project will provide training to Regional ICZM Committees on the implementation of EbA, as well as develop and implement Regional ICZM Committees business plans to ensure their long-term financial sustainability. The capacity of the national climate change office (BNCC-REDD+) to fully fulfil its mandate to coordinate climate change adaptation in Madagascar will also be strengthened through training and exchange opportunities. Appropriate legislative instruments will be put in place to further institutionalize the National and Regional ICZM Committees, and to strengthen their mandate and core funding. The respective roles and responsibilities of the ICZM Committees and BNCC-REDD+ in coordinating adaptation in coastal areas will be clarified, and collaboration between them strengthened.

The coherence and efficiency of adaptation actions in the targeted coastal areas will be strengthened through the enhanced multi-sectoral and multi-stakeholder coordination provided by the strengthened Regional ICZM Committees. The project will also support the integration of adaptation (including EbA) approaches into Municipal Planning Schemes (SACs) in the intervention zones through a participatory approach, building on the work done by the PAZC project at the regional level.

As a result, adaptation considerations will be able to be integrated in coastal development planning in a more coordinated and comprehensive manner, synergies between adaptation initiatives strengthened, and adaptation financing used more efficiently.

Outcome 1.1: Strengthened institutional capacity and policy and legislative framework for EbA in coastal zones

Output 1.1.1 Six (6) technical assistance and training sessions a year organized to support the National ICZM Committee, each of the four Regional ICZM Committees, and BNCC-REDD+ on mainstreaming EbA, and on developing partnerships and financial sustainability plans, for better coordination of adaptation action in coastal areas

Technical assistance, training and advisory services will be provided to the Regional ICZM Committees by the project. The support will focus both on (i) strengthening the technical capacity of the Regional Committees to coordinate adaptation actions in coastal areas across sectors and stakeholders, and (ii) supporting the Regional Committees to develop strategic relationships and partnerships with key actors (e.g. regional administrations, civil society organizations, donor-funded projects), to strengthen and consolidate their role as a coordinating platform. The National ICZM Committee will be engaged in the provision of the technical assistance, to enhance its capacity to support and strengthen Regional ICZM Committees in the longer term. At the same time, the capacity of BNCC-REDD+ to fully fulfil its mandate to coordinate climate change adaptation in Madagascar will be strengthened through training and exchange opportunities, and good practices (including participation in relevant regional and international events).

Sources of long-term financing for the operation of the Regional ICZM Committees will be identified, including from the public and the private sectors. The Regional Committees will be supported to develop business plans for enhanced financial sustainability, and to implement these business plans to access financing.

Different options for the sustainable financing of the ICZM Committees and their work will be further explored, analyzed and prioritized in PPG phase, based on lessons learned from Madagascar and around the world. The success to date of the efforts initiated by the PAZC LDCF project to secure sustainable financing for the Committees will be analyzed and built upon. These include public financing through an agreement with the Prime Minister's Office to include the salaries of the permanent secretariats of the Regional Committees in the Public Investment Program, as well as partnerships developed with both international and national Civil Society Organizations to leverage further funding. Lessons learnt will help to support the further development of sustainable financing options that involve inclusion in national and/or local government budgets, and partnerships with other relevant initiatives.

There is also a range of experiences from around the world in developing and implementing innovative financing instruments and platforms for ICZM, which could be replicated or adapted by the project. Possible innovative options to be further analyzed and developed in PPG phase include inter alia payments for ecosystem services; taxes, levies, and rents on public coastal services; carbon financing from mangrove restoration activities; partnerships with private sector actors (in particular those with a stake in fisheries); and regional trust funds serviced by donor contributions and other income arising from the sale of goods (publications, software) and services.

Output 1.1.2 Regulation developed to strengthen National and Regional ICZM committees' legitimacy, mandate and sustainable financing

Activities under this output aim to support the National and Regional ICZM Committees by strengthening their legitimacy, mandate and financing, through the establishment of appropriate legislation (e.g. a regulation). The legislation will contribute to strengthening the authority and legitimacy of the ICZM Committees, while adjusting their operations to the national government's procedures and expectations. The legislation will also have financial implications, setting up a framework for the long-term sustainable financing of the ICZM Committees, and could include for instance mandatory allocation of fiscal budget for ICZM Committees and requirements for local governments to match part of the national funds; etc. This is based on the premise that the Committees will be delivering essential services on behalf of the national government. As such, it is expected that the national government will have responsibility for the core funding for the ICZM Committees' services, while private sector and other partnerships will also be explored to fill gaps in financing (see sustainable financing options identified under Output 1.1.1, to be further analyzed and developed in PPG phase). The relationship between the National and Regional ICZM Committees will be clearly defined, as well as their relationship with different government actors at the national, regional and local level. In particular, the respective roles and responsibilities of the ICZM Committees and BNCC-REDD+ in coordinating adaptation in coastal areas will be clarified, and collaboration between them strengthened.

Output 1.1.3 Twenty (20) Municipal Planning Schemes (SACs) that integrate EbA approaches developed or updated through a cross-sectoral and participatory process

Municipal Planning Schemes (SACs) will be developed, reviewed, or updated in project intervention areas through participatory processes and with support from the Regional ICZM Committees, fully integrating adaptation and EbA approaches into local strategic development priorities. The roles and responsibilities of different stakeholders in the implementation of the plans will be clearly defined, and the planned priority actions will be costed. This will set the scene for the participatory development, under Output 2.1.1, of Communal Development Plans (PCDs) which will systematically integrate EbA and good natural resources management practices in coastal communities.

Similarly to the work to be done towards ensuring sustainable financing for the ICZM Committees (Outputs 1.1.1 and 1.1.2), the project will identify and establish strategies for the long-term innovative financing of the EbA actions integrated in the SACs. These financing options could include some of the same sources as for the ICZM Committees (see Output 1.1.1), as well as additional sources such as nature-based insurance schemes, which could provide immediate funding for post-storm restoration of coastal ecosystems, for example. For the integration of the costed priority actions into national and local budgets, the process could include the following steps (to be further elaborated in PPG phase): economic cost-benefit analysis of the adaptation options, which will also support their prioritization in the SACs; (ii) identification of co-benefits between the adaptation actions and development objectives; (iii) analysis of relevant national and sectoral policy and planning processes to identify entry points; and (iv) influencing policy and planning processes, specifically with regard to ensuring budget allocations for coastal EbA measures, following available guidance from e.g. OECD. Close linkages with the ongoing iterative National Adaptation Planning (NAP) process will be forged during the PPG phase, as the NAP process is a key vehicle for ensuring the cross-sectoral integration of adaptation priorities in policies, plans and budgets.

Component 2: Ecosystem-based adaptation in response to climate risks

Adaptation scenario:

Through Component 2, communities will be supported in adaptation planning, through the mainstreaming of EbA in participatory land-use planning processes. Under Outcome 2.1, strategies and plans for the sustainable management and use of coastal resources will be developed, including in the form of sub-plans in PCDs.

For marine resources, communities will be empowered to take charge of the management of their natural resources, creating LMMAs and building on Madagascar's existing mechanisms for the transfer of natural resources management and when relevant the application of traditional community regulations ("dinas"). There will be support for a simultaneous development of sustainable fisheries management plans, to ensure adaptation benefits can continue to be provided by marine ecosystems which are central to coastal livelihoods. As such, the communities will be empowered to implement, monitor and enforce the strategies and plans developed, so that the sustainable natural resource use practices introduced by the project can be adopted for the longer term. Throughout the plans, specific actions to develop sustainable financing schemes to support the implementation of the proposed activities will be presented.

Under Outcome 2.2, the project will also engage communities and other stakeholders in the implementation of interventions to conserve and restore key coastal ecosystems, and implement strategies for their sustainable management and use. As a result, ecosystem services that strengthen communities' resilience to climate change impacts will be restored. Mangroves and coastal forests will be rehabilitated and protected, enhancing their ability to provide protection from extreme weather events, including cyclones and floods, and to slow down shoreline erosion. The rehabilitation of watersheds and degraded land upstream from small lakes and coastal areas will reduce erosion and the resulting sedimentation and siltation downstream. This will not only benefit wetlands, but also marine environments and mangrove ecosystems downstream.

The communities, local authorities, Regional ICZM Committees and civil society organizations (including local associations) will be fully engaged in the planning, implementation and monitoring of the ecosystem-based adaptation measures, and their capacity will also be built through targeted training.

Outcome 2.1: Enhanced community capacity and planning framework to plan and implement EbA approaches and locally manage natural resources to increase climate resilience

Output 2.1.1 Twenty (20) communal development plans (PCDs) that guide the implementation of EbA priorities and the sustainable management of natural resources developed or updated through a cross-sectoral and participatory process

Participatory land-use planning has the potential to bring important benefits to communities and ecosystems, including adaptation benefits when climate change issues are clearly integrated. The project proposes to put in place a process which will adopt best practices, including those used in the PAGE/GIZ project, to create the enabling environment for the broader adoption of EbA and SLM (including in mangrove, coastal forest and small-lake ecosystems). This includes favoring a participatory, iterative and integrated approach in the development process of the PCDs; promoting the consultation, involvement and mobilization of all stakeholders in the development of the Communes; and engaging in a spatial planning process that values the potential of each sub-region. To support the participatory process, it may also be necessary in some communes to set up Communal Development Committees.

