



Building adaptation and resilience to climate change in the essential oil sector in Madagascar (ARCHE)

Part I: Project Information

GEF ID

10908

Project Type

MSP

Type of Trust Fund

LDCF

CBIT/NGI

CBIT No

NGI No

Project Title

Building adaptation and resilience to climate change in the essential oil sector in Madagascar (ARCHE)

Countries

Madagascar

Agency(ies)

UNIDO

Other Executing Partner(s)

National Bureau for Climate Change (BNCC) - Ministry of Environment & Sustainable Development and the National Committee of Essential Oils, Vegetable Oils, Extracts and Oleoresins (CNHEO)

Executing Partner Type

Government

GEF Focal Area

Climate Change

Taxonomy

Focal Areas, Climate Change, Climate Change Adaptation, Climate finance, Private sector, Livelihoods, Adaptation Tech Transfer, Innovation, Climate resilience, Least Developed Countries, Influencing models, Deploy innovative financial instruments, Stakeholders, Private Sector, SMEs, Individuals/Entrepreneurs, Gender Equality, Gender Mainstreaming, Gender-sensitive indicators, Capacity, Knowledge and Research

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(\$)

165,916.00

Submission Date

12/23/2021

A. Indicative Focal/Non-Focal Area Elements

Programming Directions	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
CCA-1	LDCF	1,746,484.00	5,469,350.00
Total Project Cost (\$)		1,746,484.00	5,469,350.00

B. Indicative Project description summary

Project Objective

Reducing vulnerability and increasing resilience to climate change of the essential oils value chain by promoting innovation, transfer and large-scale deployment of adaptation-oriented technologies and services

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
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Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
1. Institutional capacity building and mainstreaming climate resilience into Essential Oils value chain	Technical Assistance	<p>1.1 New strategy provides direction to develop climate-resilient EO value chain</p> <p>1.2 CNHEO has capacity to support integration of adaptation and resilience into the essential oils value chain</p>	<p>1.1.1 National Committee of Essential Oils, Vegetable Oils, Extracts and Oleoresins (CNHEO) develops a new Essential Oils (EO) strategy that integrates climate adaptation and resilience</p> <p>1.1.2 Recommendations on regulatory instruments and measures to promote the uptake of innovative adaptation technologies and services into the essential oil value chains developed</p> <p>1.2.1 Members of the CNHEO platform trained in promoting the adoption of gender-responsive climate-resilient technologies and services along the EO value chain</p>	LDC F	170,000.00	700,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
2. Innovative adaptation technologies and services promoted and deployed along the EO value chain	Investment	<p>2.1 Proven innovative adaptation technologies and services are promoted and piloted along the essential oils value chain</p> <p>2.2 Innovative financing to support deployment of adaptation technologies and services along essential oil value chains piloted</p>	<p>2.1.1 At least 20 MSMEs with proven and high-impact innovative climate change adaptation-oriented technologies and solutions for the essential oil value chain receive acceleration services (training, coaching, mentoring and business growth support)</p> <p>2.1.2 Four (4) pilot projects implemented to deploy innovative adaptation technologies and solutions</p> <p>2.1.3 Results and experiences from the four (4) pilot projects documented and widely disseminated</p> <p>2.2.1 Model innovative financing mechanisms (FIR, FDA, MFIs) to provide dedicated (gender-responsive) catalytic financing designed and piloted in collaboration with actors in the financing ecosystem</p>	LDC F	1,000,000.00	3,050,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
3. Knowledge sharing and learning	Investment	3.1 Lessons from the project documented and widely disseminated	<p>3.1.1 Distribution and support channels established, strengthened and showcased to ensure that EO growers, distillers associations and cooperatives, including women and youth, of the identified vulnerable regions access adaptation technologies and diversified livelihoods</p> <p>3.1.2 Online platform to showcase adaptation technologies, their benefits and suppliers established and managed by CNHEO.</p> <p>3.1.3 Lessons learnt documented and widely disseminated</p>	LDC F	280,000.00	750,000.00

Project Component	Financing Type	Project Outcomes	Project Outputs	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
4. Monitoring and Evaluation	Technical Assistance	4.1 Monitoring of results and evaluation	4.1.1 Project effectively monitored 4.1.2 Mid-term review and independent terminal evaluation conducted	LDC F	137,715.00	337,750.00
Sub Total (\$)					1,587,715.00	4,837,750.00

Project Management Cost (PMC)

	LDCF	158,769.00	631,600.00
	Sub Total(\$)	158,769.00	631,600.00
	Total Project Cost(\$)	1,746,484.00	5,469,350.00

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(\$)
GEF Agency	UNIDO	Grant	Investment mobilized	51,750.00
GEF Agency	UNIDO	In-kind	Recurrent expenditures	117,600.00
Recipient Country Government	Ministry of Environment and Sustainable Development	In-kind	Recurrent expenditures	1,200,000.00
Recipient Country Government	Ministry of Industry, Trade and Handcraft	In-kind	Recurrent expenditures	1,200,000.00
Recipient Country Government	Ministry of Agriculture	In-kind	Recurrent expenditures	1,300,000.00
Donor Agency	GIZ PrAda	Grant	Investment mobilized	300,000.00
Private Sector	PFAN	Equity	Investment mobilized	300,000.00
Private Sector	National Banks, MFIs	Grant	Investment mobilized	200,000.00
Private Sector	Distilleries	Equity	Investment mobilized	300,000.00
Private Sector	MSME's	Equity	Investment mobilized	100,000.00
Private Sector	Private Sector Development Associations	In-kind	Recurrent expenditures	150,000.00
Beneficiaries	Pilot producer cooperatives in essential oil value chain	In-kind	Recurrent expenditures	250,000.00
Total Project Cost(\$)				5,469,350.00

Describe how any "Investment Mobilized" was identified

The investments were mobilized by the UNIDO through meetings and teleconferencing (due to COVID travel restrictions) with the key stakeholders and presenting the project concept, key outcomes, outputs and indicative activities. Co-financing amounts are primarily based on the estimation of parallel co-financing through the ongoing projects funded by development partners and government agencies. These sources were clarified during consultations at the time of PIF development and will be further confirmed during the PPG phase. The Private Financing Advisory Network (PFAN) hosted jointly by UNIDO and the Renewable Energy and Energy Efficiency Partnership (REEEP), is a global network of climate financing experts that offer business coaching and investment facilitation to entrepreneurs developing climate projects in emerging markets. The experts in the REEEP PFAN network offer personalized one-on-one coaching and targeted introduction to investors, providing a fast-track to commercial investment. PFAN will provide investment facilitation services to projects and SMES in the EO value chain and link with private sector investors from its investor pool, so that they can leverage investments to expand their projects (grants, debt, and equity) from its global, regional and national private financing networks focused on climate adaptation. Private sector entities such as participating MSMEs and distilleries are expected to raise additional equity funding into their businesses and projects. Partnerships with the private sector financial institutions (e.g., microfinance institutions, cooperatives and rural banks) will leverage additional financing for sustainable adaptation technologies and practices. UNIDO will explore linkages with new innovative platform like YAPU for possible avenues to support the mobilization of financial instruments targeting the MSMEs and the stakeholders involved in the EO value chain. These institutions and platforms will be encouraged to develop dedicated products and services to increase access to finance to the vulnerable populations in the essential oil value chain while protecting natural resources and adapting to climate change.

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(\$)
UNIDO	LDC F	Madagascar	Climate Change	NA	1,746,484	165,916	1,912,400.00
Total GEF Resources(\$)					1,746,484.00	165,916.00	1,912,400.00

E. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount (\$)

50,000

PPG Agency Fee (\$)

4,750

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount(\$)	Fee(\$)	Total(\$)
UNIDO	LDCF	Madagascar	Climate Change	NA	50,000	4,750	54,750.00
Total Project Costs(\$)					50,000.00	4,750.00	54,750.00

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. **true**

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

This Project has an urban focus. **false**

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

Agriculture	40.00%
Natural resources management	30.00%
Climate information Services	10.00%
Costal zone management	0.00%
Water resources Management	20.00%
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 **false**

Change in mean temperature **true**

Increased Climatic Variability **true**

Natural hazards **true**

Land degradation **true**

Costal and/or Coral reef degradation **false**

GroundWater quality/quantity **false**

Core Indicators - LDCF

CORE INDICATOR 1	Total	Male	Female	% for Women
Total number of direct beneficiaries	34,005	17,003	17,002	50.00%

CORE INDICATOR 2

Area of land managed for
climate resilience (ha) 3,600.00

CORE INDICATOR 3

Total no. of policies/plans
that will mainstream 1
climate resilience

CORE INDICATOR 4

		Male	Female	% for Women
Total number of people trained	6,000	3,000	3,000	50.00%

Part II. Project Justification

1a. Project Description

A1.1. The environmental problem, root causes and barriers that need to be addressed

i) Observed and projected temperature and rainfall, climate hazards, and climate change vulnerability and impacts

1) Madagascar is the fourth largest island in the world, with a population of 20.696 million (latest census). It is situated in the Indian Ocean 400 km off the Eastern African coast, separated from the mainland by the Mozambique Channel. Madagascar is best known for its rich biodiversity and tropical rainforests and is among the richest countries in essential oils (EOs). It contains more than 71 aromatic species, many of which serve international laboratories and companies active in perfumery, cosmetics and pharmaceuticals.