Participatory mapping and diagnostic exercises will be undertaken, as part of the PCD process, in each targeted commune to map coastal areas and their natural resources/ecosystems, and to identify their importance for climate resilience, as well as their status and drivers of degradation. The mapping process

enables resource users to better understand their resource use patterns, the state and trends of these resources, and the dynamic of threats acting upon them. Categorization of the areas with high and lower pressures can also help to identify priority areas for reforestation, natural regeneration, and restoration activities (feeding into Outcome 2.2). These types of mapping exercises can also form part of the enabling environment for future interventions and the involvement of the private sector, such as for Payment for Ecosystem Services schemes .

The project proposes to also support the development of relevant sub-plans in PCDs (e.g. mangrove areas management plan), with clear EbA and SLM strategies. Participation in the mapping and concept modelling workshops will encourage community members to participate in the development of priorities for the local development plans and sub-plans. For mangroves and coastal forests, these strategies/plans will also include measures to address some of the drivers of forest degradation. These could include, for example, the promotion of improved stoves to reduce mangrove wood demand and/or the establishment of sustainably managed woodlots of fast-growing species to provide alternative sources of charcoal and timber. In communes concerned, sustainable management plans for coastal wetlands will also be developed, including considerations for the cultivation of "Rambo" (*Lepironia articulata*) and *Raphia*.

To the extent possible, the PCD processes will also take into consideration land tenure aspects and will be making recommendations to deal with land conflicts, in particular those triggered by climate migration. It is essential to ensure that such issues are effectively being addressed, to ensure security of access rights to private and common pool ecosystem services.

Finally, as part of the PCDs, investment and capacity building plans will be developed. The investment plans will include the costed adaptation actions, as well as the proposed sustainable financing mechanism for those actions, to ensure that they can continue to be implemented beyond the contributions of this LDCF project.

Output 2.1.2 Five (5) new locally managed marine areas established for increased climate resilience of marine ecosystems and related livelihoods

For improving the sustainability of small-scale fishing operations in Madagascar, local management initiatives have been shown to be more successful than top-down approaches . The project therefore proposes to establish five Locally Managed Marine Areas (LMMAs) in the project regions (number to be confirmed during the PPG phase), and to set up the proper legal and sustainable financing mechanisms. Currently, there are three types of legal mechanisms applied in Madagascar's LMMAs: i) co-managed protected areas; ii) a form of by-law known as "dina"; and iii) management transfer (TGRN). During the PPG phase, the most appropriate legal mechanisms for the areas of intervention will be selected, as they often depend on local social and customary factors. In some cases, the process may involve support for grouping several villages into local environmental management associations, with locally elected members, which could be legally empowered to set and enforce resource use rules using a dina. The LMMAs also help engage multiple stakeholders, including the private sector (e.g. fisheries collectors). The options for the sustainable financing of the LMMA will also be further scoped during the PPG phase, including through a review of lessons learnt from existing LMMAs in the country (see below).

The project will build on the lessons learnt through other organizations having worked extensively in this field. For instance, the Blue Venture experience yielded important lessons on the required approaches for successful LMMAs, which are summarized as: (a) co-management rather than community-management; (b) the permanent field presence of a supporting NGO; (c) a management focus on locally important natural resources; (d) the implementation

of poverty alleviation initiatives aimed at reducing barriers to management; (e) decision-making by resource users rather than scientists; (f) a diversified, entrepreneurial funding model; and (g) an emphasis on monitoring and adaptive management (see Table 1 for details).

TABLE 1 LESSONS LEARNT FROM BLUE VENTURE APPROACH IN VELONDRIAKE LMMA

Lessons learnt	Examples and explanation
Comanagement not community management	As comanager, BV: <ul style="list-style-type: none"> • Brings strategic, technical and financial support which VA otherwise lacks access to. • Gives the VA means to pursue legal procedures that would otherwise be inaccessible (e.g., ratification of <i>dina</i>, protected area establishment). • Helps overcome social norms and dynamics (e.g., family ties, fear of retribution and witchcraft) that may otherwise prevent VA members from applying rules. • Helps maintain momentum, drive and mission focus.
Permanent field presence of supporting NGO and social enterprise	Uninterrupted presence of BV staff and paying dive tourists in the LMMA since 2003 facilitates the development of relationships of trust and acceptance, fosters a deeper understanding of social dynamics, and may contribute to respect for rules.
Focus on locally important resources	Demonstrable benefits of managing the fast-growing and economically important (but nonthreatened) <i>Octopus cyanea</i> fishery awakened an interest in broader resource management and catalyzed further initiatives (e.g., permanent reserves).
Addressing poverty-related barriers to enable resource management	Investments in education, healthcare and livelihoods partially alleviate the immediate pressures on fishers' daily lives, opening up the space in which resource management and governance can take place. They may also help reduce dependence on fisheries and generate goodwill towards the VA and BV.
Decision-making by users, not scientists	LMMA zoning was based on willingness of VA membership to set aside fishing areas, not scientific prioritization, thus enhancing local legitimacy. This suggests that a lack of scientifically derived data need not act as a barrier to decision-making or action.
Diversified, entrepreneurial funding model	BV has built a diversified portfolio of revenues and incentive-driven models, adopting an entrepreneurial approach to fund both its own operations and those of the VA. This has increased resilience and helped the LMMA appeal to a broader range of donors.
Monitoring and adaptive management	The close relationship between BV and VA facilitates the frequent adjustment of management to adapt to changing conditions or unexpected outcomes, and community members value involvement in monitoring programs as it enables an understanding of the impacts of their management actions.

Abbreviations: VA, Velondriake Association.

Output 2.1.3 Five (5) fisheries management plans developed for marine fisheries, including provisions for sustainable catches and fishing practices to increase ecosystem and livelihood resilience to climate change

Through the LMMAs, the project will support the participatory development of fisheries management plans for marine ecosystems in the project intervention areas, including provisions for sustainable fishing practices and catches. The strategies proposed will actively integrate climate change concerns, including best management practices that take into consideration the changing physiological processes of fish, their habitats, and the fact that marine species are highly mobile when facing environmental change. The partnerships with the private sector, enabled through the LMMAs, will contribute to a higher effectiveness in the ultimate implementation of the plans (e.g. in enforcing periodic fisheries closure). Indeed, collectors also have an interest in ensuring that

proper management practices are put in place, as it contributes to maintaining the sustainability of the fisheries. Best practices and lessons learnt, garnered from the long time experience of local actors such as Blue Venture, will be adopted and taken into consideration in the development of the project activities. Financing of the plans' activities will be considered through the mechanisms developed under Output 2.1.2.

Outcome 2.2: Enhanced environmental protection and rehabilitation by local authorities and communities for adaptation benefits

Output 2.2.1 3,000 ha of mangroves and coastal forests restored for adaptation benefits through community-based approaches

Following the participatory resource mapping and identification of intervention sites for the ecosystem restoration activities (Output 2.1.1), communities will be engaged in the planning and implementation of community-based reforestation and assisted natural regeneration (ANR) for mangroves and coastal forests. In order to promote effective ANR, the project will take participants through transect walks through the project sites at the beginning of the project, to identify new growth, and what measures need to be taken to protect them. The project team will then actively support monitoring of the ANR process with regular walk-throughs and identify any areas where adaptive management measures must be taken.

Output 2.2.2 2,000 ha of degraded/deforested land rehabilitated upstream of degraded wetlands and small lakes through community-based approaches to increase climate resilience of ecosystems and communities

Restoration activities will be undertaken in catchment areas upstream of lake ecosystems and coastal areas, to reduce soil erosion and nutrient loading downstream. This will involve reforestation using native and climate-resilient tree species, as well as the restoration of degraded land. In order to ensure the long-term sustainability of these interventions, the project will work closely with local land users to introduce appropriate Sustainable Land Management and Sustainable Forest Management practices and raise awareness of the negative environmental impacts of unsustainable agricultural and forest management practices, amongst others.

In addition to the full engagement of communities, the capacity of local authorities, the Regional ICZM Committees and civil society organizations to support the planning, implementation and monitoring of the ecosystems restoration interventions will also be built through training and engagement in the project activities.

Component 3: Green Economy Approach for Resilient Ecosystem-based Livelihoods in Coastal Areas

Adaptation scenario:

The project proposes to support the development of climate-resilient value chains and other revenue-generating ecosystem-based activities (e.g. ecotourism), building on the successes of activities piloted through the PAZC project. Through the development and diversification of local livelihoods based on coastal and marine resources, the communities' resilience to the impacts of climate change is strengthened through three complementary pathways. First of all, the diversification of livelihoods and income sources increases the resilience to climate shocks, in that when climate events affect one productive sector, communities may have other sources of livelihood to provide a buffer. Secondly, the introduced and strengthened livelihood activities are designed to be more resilient to climate change impacts than some of the existing practices. And thirdly, the introduction of more sustainable livelihoods and production practices

reduces pressure on fragile ecosystems and can also incentivize their rehabilitation (e.g. through income from ecotourism), thus enhancing their ability to provide ecosystem services that help attenuate impacts of climate change (e.g. coastal protection, erosion control).