Madagascar is one of the worst affected countries by the impacts of climate change. The country is ranked 164 in the ND-GAIN index (higher value indicates higher vulnerability) and 12 in Germanwatch's climate risk index for 2000-2019 (lower value indicates higher risk). The observed temperatures and precipitations between 1961 and 2005 from the weather stations records show statistically significant increases in daily minimum temperature across all seasons. Temperatures have increased by 0.2°C over northern Madagascar and by 0.1°C over southern Madagascar.[1]¹. A steady decline in rainfall was observed in the central and east coastal regions between 1961 and 2005, accompanied by increases in the length of dry spells[2]².

2) Furthermore, the country experienced 53 natural hazards (drought, earthquake, epidemics, floods, cyclones and extreme temperatures) between 1980 and 2010, causing economic damage of over USD 1 billion[3]³. Meteorological data from the past 30 years has shown an increase of recurrence of these natural hazards, driven by large-scale disruptions in atmospheric circulation and heavy rainfall events caused by strong storms and tropical cyclones. Coupled with poor land use practices and increasing deforestation, these lead to significant and damaging floods across the country[4]⁴.

3) Madagascar experiences variable climatic situations due to insufficiency or irregularity and is frequently subject to extreme weather events (cyclones, droughts, floods, etc.) causing significant damage. In the past 20 years, Madagascar has been struck by thirty-five cyclones, eight floods and five periods of severe droughts - a three-fold increase over the previous 20 years - causing damages and affecting food security, drinking water supply and irrigation. Between 1961 and 2017, the cyclones killed 1,193 people, destroyed 0.6 million homes, and directly and indirectly affected 4 million people. Another climate disaster, floods affected more than 300,000 people during this period. Analysis of historical trends and the evolution of climatic parameters shows a significant rise in temperatures

throughout the territory over the period 1961-2017. Minimum and maximum temperatures increased by 0.04 and 0.05 °C /year. At the same time, the temperature indicators show an evolution at the rise in extreme events. In addition, a decrease in winter precipitation and spring was detected in most regions. Finally, the sea level rises gradually, at a speed of 1.57 mm / year between 1993 and 2017, and the sea temperature in the western Indian Ocean increased by 0.60 °C between 1950 and 2009.

4) Regarding future climate change in Madagascar, two emission scenarios of greenhouse gases, relating to the moderate (RCP 4.5) and high (RCP 8.5) scenarios showed projections with an upward trend in temperatures, with temperatures minimum and maximum which could increase from +1.3 to 1.6 °C by 2050 and from 1.7 to 2.9 °C by 2080. The precipitation regime should be significantly modified during the season winter, from May to October, with a 9.6 to 16% drop in precipitation by 2080. In addition, by 2100, the frequency of tropical cyclones is not expected to change significantly, but their intensity is expected to increase substantially.^[5] In particular, the intensity of cyclones is expected to increase by 46% and affect more and more the northern region of the island. A probable increase of 0.28 to 0.48 m is further expected from sea level rise by 2100. The projected decrease in rainfall, coupled with projected increases in the length of the dry periods in the future is expected to pose additional stress on the already vulnerable livelihoods of southern Madagascar. Additionally, projections have shown that temperature increases foresee to disrupt unique and critical micro-climates and lead to significant changes to local farming systems, with implications for food security^[6].

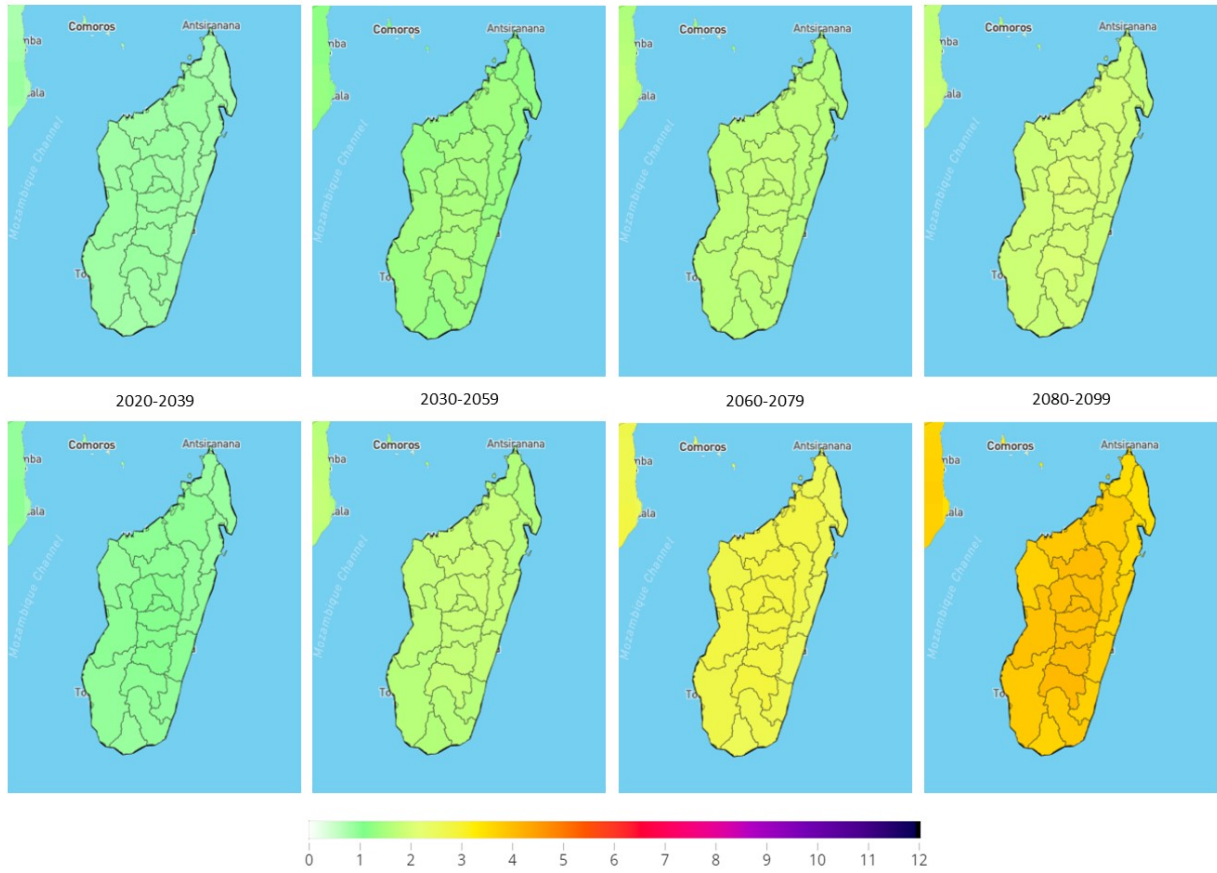


Figure 1 Annual mean temperature change under RCP 4.5 and RCP 8.5 from 2020 to 2099[7]

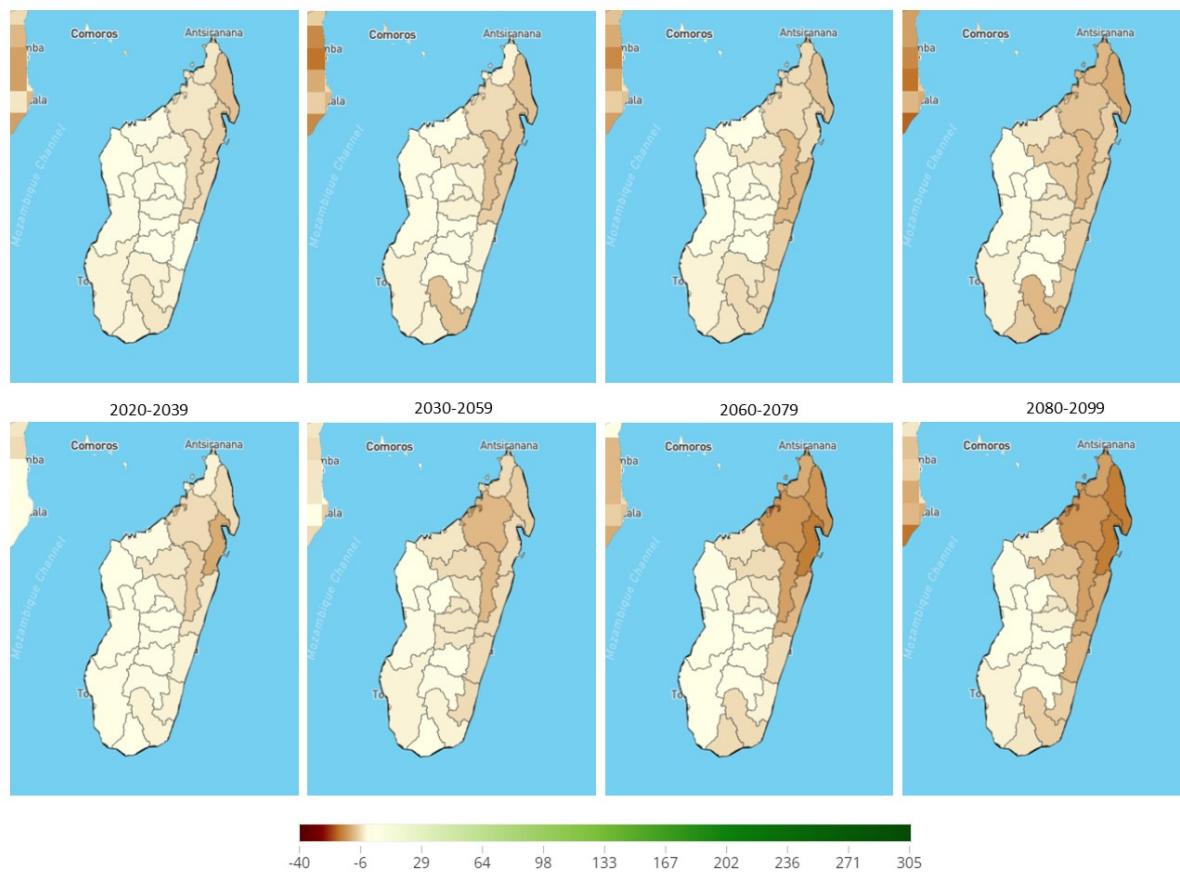


Figure 2 Change in annual precipitation (%) under RCP 4.5 and RCP 8.5 from 2020 to 2099^[8]