Around mangroves, coastal forests and wetland ecosystems, climate-resilient value chains to be explored for further development include e.g. beekeeping (honey), mangrove crabs and bamboo cultivation, as well as activities in which local women have expressed specific interest, such as the cultivation of *Lepironia articulata* (“rambo”) for basketry and straws, raphia, mangrove silk, cloves, bananas, cinnamon, and market gardening. Multiple value chains will be supported in each intervention zone, ensuring that they respond to the needs and ambitions of both men and women.

The livelihoods of communities dependent on marine ecosystems will be enhanced with support for the development of seaweed and oyster farming and associated value chains. Livelihoods around lake ecosystems will be diversified and strengthened through the development of domestic continental fish value chains through aquaculture. Technical support will also be provided for the diversification of livelihoods in areas around small lakes, through the development of e.g. beekeeping, climate-smart agriculture, and agroforestry (fruit trees).

For all the ecosystems and value chains selected, the project will support the establishment of producer organizations and sustainable business plans, to ensure the success of the livelihoods in the long term. Technical support, equipment and training for the adoption of sustainable production approaches, and for the transformation and commercialization of products, will be provided. Moreover, the project will ensure that the transformation and commercialization of products from the targeted value-chains are done close to the production areas and within the communities, bringing additional benefits locally (e.g. reducing travel time to markets for women, reducing spoilage of harvested products, and diversifying and increasing incomes).

The long-term sustainability and success of the cooperative businesses supported by the project will be ensured by connecting them with potential investors and financial institutions. A platform bringing together government, financial and MSME representatives will be established to facilitate these connections.

Outcome 3.1: Increased diversification of income-generating activities and businesses to enhance communities’ climate resilience

Output 3.1.1 100 climate-resilient ecosystem-based cooperative businesses established, with a focus on women and youth, and sustainable business plans developed

Under this Output, the project proposes to empower existing producer organizations through providing support and training for the establishment of climate-resilient ecosystem-based cooperative businesses (e.g. ecotourism, apiculture, mangrove crab, etc), with a particular focus on women, youth, and other vulnerable groups. Where necessary to further support business innovation and diversification of economic activities, the project will establish new producer organizations and cooperatives, based on local demand and interest, with a particular focus on increasing membership of women. Further support will be provided in business planning. For instance, it may be relevant to conduct market studies to help inform the development of demand-driven sustainable business plans for the targeted ecosystem-based businesses. These business plans will be developed with full participation of the producer organizations/cooperatives, covering aspects such as sustainable production, post-harvest storage, processing and transformation of products, commercialization and marketing, and accessing markets.

Output 3.1.2 A sustainable financing and investment platform for ecosystem-based businesses established and operationalized

Sustainable financing and private sector investment in the cooperative businesses supported by the project will be key for project success and sustainability. Indeed, lack of financing is the main challenge that MSMEs face when trying to undertake adaptation actions and contribute to a green economic recovery. To address this issue, the project proposes to first develop a platform bringing together government institutions, financial institutions, MSME representatives and other actors of the sustainable financing ecosystem. Cooperative businesses established under Output 3.1.1, and deemed to have reached a stage where they have viable business plans, will be invited to join the platform and be connected to potential investors and financial institutions. The project will explore partnerships with financial institutions, with a focus on microfinance, to increase access for MSMEs to credit, and assess the feasibility of innovative financing schemes including, for instance, flexible payment terms linked to cash flow. Moreover, the project will explore opportunities of partnering with the growing number of equity funds for adaptation-oriented MSMEs (e.g. Climate Resilience Fund, CRAFT, Adaptation Accelerator Program, etc.), who could be invited to take part in the proposed platform.

Output 3.1.3 Training/technical support and/or equipment provided to 3,000 entrepreneurs, including women and youth, to build capacity of ecosystem-based businesses

The project will help identify gaps in technical capacity within the value chains/business areas for the implementation of the sustainable business plans developed under Output 3.1.1. The capacity of the producer organizations to adopt and implement sustainable production approaches, and to process and market products from the selected climate-resilient value chains/businesses, will be built. Technical support and training, as well as equipment and materials, will be provided for adopting and strengthening the value chains/businesses in the project areas, with the view of introducing and supporting sustainable and improved production approaches (e.g. aquaculture in cages, integrated rice-fish culture) and best practices, and the transformation of products (and by-products) to yield higher returns.

The commercialization of the products will be supported by identifying and facilitating access to both local and national markets. In some cases, value chains already supported by the PAZC project (e.g. apiculture and rambo cultivation) will be further developed, in particular in terms of market access. Successful producers will also be trained to share their experiences and to transfer knowledge and skills to the wider community, so that these income-generating activities can be upscaled. The resulting economies of scale can also further facilitate the commercialization of the products and access to markets, in particular when combined with the support provided to the establishment of associative approaches under Output 3.1.1.

Producer organizations will be supported to establish strategic partnerships (including with private sector actors) to strengthen resilient value chains and market access. Partnerships with private sector actors will be value chain-specific, and will involve an inclusive strategy of intervention where the role of the private sector, the producer organizations, and other stakeholders will be identified and coordinated at various stages of production. While the project focus will be on strengthening local producer organization and associations, efforts will be made to cover the overall value chain by facilitating the development of these private sector partnerships.

Component 4: Awareness, monitoring and evaluation, and knowledge management for upscaling

Adaptation scenario:

The sustainability of the project interventions relies on fostering longer-term changes in the attitudes and behaviors of the target communities through improved awareness and understanding of the importance of ecosystems for human livelihoods and well-being, and of the negative impacts of unsustainable resource use on climate resilience. This improved awareness will be catalyzed through a strong communication strategy focused on increasing access to information and awareness-raising campaigns. Furthermore, the project will ensure that an effective knowledge sharing mechanism as well as an upscaling strategy are in place to ensure that lessons learnt from the project can contribute to scaling up its successes.

Outcome 4.1: Strengthened awareness and knowledge of EbA approaches to support upscaling of project results across Madagascar's coastal zones

Output 4.1.1 A project communication strategy developed and implemented, including awareness raising strategy on climate change and EbA aimed at local stakeholders

Local engagement in the ecosystem restoration and rehabilitation activities will be supported by awareness-raising activities, including the establishment of "climate schools". Building on the successful efforts by the LDCF-funded PAZC project in engaging and communicating with local stakeholders on climate issues, this project will integrate EbA approaches into existing communication toolkits for different sets of stakeholders (e.g. coastal communities; local, regional, and national media outlets; decision-makers; etc.). Furthermore, it will scale up awareness-raising days to inform coastal communities of climate change, enable them to recognize climate impacts, build understanding of the importance of coastal ecosystems for climate resilience, and raise awareness of adaptation options and EbA approaches. Environmental education and raising awareness of climate change will be promoted in schools, academia and with youth groups at regional, and local levels.

Output 4.1.2 A participatory M&E and learning framework developed and implemented

This output will ensure that project results are properly monitored throughout implementation through the establishment of an M&E framework and the implementation of regular monitoring activities and evaluations. The findings and recommendations from these evaluations and regular monitoring will feed into the learning framework, as the project will put in place a mechanism to ensure adaptive management throughout implementation, building on lessons learnt and best practices. The project experiences and lessons learnt will also inform the development of the coastal EbA upscaling strategy under Output 4.1.3.

Output 4.1.3 A coastal EbA upscaling strategy and knowledge sharing mechanism developed

To support the replication of Regional ICZM Committees as a coordination platform for adaptation mainstreaming in coastal areas across Madagascar, an upscaling strategy will be developed through a consultative process. The upscaling strategy will identify long-term funding sources for its implementation and allocate roles and responsibilities for its implementation and monitoring. The capacity of the National ICZM Committee will be built to support the implementation of the upscaling strategy and to guide the integration of adaptation considerations in the role and activities of Regional ICZM Committees across the country.

To catalyze this upscaling, mechanisms to share lessons and good practices between Regional ICZM Committees will be put in place, and the experiences and lessons learnt from the Regional ICZM Committees in the four pilot regions will be disseminated to other selected coastal regions through awareness-

raising events and exchange visits, targeting decision-makers and planners. Close collaboration with the ongoing NAP process in Madagascar will be fostered, as an entry point for supporting adaptation mainstreaming in other coastal areas.

1a.4 Alignment with GEF focal area strategies

The project is well aligned with the GEF Programming Strategy on Adaptation to Climate Change for the LDCF and SCCF 2018-2022. In particular, it will support Objective 1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation through its support for improved and climate resilient livelihoods/value chains (including increasing engagement of the private sector); its engagement with the private sector to support innovation in the management of marine resources to increase the resilience of coastal ecosystems and enable them to continue to provide adaptations services; and the consideration for climate security in its land-use planning activities, whereby conflict and migration challenges are thoughtfully addressed. The proposed project also supports the LDCF Objective 2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact, in particular through its Component 1 where adaptation considerations will be mainstreamed into ICZM and local planning. Similarly, climate change mainstreaming will take place through the integration of EbA into PDCs (Component 2).