5) Madagascar has the highest risk from cyclones in Africa: 94% of deaths and economic losses related to natural disasters have been attributed to cyclones.^[9] As the global average tropical cyclone wind speed is likely to increase in the future, it can be predicted that the frequency of the most intense tropical cyclones in Madagascar will increase substantially.^[10]¹⁰

6) Climate-sensitive natural resource-based agriculture, including essential oil production, is highly vulnerable to climate change and variability, especially heavy rainfall, cyclone, and drought whose frequency are on the rise. According to Madagascar's NAPA, rains brought on by cyclones have repeatedly destroyed biodiversity, intensified soil erosion and flooded EO crop fields. During years with the most severe cyclonic events over the past 12 years, intense rainfall has been correlated with a significant reduction in EO productivity by as much as 55%. There has also been market instability when natural hazards impacted essential oil production. A cyclone in 2000 ruined natural vanilla production and promoted importers to use artificial vanilla. The depressed demand for natural vanilla

caused prices to plummet. In effect, already poor farmers could not sell their produce and spiraled deeper into poverty.

7) As part of the design of this PIF, four stakeholder consultation meetings were held in April 2020. One of the key outcomes was that stakeholders confirmed that droughts have led to the over-cultivation of EOs to maintain production levels. According to the key stakeholders, decline in rainfalls impact the quantity and quality of materials to be distilled resulting low-grade extraction of EO. This is already posing stress to the EO producers. Other climate change impacts include rising sea levels and coastal storm surge events are increasing erosion on EO farming plots.

8) Projected climate change impacts in Madagascar are expected to further affect EO production. More variable rainfall will reduce river flows and water points during the dry seasons impacting EO production. Flooding during intense rainfall periods will destroy EO farming plots due to the inundation of crops and erosion. An increase in temperatures is likely to bring more pest infestations and pest and disease proliferation on EO farms throughout Madagascar. Rising temperature projected declined in rainfall and more extended dry periods in addition to recurring extreme weather events preventing the growers from recovering and recultivating EO.

ii) Adaptation needs

Vulnerable populations and value chains

9) Madagascar is among the poorest countries in the world, with 75% of the population living on less than \$1.90 per day.[11]¹¹ The HDI of Madagascar is now ranked 161 out of 180 countries[12]¹². This situation reduced Madagascar capacity to adapt to climate change and variability. Agriculture (predominantly rainfed), fisheries and livestock production[13]¹³ are the key economic sector of Madagascar. Despite its high potential with more than 83% of the population involved, the agriculture sector has remained essentially traditional with low yields and small farms.[14]¹⁴ Madagascar's agricultural sector accounts for nearly 30 per cent of GDP and 40 per cent of merchandise export earnings[15]¹⁵.

10) Throughout stakeholder consultations, the regions of Vakinankaratra, Amoronimania, Haute Matsiatra, Vatovavy fitovinany, Atsimo atsinanana and Ihorombe, have been identified as most crucial for the essential oil value chain, with approximately 34,005 small-scale producers of essential oil. This number is expected to increase by 25% in the next three years, based on the growing EO market in Madagascar, as well as the expected increase in EO producers impacted by climate change. Simultaneously, over the past decades, the entire EO value chain in these regions has already experienced the impact of climate change. Small EO

producers are often poorly organized and, in many cases, work with traditional, highly inefficient crop cultivation and processing technologies.

11) Madagascar's NAPA has identified several adaptation activities in the agriculture and water sectors that are most relevant to EO production including i) improve and conserve soils, ii) production and use of organic fertilizers, iii) drought-tolerant plants, iv) reforestation to cope with soil degradation, v) capacity-building for use and maintenance of water management system, vi) improve EO stakeholders' knowledge about the proper use of weather information to reduce climate risk, vii) develop and introduce policy measures, and viii) small dams for flood water control or water-saving infrastructure for different types of water used for irrigation and control flood inundating and damaging the EO crop farm. The EO producers are facing various barriers and challenges in their efforts to address their adaptation needs ? see Table 1. Consultations with the key stakeholders highlighted the following priorities lack of information and knowledge on climate change, poor regulatory framework, and institutional setup, including low capacity and lack of finance as the major barriers to adaptation.

12) Environmental pressure is noted as the key constraint that is increasing the disruption in productive agriculture and essential oil value chains in particular. Madagascar forest coverage has been declining for years, from 19 million ha in the 1950s to 8.5 million ha in 2013^[16]. Slash and burn agriculture, burning for grazing land and use of fuel wood for essential oil distillation are the main drivers of forest loss. Particular to essential oils, important quantities of wood are necessary for the essential oil distillation process; every alembic (distiller) consumes approximately 145 m³ of wood / year. In the Diana Region (Nosy Be Island, Ambilobe and Ambanja surroundings) 400 distilleries, both formal and informal, demonstrated a consumption of 58,000 m³ or 55,100 tons of wood yearly. Subsequently, this increase of deforestation shows an increasing impact on land use and proneness for erosion, compounded by the increasing amounts of floods and associated intense runoff being exacerbated by climate change. Furthermore, drought conditions are inhibiting healthy tree production and reducing the amount of fuel wood available. Stakeholder consultations held in April 2020 indicated that droughts have led to over-cultivation in order to maintain the same production. Cultivating on hill sides is a challenge because these areas are becoming drier and are difficult to irrigate. This has led to overcultivation in plains. With this interdependence of poor land use practices and increasing deforestation resulting in the increase of erosion due to climate change, it is expected that vulnerability of EO cultivators and their ecosystem will increase. Consequently, the deployment of innovative solutions for improved land use and forestry, as well as the application of innovative and resource efficient technologies for EO cultivators and producers, is crucial to decrease the vulnerability of the entire EO value chain.

Weak support to MSMEs in the essential oil sector and limited opportunities for youth and women

13) EO production is one of the fastest growing sectors for Micro and Small to Medium sized Enterprises (MSMEs^[17]) in rural areas in Madagascar. The Government describes the EO value chain as the *pillar of the rural green economy*. According to USAID, EO production and processing is referred as the 'only option' for rural economic development.^[18] The industry provides several hundred thousand jobs (for cultivators,

tradesmen, exporters, etc.).^[19]¹⁹ However, the EO sector, including its value chains, are increasingly vulnerable to climate change impacts, such as cyclones and dry periods. Lack of information and knowledge on the role of innovative technologies and solution and other resilience-building measures in the sector have caused productivity to be inefficient and vulnerable to climate shocks. Deforestation, decreasing rainfall, and increasing temperature have caused soil moisture deficit, soil erosion, and land degradation, resulting in reduced ecosystem services such as reduced EO production.

14) Pressure to increase productivity will continue because the global market for essential oils is expected to grow by 9.6 % beyond 2022 reaching a value of USD 27.49 billion. Demand from major markets remains strong, particularly in the United States, Europe and India, with France's demand growing 20% annually. Currently, Madagascar exports essential oils to around 40 countries^[20]²⁰. Madagascar holds 25% of the essential oil market of ylang- whose flower prices have increased by 317% in the last two years. Madagascar also supplies half of the world's need for clove essential oil . Other sought-after types of EOs found in Madagascar include lemongrass and cinnamon.

15) Despite the growing demand for essential oils, Madagascar remains below its potential for exporting EO and developing sustainable agribusinesses. Small-scale growers and particularly independent growers and distillers are not aware of the challenges posed by the changes in temperature and precipitation to their livelihoods. For those that are aware of the climate risks, they do not have the resources to access adaptation technologies and solutions to change their processes and practices to adapt to climate change.

16) Despite their large numbers, small and independent growers have little financial support to invest in EO cultivation and distillation equipment to make their production more efficient and climate-resilient. Women, often ignored, are mostly engaged in cultivating the flowers - a labor-intensive task, and they are the first directly impacted by the variability in rainfall and temperature. Without technical and financial supports, small producers and women become the most vulnerable. They are also less competitive with the larger producers/distillation companies and will become increasingly less resilient when climate shocks impact their essential oil plant production. The loans and guarantee programs are targeted to cash crops, such as rice, coffee and cocoa. Staple food productions such as rice and corn are emphasized because food security is a major concern in Madagascar. Approximately 25 per cent of the country's rural population is classified as food insecure.^[21]²¹

17) Climate change is causing unpredictable production of EO and market failures, particularly in the south. Madagascar's Emergence Plan^[22]²² seeks to promote business creation and the development of entrepreneurship and innovation in the agriculture sector. MSMEs make a significant contribution to economic development, yet their production and export rates remain low due to lack of access to capital, markets and lack of awareness and technical supports to build their EO business climate-resilient. Youth are not well integrated into the MSME sector despite the fact that young adults comprise more than 50% of the total population.

18) Gender disparities are marked in the agricultural sector and disproportionately affect women's access to resources, technical assistance and financing opportunities. Women are directly impacted by climate change because of their roles as cultivators, and they are relegated to tasks that are less valued and pay less, making

them more vulnerable. Especially in rural areas, women have more responsibilities due to heavy domestic tasks and agricultural labor, including work in the informal sector to support the family[23]²³.

19) Madagascar's Emergence Plan seeks to provide modern and private jobs to youth and Malagasy women by i) promoting the entrepreneurial culture at the national and regional level, ii) supporting women and young people with training in entrepreneurship, iii) establishing reliable and local supply chains for MSMEs and iv) upgrading of existing MSMEs in terms of productivity, product quality and competitiveness, by establishing business incubators and accelerators linked with university and vocational entrepreneurship programs

20) Madagascar finances the Agricultural Development Fund (FDA) to support farmers access to essential farming equipment. However, the FDA's supports to farmers is limited to staple and cash crop production only. 92% of the private sector in Madagascar consists of informal micro- or small enterprises in agriculture, trade or services, with low salaries (less than \$50 per month) and low literacy rates (25%). There are limited investments in innovation to address local needs and requirements, particular to small-scale agriculture. Microfinance products typically charge interest rates of 35% or more to take out loans. Coordination is limited among the existing structures, such as connecting the private sector with agriculture associations/cooperatives.

21) Figure 3 presents the essential oils value chains and the players along the value chains and shows that there are fewer financial resources (e.g., MFIs shown in orange in Figure 3) to support small-scale essential oil growers/cultivators on the left.

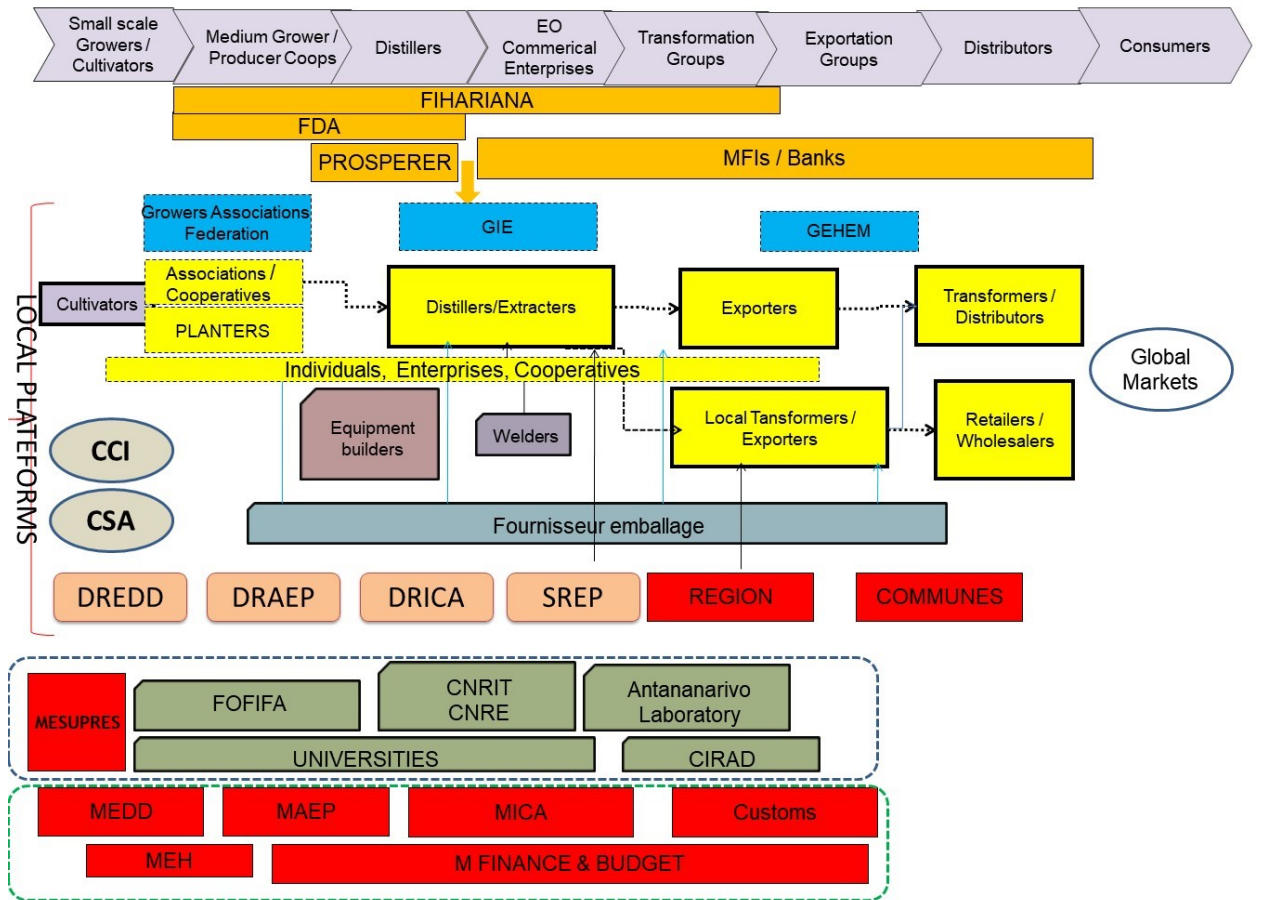


Figure 3: Essential oils value chains and the stakeholders along the value chains[24]²⁴

i) Main Barriers

22) The deployment climate change adaptation technologies and services along the essential oil value chain faces barriers described below

Table 1: Barriers

<p>1) Weak institutional coordination mechanism to ensure sustainable, climate-resilient growth and formalized entrepreneurship development frameworks to unlock adaptation-oriented innovation along the essential oil value chain</p>	<p>there is no strategy or policy to promote the sustainable and climate-resilient development of the sector. Similarly, there is a lack of a framework that formalizes the employment sector. Coordination among the various ministries involved in the EO sector (Industry, Water, Agriculture) has not taken place until now. This prevents a holistic view on improving the productivity, resilience and sustainability of essential oil value chains while reducing poverty levels and ensuring food security for rural populations. This highlights the need to raise awareness on adaptation requirements at the national and local levels and develop policy incentives that promote entrepreneurship and investment in adaptation solutions.</p>
<p>2) Limited skills development and support for entrepreneurs (especially those led by youth and women-led) to transform their early-stage innovations into adaptation-focused technology enterprises</p>	<p>As indicated in Madagascar's Emergence Plan (2019-2023), poor access of entrepreneurs to knowledge and technology is hampering the development of MSMEs. Madagascar's human capital index is one of the lowest worldwide (0.37, with only 10 countries having a lower value). Limited accelerators and incubators exist. Knowledge of even general entrepreneurship in universities and vocational institutes is limited. In particular, training is lacking for young people and women in entrepreneurship to meet urgent adaptation priorities. Women are grossly under-represented as entrepreneurs in Madagascar.</p>
<p>3) Insufficient business growth services to support MSMEs, to deploy adaptation-oriented technologies and services and transform ideas into business opportunities along the essential oil value chains</p>	<p>Most entrepreneurs in Madagascar have not received formal training in business management or entrepreneurship, and most MSMEs are informal. They do not know how to maintain sound financial administration or optimize their business operations. There is insufficient business education that targets MSME employees and owners, and MSMEs find it difficult to attract skilled staff. This hinders the long-term development of MSMEs and causes them to be run in an ad-hoc fashion. This ultimately limits their access to bank and scaling up finance.</p>
<p>3) Lack of access to financing for MSMEs, to deploy adaptation-oriented technologies and services and transform ideas into business opportunities along the essential oil value chains</p>	<p>Essential Oil (EO) MSMEs lack access to financing because MFI financing products charge high interest rates and do not target either the EO value chain or sustainable production practices (EbA or NbS). Additionally, MSMEs lack access to effective distribution and marketing channels to facilitate market penetration. They rely on informal agreements with exporters who often exploit their stronger positions financially. The financial sector, including MFIs, seldom invest in agricultural activities, particularly those led by small landholders, because of the perceived high risks in agricultural lending.</p>

<p>4) Limited awareness and accessibility of small producers to climate-smart technologies and finance mechanisms to exploit essential oil value chains</p> <p>-</p>	<p>There is limited use of production techniques adapted to climate change to improve yields and production capacity on the local level. Support is needed to transfer knowledge (such as via demonstration platforms) to rural populations on getting better access to inputs and more secure supply chains that improve processing and increase income-generating activities. Production rates are low due to these factors. Farmers and other groups are typically not formally organized into cooperatives or farmer's groups. This hinders their capacity to have productive livelihoods because groups facilitate knowledge sharing and technology transfer. The enhanced creditworthiness of a group also provides better access to capital, namely via micro-finance.</p> <p>Similarly, EO producers have limited access to equipment and high-quality inputs.</p> <p>Furthermore, essential oil producers do not have any access to insurance products that can provide them with a cushion if unforeseen climate extremes occur.</p>
<p>5) Limited value placed on the resilience of ecosystem services and their link to climate resilience as well as improved and sustained productivity along essential oil value chains</p>	<p>Illegal logging of precious woods and "slash and burn" farming remain serious threats to the country's ecosystems and biodiversity. According to Global Forest Watch, 1.6 million hectares of forest cover were lost between 2001 and 2013. With unclear land tenure and the need to expand agriculture, there is also limited motivation from the local communities to manage their land sustainably and ensure the resilience of ecosystem services essential for their livelihood, particularly those involved in essential oil value chains.</p>

A1.2) The baseline scenario and associated baseline projects

i) Baseline initiatives

National landscape

23) Madagascar's *National Adaptation Plan of Action (NAPA)* identified technology transition, particularly within the agriculture sector, as central to improving productivity and providing inputs to agro-processing and the manufacturing sector. Both would lead to increased contributions to foreign exchange earnings and resilience to emerging challenges. The NAPA highlights the need for adaptation measures for the sustainable management of natural resources, including integrating appropriate adaptation technologies supported through national institutional capacity building, providing training for farmers and businesses in the agriculture industry and required policy reformations.