1a.5 Additional cost reasoning

The project proposes a community-based EbA approach, which has been shown to be a financially effective way of providing multiple social and environmental benefits . For instance, mangrove restoration is estimated to be 2-5 times cheaper than hard infrastructure for wave heights up to half a metre and, within its wave height limits, becomes more cost effective at greater depths . It will ensure close coordination with other initiatives on the ground to ensure an efficient use of financial resources, and scale up impact. Co-financing has already been identified from several sources, and other opportunities will be further explored during the project preparation phase. Details of the additional cost reasoning for the LDCF resources, and baseline contributions, are described below:

Component 1: Climate-resilient governance and planning in coastal zones of Madagascar

Co-financing to support the achievement of Outcome 1.1 and for the implementation of activities under Component 1 will be provided by the RECOS project, the GCF Sustainable Landscapes project, and the GCF EBA IO project.

The RECOS project will, through its Components 1 and 2, contribute an indicative co-financing amount of about US\$ 153,900 to strengthening the regional and national governance of marine and coastal ecosystems (LDCF Component 1), and to developing a cooperation framework and a scientific knowledge base on these ecosystems (LDCF Component 2). Like the RECOS project, the LDCF project will work in the Menabe region, where RECOS primarily works in Morondava. By targeting three additional regions (Boeny, Antsinanana, and Vatovavy Fitovinany), LDCF is contributing to scaling up RECOS. RECOS Component 1 will lay the groundwork for the LDCF outputs 1.1.1 and 1.1.2, as it will allow the LDCF project to capitalize on the strengthened governance and thus ease operationalization of ICZM committees, specifically enabling LDCF to support regional ICZM committees with the creation of sustainable business plans and the integration of ecosystem-based adaptation (EbA) in SACs.

The GCF Sustainable Landscapes project will, through its outcome 3, contribute an indicative co-financing amount of US\$ 500,000 in grants to strengthening institutional and regulatory systems for climate-responsive planning and development. It will be implemented primarily in the landscapes of the Ambositra Vondrozo Forest Corridor (COFAV) and the Ankeniheny-Zahamena Forest Corridor (CAZ), overlapping with the proposed LDCF intervention areas of the East coast of Madagascar. The GCF project output 3.2 on strengthening decentralized governance for intervention on climate change issues will lay the groundwork for LDCF component 1 in the overlapping regions. The LDCF project will also be able to capitalize on the project's output 3.5 on integrating lessons learned and best practices regarding climate-smart landscapes into relevant documents and structures, to facilitate LDCF outcome 1.1 on the integration of best practices around climate-smart landscapes and adaptation in e.g. SACs/ ICZM committees.

The GCF EBA IO project will, through its outputs 1.1 and 1.2, contribute an indicative co-financing amount of about US\$ 350,000 in grants to updating ecosystem profiles in hotspots and thus prioritizing EbA actions by CSOs (output 1.1) and to developing a long-term vision for civil society engagement in EbA (output 1.2). The ecosystem profiles will be a valuable input into LDCF output 1.1.3 (SACs) and can provide guidance for additional Output 2.1.1. Equally, LDCF can benefit from the GCF EBA IO's long-term vision for civil society engagement for output 1.1.3 as it can build on good practices for participatory and cross-sectoral review/updating of development strategies.

Component 2: Ecosystem-based adaptation in response to climate risks

Co-financing to support the achievement of Outcomes 2.1 and 2.2 and for the implementation of activities under Component 2 will be provided by the GCF EBA IO project and RECOS project.

The GCF EBA IO project will, through its component 2, further contribute an indicative co-financing amount of US\$ 8,620,000 to supporting EbA activities through grants to CSOs (component 2). The CSOs, strengthened with grants from GCF and AFD, can also serve as a platform to mobilize/include local communities to participate in EbA interventions. In this sense, LDCF output 2.2.1 complements well the GCF EBA project focus on conservation orientated CSOs, as it does not only aim to conserve but also to restore mangroves and coastal areas via community-based approaches.

The RECOS project, through its component 3, will further contribute an indicative co-financing of about US\$ 1,385,100 to implement activities for the restoration and sustainable management of coastal ecosystems, including pilot projects for nature-based solutions and integrated management of coastal ecosystems. As LDCF project's outcome 2.2 aims to enhance communities' capacities around EbA and to improve environmental protection and rehabilitation local authorities practice for adaptation, the RECOS investments in restoration and sustainable coastal management in Menabe will directly support the LDCF project activities and scale up its impacts. The LDCF project will also be able to capitalize on RECOS Component 2 outputs under its own Component 2, to enable the communities to conduct self-assessments based on up-to-date data, and empowering them with information to catalyze action and support long-term behavioral change. Finally, the LDCF project's focus on EbA will also complement other sustainable management measures implemented through RECOS.

Component 3: Green Economy approach for resilient ecosystem-based livelihoods in coastal areas

Co-financing to support the achievement of LDCF project outcome 3.1 and for the implementation of activities under component 3 will be provided by the GCF Sustainable Landscapes project, the DEFIS programme and the PAGE II project.

The GCF Sustainable Landscapes project will further, through its outcome 1, contribute an indicative co-financing amount of US\$ 6,600,000 to strengthening adaptive capacity within landscapes and introducing EbA measures via the establishment of an Investment Fund (output 1.4) which will invest in climate-smart agriculture and renewable energy to transform smallholder livelihoods. Currently, no financing is available at scale for climate-related activities such as community based sustainable agriculture and access to energy in Madagascar due to perceived risks and inadequate financial instruments. The leveraging of private funds from the issuance of a first-of-its-kind Green/Climate Bond via the Investment Fund and the re-investment of returns and profits in a Climate Change Trust Fund for Madagascar enable investments in landscape-level adaptation and mitigation activities. Thereby, the GCF Sustainable Landscapes project will be a powerful enabler for LDCF component 3, as it addresses a key barrier to the diversification of income-generating activities and businesses: access to finance. Thus, GCF Sustainable Landscapes project will create the enabling environment for LDCF to provide value chain/business type appropriate technical support, financial literacy training and equipment to achieve outcome 3.1.

The DEFIS programme will operate in eight regions in southern and centre-eastern Madagascar (including Vatovavy Fitovinany) and focus on eight value chains, including honey. The direct beneficiaries of DEFIS investments and services will be 320,000 family farms, at least 30 per cent of them headed by women or young people. It will contribute, through its sub-component 2.1, about US\$ 2,126,667 in co-financing to strengthening producer organizations and their linkages with other market actors. These linkages will be useful for LDCF project outcome 3.1, aiming to enhance community resilience to climate change through the diversification of income-generating activities and businesses. LDCF component 3 will be able to build on the interventions of the DEFIS programme through output 3.1.1, providing training for the development of sustainable business plans of EbA-linked businesses (with apiculture products representing a key business type), and by output 3.1.2, establishing ecosystem-based cooperative businesses established with active involvement of women and youth.

The Program for the Protection and Sustainable Use of Natural Resources Phase II (PAGE II), to be executed between 2020-2023 by the German Development Agency (GIZ), will intervene in the Boeny and Diana regions of Madagascar, aiming to strengthen the technical skills of actors in sectors, including apiculture. It thus contributes co-financing to the proposed LDCF project as it is aligned to LDCF activities towards outcome 3.1 on increasing community resilience to climate change through the diversification of income-generating activities and businesses.

Component 4: Awareness, monitoring and evaluation, and knowledge management for upscaling

Co-financing to support the achievement of Outcome 4.1 and for the implementation of activities under Component 4 will be provided by the GCF EBA IO project.

The GCF EBA IO project will, through its component 3, further contribute an indicative co-financing amount of US\$ 400,000 to replicating success through knowledge products (models, tools, best practices) for EbA. As LDCF project Outcome 4.1 seeks to strengthen awareness and knowledge of EbA approaches to support upscaling of project results across Madagascar's coastal zones, there is ample opportunity to build on the knowledge products around EbA approaches.

1a.6 Adaptation benefits

The project intends to benefit coastal communities of four regions (Boeny, Menabe, Atsinanana, Vatovavy Fitovinany) in the North-West and South-East of Madagascar, and enhance the resilience of communities and ecosystems in areas where the most vulnerable population and economic activities are located. It is anticipated that the project will directly impact approximately 91,000 people and indirectly impact another 241,256 individuals.

The project is anticipated to create a significant paradigm shift for extremely vulnerable coastal communities of Madagascar by supporting a comprehensive EbA approach in coastal zones, and ultimately lead to climate-resilient development. The EbA approach will contribute to the restoration of various degraded ecosystems which will then be able to provide essential adaptation benefits and services and support the diversification of incomes. These interventions will further enhance the health and livelihoods of local communities, by increasing food security and safety, despite the negative projected climate change impacts. This will be sustained by ensuring EbA is well integrated in local planning, and transferring natural resources management to local communities. It will then be possible to replicate this model beyond the project intervention sites, to all coastal regions of the country, which will be supported by the capacity-building and communication activities at the regional level.

The proposed EbA approach will yield environmental co-benefits, including a reduction in soil erosion (which is associated with a reduction in agricultural yields and contamination of downstream marine and freshwater ecosystems) through reduced deforestation. Restored mangrove ecosystems will provide the habitats for various species, and provide food, fiber, and fuel to local communities who will be supported in their sustainable management.