24) Supporting the previous NAPA priorities, the overarching and recently developed National Development Plan or Emergence Plan (EP) has outlined the following relevant priorities for 2019 - 2023:

Priority 8 - Land and territorial governance: facilitate rural development

Priority 12 - Fostering job creation and promoting decent work

Priority 21 - Developing the entrepreneurial spirit and innovation

Priority 27 - Modernizing agriculture

Priority 30 - Preserving natural resources and the environment

Priority 32 - Adaptation and mitigation to climate change

25) Madagascar has recently established a decree that governs all activities relating to exploiting essential oils, vegetable oils, extracts and oleoresins. The *EO decree* relates to the planting, collection and transport of raw materials and the extraction, processing and marketing of products of the sector. It also enforces sustainable natural resource management (e.g., requiring reforestation with the production of firewood). The Minister responsible for Industry and Trade and Handicrafts, the Minister responsible for the Environment and Sustainable Development and the Minister responsible for Agriculture, Livestock and Fisheries are responsible for executing this Decree.

26) A **National Committee of Essential Oils, Vegetable Oils, Extracts and Oleoresins (CNHEO)** is in the process of being created to promote the sustainable development of the sector via concrete measures CNHEO responsibilities include:

- ? To serve as a platform for dialogue between the State and private actors in the sector;
- ? To promote the Malagasy standard on essential oils, vegetable oils, extracts and oleoresins;
- ? To support research and development to enable technological innovation in the sector;

27) Similarly, the **Initiative Emergence Madagascar (IEM)** (2019-2023)^[25] is a platform for consultation, bringing together the Energy, Governance, Natural Resources, Food Security, Investments and Women's Empowerment sectors to i) convert Madagascar into a country exporting finished products with high added value and ii) improve the cultivable area by 100,000 hectares in 5 years.

28) Madagascar's **Nationally Determined Contribution (NDC)** aims at increasing carbon sinks by 32% through a reforestation programme with indigenous species covering 270,000 ha. Main mitigation actions include large scale reforestation for sustainable timber production and conservation of indigenous species, reduced timber extraction, and large-scale adoption of agroforestry. This highlights the need to develop alternative revenue streams through non-timber forest products, such as oils and other products for commercial purposes, and to enhance local knowledge and sustainable management of Madagascar's unique biodiversity. In priority adaptation actions for the 2020-2030 period, the NDC notes the need for widespread application of integrated models for resilient agriculture, implementation of ecosystem-based adaptation, and restoration of natural habitats. The adaptation costs for the 2015-2030 period are estimated at 42.099 billion. ^[26]

ii) Support for local products and MSMEs

Current Support for Farming Organizations

Madagascar has five avenues of support for grower's associations and cooperatives.

- 1) **PROSPERER** programme (Support for Rural Microenterprises and Regional Economies will come to a close at the end of 2020). Its global objective is to promote income growth by consolidating rural micro-enterprises. PROSPERER has identified and mobilized SMEs as well as paired producer organizations with exporters. It has also provided extension services support. Furthermore, it has provided professional training in marketing and management, including integration of youth in entrepreneurship. Most significantly for the essential oil sector, via its Rural Investment Facility (FIR) PROSPERER has supported rural finance and risk management. The project worked with partner MFIs to provide working capital for vulnerable rural MSMEs. PROSPERER subsidizes 50% of any equipment cost.

- 2) **Volamahaso** is a MFI that provides microfinance products for rural farmers, including the essential oil sector. These include 1) Solidarity credit without real guarantee (CSGR), 2) Small business credit (CPE): credit to finance the purchase of inputs, storage of agricultural products and working capital, 3) Credit with education (CAE): to finance to educate women business owners. Volamahaso can finance up to 20% of the equipment cost, and only for large investments, they can provide a guarantee on the borrower's repayment capacity. They entered into a partnership with the PROSPERER program to facilitate access by groups or cooperatives of essential oil producers to solidarity credit without any real guarantee to buy distillation equipment. PROSPERER guaranteed the loan of the group by providing the guarantee fund and paying the administrative fees. The equipment is purchased in the name of Volamahaso until the loan is repaid. Volamahaso has not yet adopted specific support mechanisms for women and youth entrepreneurs. However, they have developed a mechanism to softened the conditions of access, the repayment period, the loan repayment method in partnership with the **PROJERMO** (Young rural entrepreneur project in the Middle West), which has posted a deposit with their agency to guarantee repayment of loans contracted by young entrepreneurs.

- 3) **The Agricultural Development Fund (FDA)** is a national financial tool that mobilizes funding and allocates financial support. The FDA targets producers and their organizations and covers the three sectors Agriculture - Livestock - Fishing. For reasons of not doubling the EO sector's financing with PROSPERER, the FDA has not yet assisted in the EO sector. Eighty per cent of available financing is used to finance the three sectors (rice, corn, honey), prioritized by the DEFIS program of the Ministry of Agriculture. FDA strives to provide equity in access to finance, sustainable management of natural resource capital and progressive pooling of State / Sector / Donor resources. Its areas of intervention cover:
 - ? direct services to farms for technical, economic and management support, applied research, access to markets
 - ? access to production factors (materials, inputs, equipment and infrastructure)
 - ? structuring and promoting value chains
 - ? agricultural training and the installation of young farmers
 - ? strengthening support systems for producers
 - ? support for integration of products into the market economy
 - ? finance interregional exchange visits and co-finance foreign trade

The FDA receives grant requests for services from their regional FDAs and ensures the monitoring/evaluation of funded projects. Although the FDA has not concentrated on climate change, it has funded research on rice varieties suitable for climate change.

- 4) **FORMAPROD** is a program that improves agricultural productivity and increases the income of family farms through vocational training for young rural people. It aims to prepare the new generations of young rural people for farming jobs and to support sustainable financing systems. All good practices are tracked in knowledge management and communication system.
- 5) **Fihariana**^[27] is providing technical and financial support to Malagasy people with practical projects. Entrepreneurs can access loans ranging from 200,000 Ariary to 200 million Ariary to complete their project. The goal is to improve the economy of Madagascar through entrepreneurship and job creation with a goal of creating 10,000 jobs a year. The Malagasy State, through Fihariana plays the role of guarantor. The main partners, BNI and BOA banks, provide grant loans repayable at subsidized rates to young entrepreneurs with interest rates ranging from 4 to 9%. Fihariana does not target the essential oil sector. However, they have provided guarantees for young entrepreneurs that have taken out credit with banks. Their funding is not specified for adaptation to climate change.

Essential Oil Research: Two research institutions, CNRIT and FOFIFA, are conducting research on improvements to the essential oil value chain. All other research institutes focus on the staple food and cash crops of corn, rice, honey and coffee. Based on the consultations and the NAPA, the following climate change adaptation options aim to reduce deforestation, conserve soil to build resilient ecosystems for the sustainable production of EO

29) In addition to the identified priorities, and based on the further consultations with the UNIDO country office in Madagascar, the project will assess and consider the following adaptation technologies and solutions, including Nature-based Solution (NbS) in the EO value chain:

- a. Mainstreaming climate change adaptation into the EO value chain and the relevant EO regulatory framework and land zoning law.
 - b. Nature-based solution, such as restoration of degraded forest areas (plantation of the native species including native EO plants), support establishing enterprises by MSMEs to setup plant nurseries to produce native and EO plant seedlings for massive reforestation, wetland and flood plains conservation, ecosystem-based adaptation solutions and community-based natural resource management, including adaptive land use management to revive degraded land to build resilient ecosystems against the climate hazards.
 - i. Traditional technologies and methods, efficient irrigation, water-saving techniques including rainwater harvesting to address drought and low rainfall.
 - ii. Hazard and vulnerability mapping and monitoring, early warning and response system including weather and climate services for the EO value chain businesses.
 - c. Financial incentives including tax and subsidies, insurance, index-based weather insurance schemes, catastrophe bonds.
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30) Furthermore, a couple of business support services have been created to support MSMEs in transforming their business models, products and technologies into sustainable and profitable enterprises. The main support services are listed below. The project will explore potential synergy and cooperation with them.

? The **Innovation lab Madagascar**^[28]²⁸ is a multi-disciplinary team of young experts who support web development, web design and digital marketing. Similarly, **Human Network International** is exploring phones and devices that Madagascar households already own to bring in innovative, productive and sustainable ways.^[29]²⁹ The initiative recognized the importance of using ICT to develop and accelerate capacity building to use technology in smart and innovative ways. An example is targeted data collection for conservation statistics for WWF.

? Other innovation networks available to Madagascar include a French impact investing firm called **Investisseurs & Partenaires (I&P)** who support SMEs in Madagascar and 14 other countries in Sub-Saharan Africa. I&P's mission is to support the development of responsible and profitable African MSMEs that can create local 'added value' and long-term employment and generate positive social, environmental, and governance impacts.

31) In addition to the support for farmers and innovation, there are various **baseline projects in Madagascar** that directly and indirectly support the EO sector and its sustainable development.

Table 2: Baseline Projects

Project Title	Time-frame	Budget (\$million)	Financiers	Key objectives
PROSPERER (Support Programmer Rural Microenterprises and Regional Economies)	2007 - 2020 (14 years)	63	IFAD	<p>Objective: Promote income growth by consolidating rural micro-enterprises at local and regional levels in 9 regions (Analamanga, Haute mascara, Itasy, Sofia, Vatovavy Fitovinany, Atsinanana, Analanjirofo, Boenyand Bongolava).</p> <p>? Component 1 - identifying, mobilizing SMEs and pairing the producer organizations with exporters. It also aims to provide extension services support.</p> <p>? Component 2 - providing professional training in marketing and management. The component also supported over 6,000 youth and their integration into entrepreneurship</p> <p>? Component 3 - improving rural finance and risk management. The project worked with partner MFIs (Volamahasoa) to provide working capital for vulnerable rural MSMEs. Through its Rural Investment Facility (FIR), the project subsidizes 50% of any equipment cost by working with the MFI.</p> <p>The experiences and networks mobilized through the PROSPERER project will be useful for this GEF/UNIDO project, especially SMEs mobilized, capacity building and rural financing and risk management.</p>

<p>Integrated Growth Poles and Corridor Project PIC (SOP2)</p>	<p>2018 - 2023</p>	<p>200 (1.2 for Essential Oils)</p>	<p>World Bank</p>	<p>It aims to contribute to the sustainable growth of the tourism and agribusiness sectors by enhancing access to enabling infrastructure and services. EO sector support will take place in Nosy Be and in Ambanja within the northern DIANA Region. It will benefit small-holder farmers active in the EO sector in collaboration with Fahriana. They have conducted an inventory of distillation technologies and have identified 1 alembic technology that reduces the use of fuel wood by 80%. The technology is expected to be first piloted in July 2020. They will work with the Ministry of Industry to create legislation mandating the use of more efficient distillation equipment. They will also provide a small revolving grant on the order 10,000 ? 40,000 dollars (a maximum of USD 700,000) in addition to 7,000 each in non-repayable capital to startups for integration of more efficient distillation technologies.</p>
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<p>Madagascar: Promotion and Adaptation of channels of agricultural value to climate change (PrAda)</p>	<p>2017- 2022</p>	<p>17.5</p>	<p>GIZ</p>	<p>PrAda is working in the south and south-east of Madagascar (Androy, Anosy and Atsimo Atsinanana regions) to promote adaptation in agricultural value chains. Relevant value chains to this project include ginger, cloves and vanilla. The project aims to 1) improve access to agrometeorological advisory services with a crop calendar that can be accessed by a 3-2-1 hotline by actors in the value chains, 2) train more than 2,000 small producers in business management and nutrition (Farmer Business School), 3) work with insurers and regulators to reform insurance codes and introduce climate risk insurance for at least 1,000 people involved in the value chains, 4) facilitate direct contracts between producers and the private sector, so that 5,000 farmers get better prices for their products and have more income security. The UNIDO/GEF will collaborate with this project, especially related to use of agrometeorological services to develop insurance products, training SMES with adaptation technologies and services and financing</p>
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Sustainable Landscapes in Eastern Madagascar	2016-2026	69.8	GCF / Conservancy International and EIB (Althelia and the EIB bond)	<p>Addresses smallholder vulnerability to access private sector investment. The project is pioneering Green / Climate Bond with all returns and profits being re-invested to capitalise a Climate Change Trust Fund for Madagascar. Public sector interventions (managed by CI) are not-for-profit adaptation, mitigation, capacity building and mainstreaming activities to reduce smallholder farmer vulnerability and reduce GHG emissions from deforestation. Private sector interventions (managed by EIB) are for-profit activities, including traditional loans, equity investment, profit participation loans (PPL) to deploy financial support to communities, farmer organizations and sustainable companies.</p> <p>The present project will seek synergies with this GCF project and build on lessons learned with the aim to identify future collaboration, in particular referring to the development of a sustainable financial mechanism to support EO smallholder farmers in Madagascar.</p>
Transforming Financial Systems for Climate	2019-2026	240 (GCF) 413 (AFD)	GCF / AFD	<p>Implemented in 17 developing countries, including Madagascar and seeks to scale up climate finance in the targeted countries, to redirect financial flows, and reinforce the capacity of local partners in sustainable energy, energy efficiency, housing, agriculture, forestry and water and waste management. The Program will i) provide credit lines with tariffs/incentives tailored to climate investments needs, (ii) provide technical assistance grants, and (iii) feed into the public policies of the governments concerned. It aims to alleviate the lack of innovation/risk aversion and liquidity constraints/interest rates that are too high for the final beneficiaries. The AFD and GCF credit lines will mobilize funding brought by LFPs (20% of the AFD's and GCF's credit line), and end-borrowers will bring another 30% of the credit line amounts as equity investments.</p>

Adaptation planning support for Madagascar	2019-2022	1.46	GCF / UNDP	<p>The Readiness and Preparatory Support aims 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. It will also leverage emerging local and external funding opportunities. This objective will be achieved through three outcomes: (i) Climate risks and vulnerabilities in the water sector are assessed, and</p> <p>economic costs and adaptation options of the most vulnerable sectors are appraised; (ii) Coordination mechanisms and technical capacities for integration are strengthened to facilitate climate change adaptation mainstreaming into development; (iii) Institutional skills to access climate finance, and private sector engagement on climate change adaptation are enhanced.</p> <p>The present project will foster synergies and alignment with the lessons learned and best practices from this readiness support.</p>
Support to the semi-industrial processing of sugar cane	2013-2019	2.35 (EUR)	UNIDO	<p>Provides technical assistance and capacity building to local stakeholders, using a partnership with private enterprises to address the bottlenecks in the supply chain of sugar cane, from the production level, through the processing, storage, and marketing. The project result is to improve the productivity of the semi-industrial sugar cane sector and add value to products to generate more income, integrating small scale independent producers.</p>

<p>Adaptation Accelerator Program: Building Climate Resilience through Enterprise Acceleration (AAP)</p>	<p>2019-2023</p>	<p>2.37</p>	<p>GEF</p>	<p>The proposed project addresses the key binding constraint of limited access to credit for SMEs in developing countries, with a focus on enterprises that are relevant to the goal of advancing adaptation and resilience. By building the information base needed to inform investors; linking enterprises to investors with appropriately matched risk appetites and portfolio interests; and providing technical support to strengthen enterprise-level ability to attract investors, the project will address the principal barriers identified. AAP foresees to build on the expertise of CI?s impact investing fund Conservation International Ventures (CIV) and its Conservation Investment Partners (CIP) network, which have extensive financial expertise in enterprise development and impact investing.</p>
<p>Adaptation SME Accelerator Project (ASAP)</p>	<p>2021-2024</p>	<p>2,53</p>	<p>GEF</p>	<p>The overall purpose of the project is to catalyze the markets for climate resilience and adaptation solutions in developing countries and promote greater use of these solutions by customers. The project will do this by building the ecosystem of SMEs involved in adaptation and climate resilience in developing countries through a program of market mapping, convening and network building, and incubation/acceleration. Project activities will include: refining the taxonomy of the range of climate resilience solutions and segments, mapping companies and markets, sharing market information with market participants, building networks and holding convenings of adaptation-focused SMEs regionally, and enabling existing incubator and accelerator programs to begin enrolling and supporting adaptation-focused SMEs</p>

Business as Usual (without project intervention)

32) In the absence of support for CNHEO and the EO sector in general, there will be limited awareness on local and national levels on how the integration of climate change adaptation in the sector can make value chains more resilient. There would also continue to be limited coordination or enforcement for sustainable EO development. Business growth support services will continue to have a limited focus on climate adaptation technologies, products and services, and reducing the impact of climate change on the EO sector. In the absence of this project, stifled innovation and MSMEs would continue to have limited support to build their businesses resilient to climate change. CNHEO would not have an enabling environment for financing to build climate-resilient MSMEs to scale up their businesses, nor a policy framework would priorities addressing the barriers and climate impacts. There would also be limited coordination mechanisms and policies to engage MSMEs to mainstream climate resilience. CNHEO would focus on green growth in general, including reducing deforestation, but not proactively on adaptation. CNHEO would also not have the capacity to promote synergies across ministries active in the essential oil sector.

33) Existing MSME support services would continue to lack the capacities to transform adaptation technologies, products and services into marketable products. Without an understanding of how to quantify the adaptation and resilience benefits of projects, FSPs will not have the capacity to tailor financing (seed and business growth capital) to support adaptation MSMEs to grow nationally and regionally. Current Agricultural Development Funds will continue to focus only on staple crops.

34) On the local level, there will be limited awareness and capacities to acquire adaptation technologies by both the growers and producer's associations active in the essential oil value chain. In particular, the small-scale growers will continue to be marginalized. They will continue to have limited technical and financial support to access technologies and services to make their production more resilient. Vulnerable communities, including women and youth most impacted by climate change, would not have access to safety nets and diversified livelihoods (such as MFI products) to withstand climate change impacts. They would not be able to voice their needs on what kind of adaptation measures can improve their productivity in a sustainable way, such as women who have the laborious tasks of cultivating essential oil plants. Climate risk insurance will continue to be absent from the EO sector preventing all stakeholders along the EO value chains from rebounding after climate shocks such as more frequent cyclones.

35) In a post **COVID** world, there would be limited means to increase nationally-driven country resilience with resources likely to focus on seemingly more urgent priorities. There will continue to be limited access for vulnerable populations, especially youth and women in rural areas, to participate in income diversification and entrepreneurial activities. By not increasing the resilience of the EO sector, it is most likely that the crops and feedstocks for the production of EOs will continue to be susceptible to extreme climate events (droughts and floods) and disease pest proliferation.