Vulnerable communities and groups, including women, will gain numerous benefits, both social and economic, from the interventions. For instance, women currently are responsible for transporting fresh fish by foot to markets over long distances. The support for transformation and value addition of fish, as well as storage, closer to the harvesting sites would enable women to gain considerable time and supplement incomes. Moreover, it would reduce potential post-harvest losses associated with increased temperatures. Similarly, the support for income generating activities close to homesteads, such as beekeeping, have been shown to be very effective in empowering women. The project will therefore ensure to build on the experience of other successful interventions to ensure women are primary beneficiaries of those interventions, as traditional gender roles may sometimes be a barrier to their successful uptake.

COVID-19 considerations

In Madagascar, from 3 January 2020 to 1 April 2022, there had been 64,009 confirmed cases of COVID-19 with 1,384 deaths, reported to WHO . According to the World Bank , the impact of the COVID-19 pandemic resulted in: a) a recession in 2020 comparable to that of the 2009 political crisis and the reversal of close to a decade of progress in poverty reduction; and b) 1.38 million people being pushed into extreme poverty due to job losses in key manufacturing and service sectors, as well as the sudden loss of income for informal workers affected by lockdowns in major cities. This increases the vulnerability of populations to shocks, including climate shocks. Therefore, there is an urgent need to support economic resilience, health, and recovery efforts in Madagascar, while simultaneously addressing climate change adaptation priorities.

As such, this project will contribute to green recovery and building back better by supporting climate-resilient cooperative enterprises which diversify livelihoods and increase household income, while simultaneously providing environmental and adaptation benefits. In particular, the project will work towards improving the financial inclusion of those smaller businesses, in line with the country's priorities as outlined in the Madagascar's latest country development vision, the Plan Emergence Madagascar, which features a strong focus on private sector development, entrepreneurship, and improving competitiveness in global value chains and in line with the recommendations of the IFC 2022 Madagascar Country Private Sector Diagnostic (CPSD) report .

1a.7 Innovation, sustainability and potential for scaling up

Innovation

Innovation will take several forms under this project. First, it will focus on transferring the management natural resources to local coastal communities through LMMAs, through innovative mechanisms which actively involve multiple actors, including proposed partnerships with the private sector in the sustainable management of coastal ecosystems (mechanism TBD during the PPG phase), and could support the integration of customary rules with laws governing the use of natural resources ("reconciling the legal and the legitimate") through the *dina*, which the Malagasy state has adopted as a governance tool legally recognized through the 1996 GELOSE legislation, and is also approved as part of the Code des Aires Protégées. Another key area of innovation is the focus on supporting innovative green businesses, with an emphasis on delivering adaptation benefits for ecosystems and coastal livelihoods.

Sustainability

The project will ensure the sustainability of interventions through several means, including first and foremost its community-based and participatory EbA approach. The project will ensure the specific needs of stakeholders are being addressed, and that there is significant buy-in through extensive stakeholder engagement from the design of the project onwards. The project will also ensure gender-specific needs of stakeholders are emphasized. It will work on increasing the capacity of local authorities to plan and implement EbA, including through supporting its integration into communal plans, which is anticipated to create a long-term shift in the way local ecosystems are managed (e.g. mangroves). In addition, the project will support the development of new revenue streams for local communities, potentially providing long-term financial stability and thus improving the prospects for more sustainable use of natural resources in the long-term. Furthermore, the project's approach to support the transfer of natural resources management from centralized authorities to local communities, including through traditional community regulations for natural resource management ("*dinas*"), should further help ensure the long-term sustainability of natural resource use, and thus contribute to a sustained strengthening of the communities' resilience to climate impacts. The strong focus on awareness raising and communication on the topic of climate change and EbA will also contribute to shifting beliefs and behaviors. At the institutional level, the project will also provide support for access to sustainable financing for ICZM, support to BNCC-REDD+ for M&E of adaptation, and will promote knowledge exchanges to catalyze the upscaling of good practices and lessons learnt.

Potential for scaling up

The project will work towards adaptation mainstreaming in the management of coastal zones of Madagascar. Under Output 4.1.3, the project will work on an upscaling strategy for adaptation mainstreaming in coastal areas across Madagascar. The potential for scaling up project outcomes will also come from a strong knowledge management strategy. Indeed, the experience from the project in different areas of the country will provide a broad range of lessons which will allow for replication in varying local contexts. To catalyze this learning and good practices, mechanisms will be put in place, and the experiences and lessons learnt from the Regional ICZM Committees in the four pilot regions will be disseminated to other selected coastal regions through awareness-raising events and exchange visits, targeting decision-makers and planners. Moreover, under Outcome 1.2, the project will mainstream EbA into local planning strategies, which ultimately will be expected to yield long-term systematic adoption and implementation across coastal communes of EbA approaches.

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.



Project intervention regions: 1. Boeny, 2. Menabe, 3. Atsinanana, and 4. Vatovavy Fitovinany



LEGENDE :

SYMBOLISATIONS :

- Chef-lieu de Province
- Chef-lieu de Région
- Chef-lieu de District

SYMBOLISATIONS :

- Chemin de fer
- Route Nationale
- Route d'Intérêt Provincial
- Route d'Intérêt District

SYMBOLISATIONS :

- Limite de la Région étudiée
- Limite du District étudié
- Districts Indépendants
- Région Indépendante



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From left to right: Boeny region, Menabe region, Atsinanana region, and Vatovavy Fitovinany region

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Indigenous Peoples and Local Communities Yes

Civil Society Organizations Yes

Private Sector Entities Yes

If none of the above, please explain why:

The concept was requested by Madagascar's National Designated Authority from the Bureau National des Changements Climatiques, du Carbone et de la REDD+ (BN-CCCREDD+). Starting in 2019, an initial consultative process was undertaken to share best practices and gather priorities on the ground for this project. Individual interviews were undertaken with the following key stakeholders:

- PAZC project PMU staff and technical experts in fields including tourism, apiculture, agriculture, and fisheries;
- Government authorities from different ministries and at different levels (national, regional) including:
 - BN-CCCREDD+, including Carbon Fund and External Financing Department;
 - National ICZM Committee (CNGIZC);
 - Directorate of Collection, Valorization and Planning of Maritime Territory;
 - Mahajanga Aquaculture Development Center (Madagascar Agency of Fisheries and Aquaculture);
 - Boeny Directorate of Regional Development (DDR)
 - Interregional Directorate for the Environment and Sustainable Development (DIREDD);
 - Boeny Regional ICZM Committee
- NGOs and CSOs:
 - WWF Madagascar;
 - Blue Venture;
 - MIHARI network;
- Other ongoing projects:
 - PAGE GIZ

Following initial consultations, a preliminary workshop with key national stakeholders was organized to share priorities identified and the initial results framework, and enable further exchanges on the proposed concept.

Based on the initial concept prepared, four regional consultations and a national stakeholder consultation workshop (February 2020) were held to refine the concept and ensure needs would be met by the project . At the regional level, stakeholders consulted included local authorities, decentralized technical services, independent thematic/technical experts, other international donor-funded projects active on the ground, media/journalists, NGOs, fisher associations, and CSOs; while at the national level relevant ministries, NGOs, and CSOs participated.

During the PPG phase, further consultations will take place with local communities (including vulnerable groups such as women and youth), civil society, NGOs, and government officials to ensure activities are well targeted, that they address the needs and ambitions of the most vulnerable groups, and that they are complementary to activities undertaken by the wide range of donors on the ground. Consultations may take the form of workshops, key informant interviews, focus groups, and/or household surveys as deemed relevant and feasible at that stage.

In terms of stakeholders' anticipated roles in the project, it is envisioned that for instance Regional and Communal authorities as well as Regional Directorates in charge of land use planning would be involved in SAC and PCD development, together with other relevant initiatives working on similar issues (e.g. PAGE/GIZ). On the other hand, activities under Outcome 2.1 would benefit from consulting with Blue Venture to gain insights regarding its experience in the area, and actively involve both public (e.g. Regional authorities, DRAEPs , Regional Directorates for Land Use Planning, DREDDs , DELC) and private sector actors, including fisher associations. Finally, activities under Component 3 would directly support cooperative enterprises, with involvement on different aspects from technical services such as Regional Directorates of Industry and Commerce; Regional Fisheries and Aquaculture Service, DIREDD, CDA as well as DELC, and communal and regional authorities. Other relevant stakeholders and their respective roles and responsibilities in the project, as well as the means and timing of proposed engagement, will be detailed in a comprehensive Stakeholder Engagement Plan to be prepared during the PPG phase.

In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement

During the PPG phase, further consultations will take place with local communities (including vulnerable groups such as women and youth), civil society, NGOs, and government officials to ensure activities are well targeted, that they address the needs and ambitions of the most vulnerable groups, and that they are complementary to activities undertaken by the wide range of donors on the ground.

3. Gender Equality and Women's Empowerment

Briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).

Problem statement

The adverse impacts of climate change are affecting coastal populations' access to natural resources, and causing losses of income sources. These factors are particularly stark for women and girls, accentuating poverty. Their vulnerability is further exacerbated by their limited ability to actively participate in decision-making processes.