A1.3. The proposed alternative scenario, with a brief description of expected outcomes and components of the project

36) The proposed project seeks to catalyze a market for adaptation technologies, products and services by nurturing and promoting innovations that address climate adaptation needs of the vulnerable groups in Madagascar while conserving natural resources and ecosystem services. The proposed project interventions will support approximately 34,005 small-scale farmers involved in the EO sectors in the most vulnerable regions of

the country, namely Vakinankaratra, Amoronimania, Haute Matsiatra, Vatovavy fitovinany, Atsimo atsinanana and Ihorombe. It will furthermore provide guidance to the newly established EO national platform CNHEO to mainstream resilience and innovation along EO value-chains and enforce sustainable development by transforming the new EO development decree into a Sustainable EO Development Strategy.

37) The acceleration of local adaptation MSMEs within the EO value chain, as well as the piloting of their proven and high-impact innovative climate change adaptation-oriented technologies and solutions for the EO value chain will provide not only trainings, coaching, mentoring and business growth support, but more so facilitate the business replication and scaling up of successful best-practice examples and best available technologies suitable for the local market that can address the adaptation needs along the EO value chains. Business growth and investment facilitation services will ensure that identified MSMEs will be nurtured to develop into commercial businesses with scalable solutions for large-scale deployment of adaptation solutions. The selection criteria of eligible MSMEs will be defined in the inception phase of the project and will include ecosystem-based adaptation solutions and climate-resilient technologies that have been tested in West Africa through the United Nations Environment Programme's (UNEP) Microfinance for Ecosystem-based Adaptation (MEbA) project[30]³⁰. Sample technologies and practices that may be promoted through this approach may be accessed [here](#).

38) To ensure a holistic approach in project interventions and ensure accessibility and affordability of adaptation solutions for vulnerable populations along the EO value chains, the project envisages capacity strengthening of EO value chain stakeholders through training and awareness raising activities as improved provision of financial and insurance services. Insurance groups will also be trained to tailor products to vulnerable populations that support adaptation. The project will train Financial Service Providers (FSPs) to provide credit lines to the vulnerable groups to borrow and acquire adaptation technologies, products and services.

39) UNIDO has a wealth of knowledge and experience in developing MSMEs, regional experience in SSA and its strong partners that will be able to support this project. In particular, UNIDO will leverage its partnerships are follows:

- a. The **Private Financing Advisory Network (PFAN)**, hosted jointly by UNIDO and the **Renewable Energy and Energy Efficiency Partnership (REEEP)** is a global network of climate financing experts that offer business coaching and investment facilitation to entrepreneurs developing climate projects in emerging markets. The experts in the REEEP PFAN network offer personalised one-on-one coaching and targeted introductions to investors, providing a fast track to commercial investment. In the course of the present project, it is foreseen for PFAN to work with MSMEs supported by the project and to provide them with investment facilitation services so that they can leverage investments to expand their projects (grants, debt, equity) from their global, regional and national private financing networks. This will be based on the experience and lessons learned from GEF/UNIDO project in South Africa (GEF ID 5704), where this approach has already been successfully applied. Clear synergies and links will be established with PFAN in the proposed GEF/UNIDO Adaptation project during the PPG phase.
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b. UNIDO and UNEP are leading the transfer of climate technologies, especially adaptation technologies, through hosting the **Climate Technologies Centre Network (CTCN)**. The CTCN has recently developed guidelines providing identification and evaluation assistance when looking for adaptation solutions. CTCN offers support through an Incubator Programme as well as through financing opportunities under the AFCIA (Adaptation Fund Climate Innovation Accelerator) programme funded by the Adaptation Fund. Thus, linking the present project to international and regional accelerators will allow supported MSMEs access to increased learning and adopting their successes to enrich the training programs. Clear synergies and links will be established with CTCN in the proposed GEF/UNIDO Adaptation project during the PPG phase.

40) The project seeks to enable the groundwork for institutional and policy support for adaptation innovation in the EO sector by supporting CNHEO in Component 1. Components 2 and 3 will stimulate both supply (Component 2) and demand (Component 3) sides for scaled and effective deployment of adaptation-oriented solutions specific to the EO value chain. The project Theory of Change is illustrated in Figure 4.

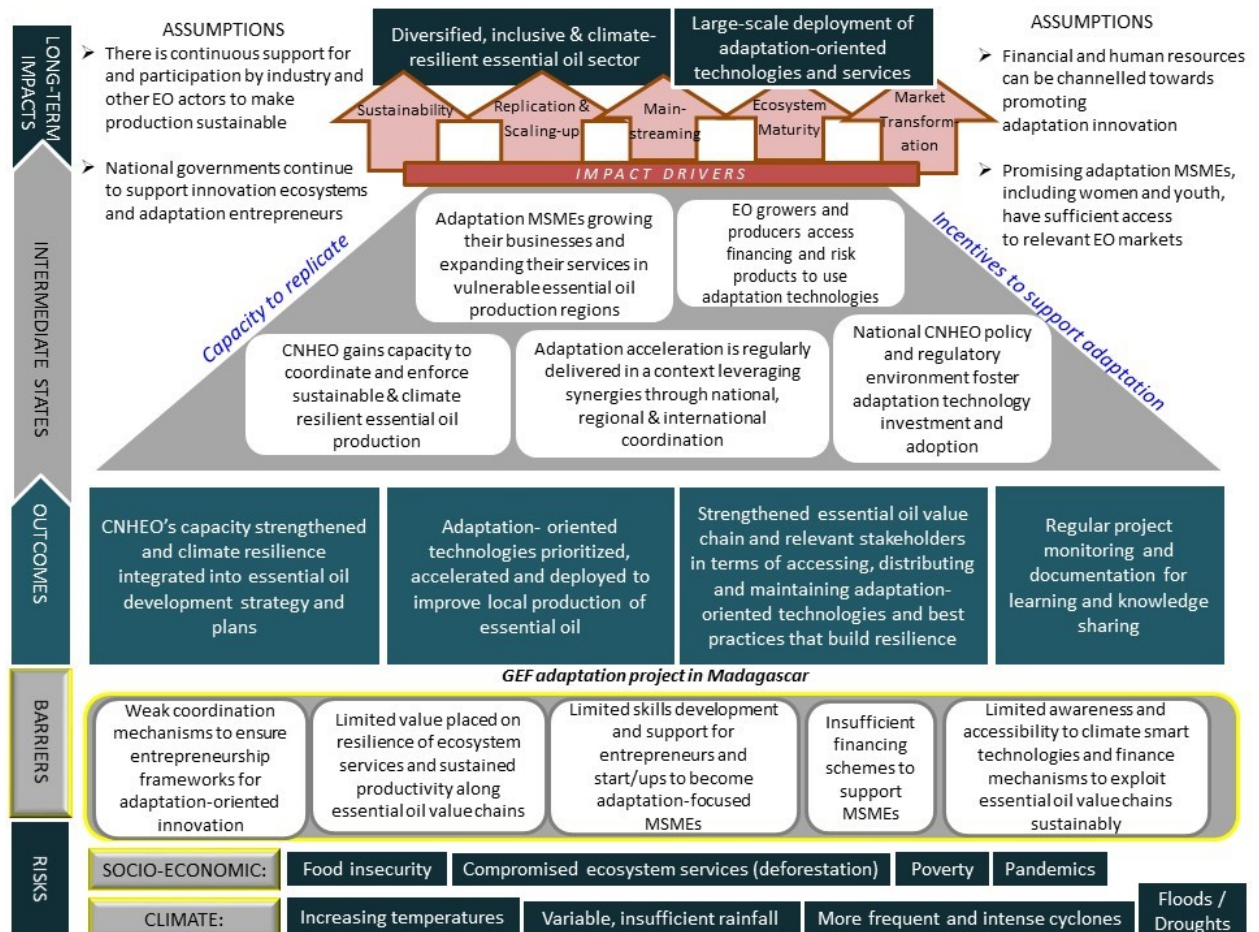


Figure 4: Theory of Change

41) The project has been designed to address the identified climate and related socio-economic risks set out in the previous section, as well as existing barriers to climate change adaptation, innovation and entrepreneurship in Madagascar. The expected outcomes and impacts aim to contribute to build a diversified, inclusive and climate-resilient essential oil sector, while promoting large-scale deployment of adaptation oriented technologies and services.

42) As adaptation is local, the proposed project will focus on mainstreaming adaptation TPS particularly in the most vulnerable regions in the country, such as Vakinankaratra, Amoronimania, Haute Matsiatra, Vatovavy fitovinany, Atsimo atsinanana and Ihorombe. The identification of the specific regions and climate change risks will be validated in the course of the PPG phase through a Climate Risk Vulnerability Assessment.

43) The proposed project will be addressing the identified barriers and risks by strengthening of the newly established CNHEO as to mainstream resilience and innovation along EO value-chains and enforce sustainable development by transforming the new EO development decree into a Sustainable EO Development Strategy. As such capacity gaps will be addressed with targeted capacity building for policy makers and institutional actors. Furthermore, selected adaptation-oriented technologies and solutions will be prioritized, accelerated and deployed to improve the local production of essential oil. Special focus will be given to strengthening EO value chains and relevant stakeholders in terms of accessing, distributing and maintaining adaptation-oriented technologies and best practices that build resilience. Networking, advocacy, knowledge generation and exchange will enhance awareness amongst ecosystem stakeholders and increase the impact of the project whilst increasing opportunities for MSMEs and small holder producers in vulnerable regions of Madagascar.