In the coastal zones of Madagascar, women are often engaged in unpaid work, such as childcare or fetching water, limiting their ability to engage in income generating activities and leadership functions in their communities. This "time poverty" has repercussions on the levels of engagement in project activities, and the achievement of project outcomes. The COVID-19 pandemic is exacerbating these challenges. It is putting disproportionate pressure on women and girls who are often the main actors in the informal sector, and work in small production units (e.g. transformation of fish) that barely cover basic family needs with few or no social safety nets.

Ongoing environmental degradation in coastal zones is also putting pressure on women, including mangrove overexploitation and their destruction associated with climate change. Women and girls in particular exploit mangrove wood as a source of energy, while men use mangrove wood for construction, all contributing to the degradation of the coastal zone. These ecosystems are natural habitats of fish, crabs, and are central to small-scale silk production. The significant reduction in the extent of mangroves endangers fishery production, directly impacting processing and marketing of fishery products by women, girls and young people. There remains a lack of understanding within communities of the factors affecting ecosystem health, and how to effectively manage natural resources to ensure their long-term sustainable exploitation.

Proposed solutions

The project proposes a two-fold approach to reduce the vulnerability of women in the coastal zone of Madagascar to the adverse impacts of climate change: a) improving governance and leadership, and b) increasing economic capacity. Through its interventions, it is also expected that the project will bring co-benefits for the increased resilience of women to unexpected shocks, including the COVID-19 pandemic.

First, the project will seek to increase representation and participation of women in decision-making bodies/processes (e.g. Regional ICZM Committees, consultation and planning processes, studies). The project will enable women to take ownership of the challenges of resilience to climate change, gain an understanding of the relevance of adaptation action/EbA, and develop their full support for the implementation of the proposed actions.

In addition, consultations conducted as part of the preparation of this PIF demonstrated an important buy-in from local women for various income-generating activities being proposed. In particular, women have demonstrated interest for multiple value chains (e.g. honey, "Rambo" (*Lepironia articulata*), mangrove crab, mangrove silk, fisheries). The project also proposes to provide support for the transformation and commercialization their products closer to the

production areas and within the communities, and thereby potentially bringing additional benefits to the communities (e.g. reducing travel time to markets for women, reducing spoilage of harvested products, diversifying and increasing incomes).

During the PPG phase, a gender analysis will be completed, and will inform a complete gender action plan which will contain gender specific activities, indicators, and targets aligned with the project's logical framework. The analysis will explore the multiple dimensions of women empowerment, taking stock of perceptions, attitudes and practices which are barriers to increasing their resilience to climate change. For instance, the gender study/analysis should seek to understand how to strengthen women's organizations, ensure sustainable access to credit for women involved in the targeted value chains, their access to networks, skill development, knowledge sharing mechanisms, and development of new markets.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes

closing gender gaps in access to and control over natural resources;

improving women's participation and decision-making; and/or Yes

generating socio-economic benefits or services for women. Yes

Will the project's results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Will there be private sector engagement in the project?

Yes

Please briefly explain the rationale behind your answer.

The private sector will be engaged throughout the project development and implementation. In particular, the PPG phase will help explore opportunities for the commercialization of products from the targeted value chains, and conduct rapid value chain appraisals to identify the key private sectors actors to be engaged. The first phase of the LDCF PACZ project identified the “Rambo” value chain as particularly promising, and opportunities for partnerships and market development are already being explored. Moreover, the honey value chain will be further supported, with demand currently significantly outpacing supply.

Consultations have identified a lack of business awareness and market access as barriers to increasing resilience to climate change. In particular, stakeholders expressed the need build trust with the private sector amongst local communities, by creating multi-stakeholder platforms where views can be exchanged, expectations managed, and capacity built. Consultations revealed issues related to breaches of contractual agreements between local producers and large buyers, including inflated purchasing prices, as well as the inability of producer organizations to fulfill their supply engagements. Capacity-building at the local producer organization level, in terms of business development and supporting the development of commercial relationships with the private sector for instance, will be explored during the PPG phase. Engaging the private sector through LMMA management could contribute to building this trust and increasing participation in adaptation.

In terms of ecotourism, the project will liaise and engage with private tourism operators in the coastal zone, and assess how the project interventions can benefit them through EbA, including restoration activities and improved ecosystems management, as well as what contributions they may be able to make to the project’s adaptation objectives.

5. Risks to Achieving Project Objectives

Indicate risks, including climate change, potential social and environmental risks that might prevent the Project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the Project design (table format acceptable)

The Table below describes the main risks to the project, and will be revised/expanded upon during the PPG phase.

#	Description of risk	Potential consequences	Mitigation measures	Risk rating	Probability and impact (1–5)
1	Shifting national/regional adaptation priorities	Frequent changes in government agencies and key individuals, and the consequent limited institutional memory, result in disruptions and/or delays in project implementation and may compromise the effectiveness and sustainability of the project.	The project will keep abreast of any changes in national/regional adaptation priorities, and remain flexible by adopting best practices in adaptive management. Recent experience in Madagascar has shown that despite high staff turnovers in government agencies, key institutions such as Regional ICZM Committees have had success in retaining core members and are essential in retaining institutional memory. Their role in mitigating this central risk will be explored further during the PPG phase.	Low	P = 2 I = 2
2	Lack of coordination between interventions in the target areas, and lack of agreement on priorities.	Project interventions are duplicated and the effectiveness of project management is reduced.	The project will conduct a stakeholder mapping exercise, and develop a stakeholder management plan. These will contribute to the coordination strategy of the project with other ongoing interventions to prevent a duplication of efforts, as well as ensure clear communication of priorities and any changes to them. Synergies and collaboration will be facilitated by the executing agency. Moreover, the project will provide capacity-building to the BNCC-REDD+ and will enable Regional ICZM Committees to act as coordinators of adaptation action in coastal zones.	Medium	P = 2 I = 4
3	Climate change adaptation priorities undermined by political changes, national e	Changes in government and project staff, or issues related to safety and security, lead to a delay i	The project will focus on building country ownership of the activities, and has been aligned with national and regional priorities. It also intends to bring m	Medium	P=3 I=3

	emergencies (including the COVID pandemic) or civil unrest.	in the implementation of the project activities.	multiple socio-economic benefits to local communities, which are likely to remain priorities even in the event of national emergencies such as COVID-19.		
4	Limited acceptance and/or adoption of adaptation interventions by local communities.	Local communities may not adopt identified adaptation interventions during or after the proposed project, resulting in the continued unsustainable use of resources.	To ensure continued buy-in from stakeholders at all levels, the project will: (i) conduct extensive stakeholder engagement, with a focus on community-based leaders; (ii) develop mechanisms to transfer natural resources management to local communities; and (iii) focus on livelihood diversification and revenue generating activities through a value chain approach. The active engagement of local communities, including women and girls, will be central to the project implementation strategy. Moreover, the project will seek to develop markets for key value chains, yielding direct economic benefits to communities.	Medium	P = 1 I = 4
5	Lack of funds available for ensuring the sustainability of interventions (e.g. Regional ICZM Committees, maintenance of transformation facilities, ecosystem restoration) beyond the duration of the project.	The project achievements and results will not be maintained after the project finishes.	To increase the sustainability of interventions, the project will take a highly participatory approach, and seek financial sustainability of interventions from the onset by working on long-term business plans for regional and local institutions, as well as for the development of key value chains. Increased access to markets and livelihood diversification will be direct incentives for improved ecosystem management efforts by communities..	High	P=3 I=4
6	Natural hazards and climate shocks.	The threat of natural hazards, including wildfires, sea level rise, and storms, is very real in coastal zones, potentially compromising the success of EbA interventions, and causing damage to project infrastructure.	The project will seek to climate-proof its interventions, and integrate early warning systems to mitigate the risks as much as possible.	High	P=4 I=4
7	COVID-19 pandemic, and possible associated restrictions	COVID-19 restrictions may limit access to project sites, reduce economic opportunities/limit market access. and exacerbate soci	The implementing and executing agencies will put in place contingency plans when necessary. While access to COVID-19 vaccination is rapidly expanding in Western countries. it is likely to take much longer	Medium	P=3 I=3

		al inequalities, leading to delays in implementation and failure of new businesses.	er in Madagascar. The project will therefore plan/budget for mitigation measures, such as social distancing and support for IT solutions and remote access/communication.		
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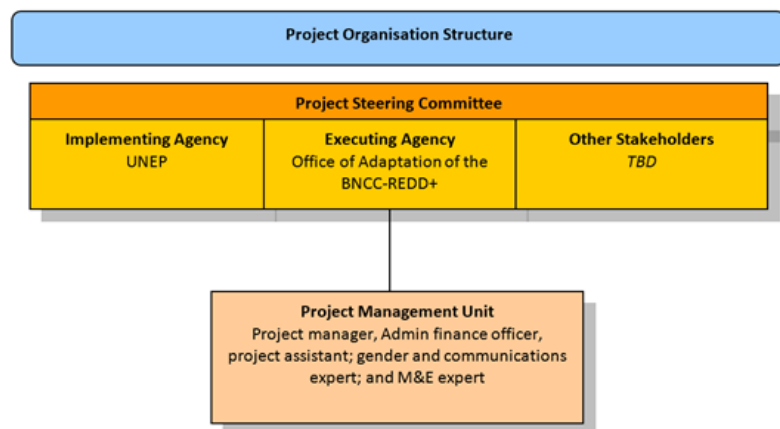
Environmental and social safeguards risks are identified in the Safeguard Risk Identification Form (SRIF) (Annex D). Overall, the SRIF shows that there are low risks brought on by the project for the environment and communities. Indeed, it is quite the contrary: the project aims to restore degraded ecosystems in coastal areas to provide adaptation benefits, and does not rely on grey infrastructure to achieve this objective. Therefore, it has extremely limited potential to cause unexpected detrimental impacts to natural habitats. Moreover, as the project relies heavily on local planning and the transfer of natural resources management to local communities, it is anticipated that the process will enable broader behavioral changes which will protect the environment, reduce conflicts, and increase resilience.

6. Coordination

Outline the institutional structure of the project including monitoring and evaluation coordination at the project level. Describe possible coordination with other relevant GEF-financed projects and other initiatives.

The project (including environmental and social risk management) will be executed by the Office of Adaptation of the BNCC-REDD+ (Executing Agency). UNEP will be responsible for providing implementation oversight and project assurance services as the project Implementing Agency. UNEP is well placed to take on the planned activities, having widespread experience implementing projects at different scales, with a strategic focus on Ecosystem-based Adaptation. It will continue to partner with the BNCC-REDD+ as the executing entity for this project, having established a successful relationship with the organization over the course of the LDCF project entitled “Adapting coastal zone management to climate change considering ecosystem and livelihoods” among others, which will enable both entities to build on the lessons learnt through the process. The mid-term review of the project is provided in Annex E as evidence of the success of the partnership.

The specific implementation arrangements will be as follow: UNEP will be responsible for providing implementation oversight and project assurance services, including submission of progress reports and evaluations to the GEF. The BNCC-REDD+ and UNEP will form part of the Project Steering Committee (PSC), alongside other relevant stakeholders. The PSC will oversee project execution in order to meet the intended project results, and facilitate adaptive management. The PSC will meet at least twice a year – with ad hoc meetings held as and when necessary – to discuss the project’s main performance indicators and provide strategic guidance. The Project Management Unit (PMU) will be based within the Office of Adaptation of the BNCCBNCC-REDD+, which will ensure routine monitoring of the project.



Coordination with other initiatives

Medium term planning for adaptation in climate sensitive sectors in Madagascar

(UNDP/GCF, Readiness proposal, launched December 2020 for 18 months, US\$ 1,4M)

This readiness proposal seeks to enable the country to reduce its vulnerability to climate change by strengthening the integration of adaptation into development planning and mid-term planning and budgetary frameworks. This objective will be achieved through three outcomes: Outcome 1: Climate risks and vulnerabilities in the water sector are assessed, and economic costs and adaptation options of the most vulnerable sectors are appraised; Outcome 2: Coordination mechanisms and technical capacities for integration are strengthened to facilitate climate change adaptation mainstreaming into development; and Outcome 3: Institutional skills to access climate finance, and private sector engagement on climate change adaptation are enhanced. Should the project still be active at the time of implementation, this LDCF project will ensure close coordination to ensure that it can capitalize on the knowledge generated through the project, including in particular the strategy to engage with the private sector in the priority sectors of agriculture and coastal and ecosystem management (Sub-outcome 3.2), which could help inform the formulation of LDCF project Component 3 activities.

Improving Adaptation and Resilience to Address Climate Change in the Rural Communities of Analamanga, Atsinanana, Androy, Anosy and Atsimo Andrefana (UNDP/LDCF, GEF ID 5632, 2017-2022, US\$5,877,397)

The first outcome of this ongoing LDCF project aims to increase the awareness and strengthen the capacities of decision-makers, technicians and vulnerable communities in terms of climate change adaptation. 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 regard 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. Both this proposed project and this ongoing LDCF project will intervene in Atsinanana, and coordination to avoid a duplication of efforts will be essential.

Conservation and Sustainable Use of Biological Diversity in the Northwestern Landscape (Boeny region) (CI/GEF ID 9606, 2019-2022, US\$6,817,431)

The overall objective of the project is to strengthen the long-term conservation and sustainable use of biodiversity in the northwestern landscape of Madagascar. In order to foster the full recognition of the role of Protected Areas (PAs) in the sustainable development of the Boeny region, the project will support targeted interventions in and around the five target PAs. Taken together, the five PAs protect a corridor of the most intact natural habitats in Boeny. The objective of this project is “to strengthen the long-term conservation and sustainable use of biodiversity in the Northwestern Landscape of Madagascar”. This objective will be achieved through the implementation of two project components that will deliver three main outcomes. The first component of the project will focus on strengthening the management and sustainable financing of the five PAs in Boeny to reduce threats on natural resources. The activities under this component will result in an increased management effectiveness of the 5 targeted PAs (outcome 1.1). Activities to address long term financing will improve financial sustainability of the 5 PAs (outcome 1.2). The second component of the project will encourage livelihood activities that support sustainable use of biodiversity by local communities in and around the targeted PAs to strengthen PA protection efforts and improve community well-being in the buffer zones of the PAs. In addition, the proposed project will enhance previous GEF investments that have been made to establish the CMK and Bombetoka-Beloboka reserves by improving their long term financial sustainability. The proposed LDCF project will coordinate with this project, in particular activities relating to livelihood diversification and the use of biodiversity. Where relevant, the LDCF project will explore ways to support the integration of EbA and climate change concerns into this project.

Inclusive conservation of sea turtles and seagrass habitats in the north and north-west of Madagascar

(UNEP/GEF ID 10696, under development, US\$ 3.4M)

The objective of the project, which is being developed in 2021 following PIF approval in December 2020, is to adopt integrated approaches for inclusive conservation of sea turtles and seagrasses and the sustainable management of their habitats in north-west of Madagascar. The objective will be achieved through three interrelated components. Component 1 is focused on strengthening the policy, legal and institutional framework for sound management of sea turtles, seagrass and their habitat. Component 2 is designed to enable the effective and strategic management of sea turtle and seagrasses habitats. Component 3 focuses on developing and promoting incentives for local communities to conserve sea turtles and seagrasses and to sustainably manage their habitats. While the project's intervention areas are north of those of the proposed LDCF project, there are linkages between their approaches. Synergies and coordination between the two projects will be further developed during the PPG phase.

Blue Action Fund (BAF): GCF Ecosystem Based Adaptation Programme in the Western Indian Ocean

Sub-project: Creating a network of resilient MPAs in globally significant areas of the Western Indian Ocean

(KfW/Blue Action Fund, 2019-2023, US\$4.7M)

The Western Indian Ocean is a socially and biologically diverse region that contains some of the world's most extensive and most climate resilient coral reefs and mangroves, which are critical sources of protein, coastal protection, and income to coastal populations. Yet, the integrity of the region's ecosystems is threatened by the overexploitation of fisheries, habitat clearing, and pollution. These threats are exacerbated by the impacts of climate change, including sea level rise, coral bleaching, and storm events. The project addresses these challenges by expanding and improving a network of climate resilient, sustainable and effectively managed marine protected areas in the Western Indian Ocean, and ensuring their associated sustainable use zones are conserved. WCS will design and revise management plans for a total of 6,040km² of MPAs, including 2,950 km² of new or expanded protected areas, and provide resources, instruments, and capacities to implement the plans in Kenya, Tanzania and Madagascar. The project will enhance the community management of sustainable small-scale fisheries and work towards reducing post-harvest losses and improving marine-related supply chains. The project will thus contribute to maintaining the critical ecosystems in the region and ensuring sustainable livelihoods for coastal communities. The project will intervene on the north-west coast of Madagascar, north of the Boeny sites of this proposed LDCF project. Close coordination will take place, with work on community management of small-scale fisheries and marine-related supply chains of particular interest.

Selected past projects to build on:

Standardized Methodologies for Carbon Accounting and Ecosystem Services Valuation of Blue Forests

(UNEP/GEF ID 4452; 2014-2021; \$ 4,500,000)

This GEF project looked at carbon storage and sequestration and ecosystem services provided by blue forests ecosystems (i.e. mangrove forests, saltwater marshes, and seagrass meadows) and proposed improved methods and approaches to value these services. The project had one proof of concept in Madagascar led by Blue Venture. In addition, it has put together a Blue Forests Solutions Toolkit which will be useful to support this project, as it provides a platform with the tools necessary for developing nature-based blue economy business models, recognizing the full range of ecosystem benefits and increasing resilience in the face of global environmental changes. The four topic areas – Ecosystems, Economy, Policy and Communities – include case studies, links to tools and resources, and answers to key questions on how to improve ecosystem management and support sustainable livelihoods while mitigating climate change.

Adapting coastal zone management to climate change considering ecosystem and livelihoods

(UNEP/GEF ID 4568, 2014-2021, \$5,337,500)

LDCF resources were used to address the vulnerability of coastal zone of Madagascar to current and expected climate change and the lack of capacity to cope with it. The LDCF project created adaptive capacity among all social groups, whether government or communities, from the local to the central administration level, while ensuring that the local environment would be protected and managed in a way that allows it to withstand climate change impacts and to provide continued livelihoods. It included demonstration interventions at pilot sites in four coastal regions –Menabe, Boeny, Antsinanana, and Vatovavy Fitovinany to restore, protect and sustainably manage productive ecosystems, as well as invest in the restoration of coastal barriers and buffers such as sea walls and dykes. Project interventions consisted of: i) a strengthening of scientific and technical capacity towards adaptation in coastal zones; ii) the implementation of key adaptive measures and technologies in vulnerable sites; iii) and the creation of an enabling policy environment towards stronger coastal resilience.

Sustainable Management of the Environment Programme (PAGE)

(GIZ, 2015-2020, US\$ to be confirmed)

PAGE / GIZ supported key state actors (at national and regional level) and Civil Society working in the areas of intervention of the Program to contribute to the sustainable management of natural resources. At the local level, these are the actors of the municipal administration in and around protected areas as well as public inter-municipal cooperation bodies (OPCI) and basic communities (CoBa). Within a regional and municipal planning framework (Regional Land Use Planning Scheme – SRAT and Communal Development Plan - SAC), the themes aimed at reducing deforestation and landscape and forest restoration are carried out at different levels: national through political support and strategic, regional and local for operational activities. In the Boeny region, PAGE / GIZ supported the honey value chain from to improve the income of communities living in and around protected areas, so that they are more involved in the protection of the natural and forest resources of their environments, supported land use planning (SRAT and SAC), worked with local associations to disseminate agricultural and fishing techniques adapted to climate change, supported Komanga (a platform of CSOs) to conduct advocacy work on the effects of climate change and appropriate adaptation measures, and much more.

Strategic Program for Climate Resilience (SPCR) Phase I

(PPCR, 2017-2020, US\$ 1.5M)

The objective of Phase I was to support Madagascar in the formulation of a Strategic Program for Climate Resilience (SPCR), and the development of a programmatic multi-sector and climate resilient investment plan, and to establish the enabling environment for its implementation. This recently completed program yielded the following main deliverables: a. National disaster risk atlas for Madagascar; b. Climate resilient road construction norms; c. Strategic plan development for the implementation of BNGRC decentralized structures; d. Regulatory texts for DRM platform; e. Action plan development for DRM Strategy implementation; f. Business continuity plans for basic services delivery in case of a disaster emergency; g. Vulnerability and adaptation measures study for coastal cities of Toamasina and Mahajanga; and h. Procedures manual for the management of national contingency funds.

Global Climate Change Alliance Initiative

(EU, 2014-2020, €9M)

The programme addressed the high vulnerability of Madagascar to climate change. Many efforts had already been undertaken to address the effects of short-term climate variability, and the focus of this project was on sustainable adaptation to climate change. The project responded to these challenges by

articulating interventions at the central institutional and decentralized levels. The specific objective was to strengthen the capacity to adapt to climate change, with a view to achieving sustainable development. Activities focused on finalizing the National Action Plan to Combat Climate Change (PANLCC) and the National Adaptation Plan (NAP); Developing and maintaining a database of climate change adaptation projects; Developing frameworks for consultation and mechanisms for integrating climate issues at regional and national levels; Developing the use of environmental assessment tools; and Strengthening the capacities of key actors for engagement at the international level.

Sustainable Coastal Fisheries Project Phase 2 (PCD)

(KfW, 2018- 2021, US\$ 10.77M)

The Project, executed by Madagascar National Parks (MNP), WWF, Blue Venture, Mihari, and GRET, aims to contribute to the sustainable management of marine natural resources in Madagascar coastal areas, to increase incomes of the local population to contribute to the improvement of the sustainable management of natural resources in the priority areas. Within a four-year period the project will be implementing the concepts of "Locally Managed Marine Areas (LMMA)" for co-management of marine and coastal protected areas. AHT will provide Technical Assistance to MNP itself and, in cooperation with MNP and the four NGOs, to six LMMAs in different regions throughout Madagascar (including Menabe). The objective of the project is to contribute to the sustainable management of natural resources in Madagascar's coastal and marine areas as well as to increase the income of local communities. The proposed LDCF project will build on this experience with the implementation of LMMAs (Output 3.2), and lessons learnt from the project will be integrated in the final project design during the PPG phase. Should the project be extended beyond 2021, close coordination between the two would take place during implementation. Moreover, the two initiatives shall build on each other's interventions to support the sustainable management of marine and coastal ecosystems, and income diversification strategies.

7. Consistency with National Priorities

Is the Project consistent with the National Strategies and plans or reports and assessments under relevant conventions?

Yes

If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc

In order to tackle the challenges outline above, Madagascar needs to rapidly implement concrete ecosystem-based adaptation actions, and thereby empower the most vulnerable communities to increase their resilience to climate change. The country's priorities, as they pertain to this project, are outlined below:

National Adaptation Plan (NAP): This LDCF project is fully aligned with Madagascar's 2019 NAP. In particular, it touches upon the following priorities: Add value to by-products and develop income-generating channels to improve agricultural income; Promote the conservation of ecosystems-nurseries (mangroves and coral reefs in particular), in order to ensure the reproduction of the resource; Establish partnerships with organizations to support management of existing sites and support designation of new sites, and build site management capacity; Secure in situ the most threatened ecosystems (dry forests, rainforests, mangroves, coral reefs, lakes and ponds) that provide buffers during extreme events; and Promote sustainable tourism in coastal zones.

Nationally Determined Contributions: This proposed project aligns with Madagascar's NDC adaptation priorities over 2020-2030, including: (i) Strengthening natural protections and reducing the vulnerability of coastal and marine areas affected by coastal erosion and the retreat of the coast; as well as (ii) Restoration of natural habitats (forests and mangroves: 45,000 ha, lakes and streams, etc.). Nature based Solutions to climate change are featured prominently as well.

National Action Plan on Integrated Coastal Zone Management: Moreover, it aligns with the 2019-2023 National Action Plan on Integrated Coastal Zone Management (ICZM), which aims to promote ICZM to ensure sustainable livelihoods in coastal zones, as well as ensure the protection and conservation of ecosystems to increase climate resilience .

The 2010 National Climate Change Policy (PNLCC): It promotes measures to reduce Madagascar's vulnerability to climate change, including behavioural change. The PNLCC is based on five strategic areas, namely: climate change adaptation, mitigation actions, climate change mainstreaming, sustainable financing sources, and research, development and technology transfer. It is supplemented by the National Action Plan to combat climate change (PANLCC).

8. Knowledge Management

Outline the knowledge management approach for the Project, including, if any, plans for the Project to learn from other relevant Projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

Firstly, the project proposes to build on lessons learnt from the LDCF PAZC project, and will coordinate closely with other ongoing and recently completed projects in the areas of interventions to ensure that best practices can be scaled up and that innovation can continue to be supported. More broadly, a knowledge management strategy will be prepared during the PPG phase, and will ensure the lessons learned through the project are effectively disseminated through a range of appropriately targeted knowledge products (e.g. for producer organizations, local government officials, private sector, etc), and that learning is enhanced at all stages of project implementation. The M&E activities of the project (e.g. independent mid-term evaluation) will contribute to the identification of good practices and lessons-learned, as well as the adaptive management of the project. Of importance, the project will develop significant contributions to the generation of new knowledge (Outcome 2, in particular) through participatory planning processes and implementation, supported by extensive capacity-building activities and trainings. This will ensure that knowledge is not only generated during and after project implementation, but that it continues to be used as part of adaptation decision-making processes at the local level.

9. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF

CEO Endorsement/Approval MTR

TE

Medium/Moderate

Measures to address identified risks and impacts

Provide preliminary information on the types and levels of risk classifications/ratings of any identified environmental and social risks and potential impacts associated with the project (considering the GEF ESS Minimum Standards) and describe measures to address these risks during the project design.

Please see the attached Safeguard Risk Identification Form (SRIF) for details.

Supporting Documents

Upload available ESS supporting documents.

Title

Submitted

Safeguard Risk Identification Form (SRIF) Madagascar
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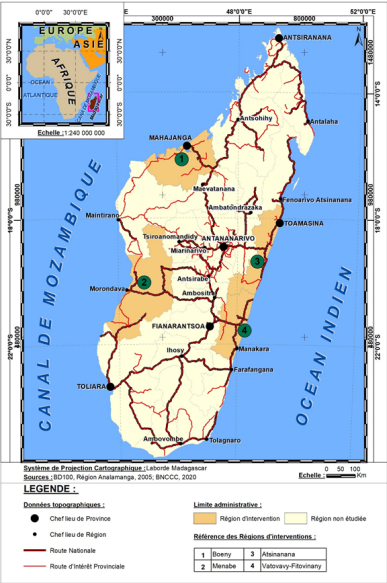
Part III: Approval/Endorsement By GEF Operational Focal Point(S) And GEF Agency(ies)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the Operational Focal Point endorsement letter with this template).

Name	Position	Ministry	Date
Hery A. Rakotondravony	GEF Operational Focal Point	Ministry of Environment and Sustainable Development	3/21/2022

ANNEX A: Project Map and Geographic Coordinates

Please provide geo-referenced information and map where the project intervention takes place



Project intervention regions: 1. Boeny, 2. Menabe, 3. Atsinanana, and 4. Vatovavy Fitovinany



From left to right: Boeny region, Menabe region, Atsinanana region, and Vatovavy Fitovinany region