44) IF the CNHEO gains capacity to coordinate and enforce sustainable and climate-resilient essential oil production as to support the national policy and regulatory environment to foster adaptation technology investment and adoption, and adaptation acceleration is regularly delivered in a context of leveraging synergies through national, regional and international coordination, THEN adaptation MSMEs can sustainably grow their businesses and expand their services in vulnerable regions. ALSO EO growers/distillers will be able to access financing and risk products to acquire suitable adaptation technologies and solutions.

Component 1. Institutional capacity building and mainstreaming climate resilience into Essential Oils (EO) value chain

Addressing Barrier 1: Weak coordination mechanism to ensure sustainable, climate-resilient growth and formalized entrepreneurship frameworks for adaptation-oriented innovation along the essential oil value chain

Addressing Barrier 5: Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity along essential oil value chains

Outcome 1.1 New strategy provides direction to develop climate-resilient EO value chain

Output 1.1.1 National Committee of Essential Oils, Vegetable Oils, Extracts and Oleoresins (CNHEO) develops a new Essential Oils (EO) strategy that integrates climate adaptation and resilience

45) Initially, the project will strengthen the CNHEO to develop a climate-resilient Essential Oil value chain Development Strategy that promotes and integrates climate change adaptation-oriented technologies and solutions and business model innovation throughout the EO value chain. Identification and understanding of

climate risks within the EO value chain will be the basis for developing the strategy to promote and integrate climate change adaptation-oriented technologies and solutions and business model innovation. The strategy will conduct a stakeholder mapping and priorities the most vulnerable sector and the stakeholders in the EO value chain, especially the cultivation and growers (priority will be given to women and youths). A mapping of EO zones will be conducted as to update and introduce sustainable production zones into the strategy and identify adaptation needs to address the climate risks within the value chain. This national strategy on the sustainable production of essential oil will a) foster the enabling conditions to adopt climate-smart adaptation technologies/measures; b) catalyse green investments and create a market pull in the climate adaptation space for priority EO value chains and c) provide policy support for key issues such as strengthening and rehabilitating forest ecosystem services, particularly through Nature-based Solutions, such as EbA, which is a prerequisite for the successful and sustainable production of EO. The main objective is to set the framework and recommendations for integrating climate adaptation into the existing EO strategy development. Furthermore, the project will support the CNHEO to establish sustainable EO production standards and integrate lessons learned from the PIC, AAP and other GEF and GCF projects. The project will build on **developed taxonomy for adaptation solutions, lessons learned and best practices from the GEF SCCF Adaptation SME Accelerator Project (ASAP), in order to ensure strategic complementarity and alignment** for the government officials on policy development that promotes adaptation oriented MSMEs. **Clear synergies with the ASAP will be defined in the course of the PPG phase.**

Output 1.1.2 Recommendations on regulatory instruments and measures to promote the uptake of innovative adaptation technologies and services into the essential oil value chains developed

46) CNHEO will administer the development of recommendations on regulatory instruments for policymakers and regulators to use as a conceptual framework to guide all the stakeholders engaged in the EO value chain to apply appropriate climate change adaptation technologies in their business activities. The recommendations will elaborate on the developed EO strategy and identify existing policy and regulatory gaps based on which appropriate necessary regulatory instruments will be suggested, addressing i) clear guidelines and requirements for the stakeholders to comply with; ii) the registration of all size producers of the EO, iii) the adoption of climate-resilient technologies, products and services throughout the EO value chain.

47) An analysis of EO market studies will be conducted to improve EO product diversification along the value chains. In close coordination with ASAP and their taxonomy project on adaptation technologies, CNHEO will stock take potential adaptation technologies and services to indicate how an adaptation focus can best be integrated and marketed into the current innovation ecosystem. They will reach out to the Global Commission on Adaptation to enhance the country's expertise on adaptation.^[31]³¹

Outcome 1.2: CNHEO has capacity to support integration of adaptation and resilience into the essential oils value chain

Output 1.2.1 Members of the CNHEO platform trained in promoting the adoption of gender-responsive climate-resilient services along the EO value chain

48) A better understanding of climate-related risks and vulnerability assessment throughout the EO value chain will inform the identification of adaptation technology, products and services, and innovations to receive acceleration services. Hazard and vulnerability mapping and monitoring (including forest fire) will help identify hotspots and plan appropriate adaptation and disaster risk reduction solutions, including uptake of weather and climate services to plan and prevent the risk of climate hazards. CNHEO will receive tools to conduct climate risk vulnerability assessments (CRVAs) and improve resilience planning for priority EO sectors. CNHEO will nominate experts to conduct the vulnerability assessments. Adaptation responses that promote sustainable management of biodiversity, ecosystems and ecosystem services will subsequently be prioritized accordingly.

49) The project will strengthen the capacities of all relevant institutions, to accelerate innovation related to sustainable production and climate-resilient technologies in the EO value chain. The CNHEO platform, industry associations and banks will receive awareness-raising on the types of adaptation innovations and business plans that can be scaled up in their particular aspects along the EO value chain. This will ensure that MSMEs offering adaptation-oriented technologies and solutions will have all the needed supports and market opportunities, as well as leverage access of these technologies and solutions to the vulnerable population, namely small scale producers in the EO value chain. A particular focus will be given to the participation and support of women and youth. . During the PPG phase a capacity needs assessment will be conducted to specifically define the necessary trainings and respective target groups.

50) CNHEO will provide improved tools for cross-sectoral planning and formulation of priority actions for climate adaptation. To incentivize needed investments and private sector engagement in climate resilience and adaptation building, policy guides and associated technology roadmaps will be developed to guide and stimulate the development of adaptation-oriented industries and grab opportunities in emerging markets for businesses and investors.

51) The CNHEO platform will organize climate change adaptation focused initiatives such as AAP, ASAP in coherence with GEF and GCF funded projects. Initially, a mapping of stakeholders and the EO value chains will help to understand product diversification and cross-sectoral supports and cooperation for sustainable EO development. It will also ensure that all actors, particularly women, youth and small producers along the value chain benefit the most.

52) The project will ensure CNHEO's close collaboration with the PIC and ASAP projects to ensure synergies. The platform will enhance the coordination between relevant the MSME and the national stakeholders involved in EO value chains. The CNHEO will further coordinate funding sources such as the GCF-funded Climate Change Trust Fund and the World Bank PIC's support for EO MSMEs. CNHEO will build on any cooperation mechanisms already established via the PROSPERER project (IFAD) that has harmonized producers and exporters in the EO sector.

53) The project will coordinate with other GEF projects that reinforce climate change adaptation awareness within agencies and organizations, particularly with ASAP's strengthening the regional understanding of adaptation and innovation (See Coordination section).

Component 2. Innovative adaptation technologies and services promoted and deployed along the EO value chain

Addressing Barrier 2: Limited skills development and support for MSMEs and start/ups (especially youth and women-led) to transform their early-stage innovations into adaptation-focused technology enterprises

Addressing Barrier 3: Insufficient business growth services and financing schemes to support MSMEs, to deploy adaptation-oriented technologies and services and transform ideas into business opportunities along the essential oil value chains

Outcome 2.1 Proven innovative adaptation technologies and services are promoted and piloted along the essential oils value chain

Output 2.1.1 At least 20 MSMEs with proven and high-impact innovative climate change adaptation-oriented technologies and solutions for the essential oil value chain receive accelerations services (training, coaching, mentoring and business growth support)

54) Component 2 will promote the development, commercialization and deployment of adaptation technologies, products, and services along the EO value chain by supporting adaptation MSMEs to develop their innovations, improve their businesses and better access finance. Under this component, calls for proposal with clearly defined selection criteria will be launched and widely disseminated to attract local adaptation MSMEs that have already successfully piloted their solutions to receive further support through this project. At least 20 successful adaptation MSMEs with proven and high-impact innovative technologies and solutions will receive specialized training and technical assistance to help them understand and access financial services such as microfinance for improving their innovations. The selected adaptation MSMEs will further receive specialized business growth support and result based seed funding to grow their businesses. The project will support marketing of these technologies to build awareness throughout the country. The project will collaborate with existing initiatives and baseline projects to promote technologies via demonstration road shows and fairs.

55) One of the business avenues is to establish production facilities of native EO and other native plant seedlings in nurseries. Furthermore, a methodology for accelerating adaptation MSMEs will be adopted from the regional GEF projects: Adaptation SME Accelerator Project (ASAP), executed by the Lightsmith group, and the Adaptation Accelerator Program (AAP) executed by CI-Ventures.. UNIDO and Lightsmith group have agreed to incorporate the methodology developed by the Lightsmith group under the ASAP programme by the national accelerator programme to ensure alignment and consistency. AAP will complement the proposed project by providing sector expertise and mentoring on agro-business development based on climate-resilient technology and sustainable production practices. Additionally, adaptation MSMEs from these two programmes will be invited to participate to the calls launched by the proposed project.

56) Training provided to MSMEs will ensure that their business practices can be adaptive to adjust to the climate risks at hand and that their production models integrate an ecosystem-based adaptation approach. By providing the tools for MSMEs to identify risks and risk mitigation measures, it will be more likely that their ideas will be used in the long run throughout Madagascar. This will also increase their ability to access credit with stable income streams despite climate pressures.

57) The selection criteria for climate adaptation technologies and business models should aim to reduce the risks of climate hazards faced by the EO value chain, including:

- a. *the most innovative and sustainable climate adaptation technologies, products and services with strong catalytic and multiplier effects;*

- b. *substantial potential for scaling-up and hence maximizing impact for resilience building across EO value chains;*
- c. *business models with potential for replication and hence further increase the cost-effectiveness of the project interventions.*

In addition, applications will be screened considering their contribution to employment creation, empowerment of the women and the youth, and social-economic impacts at the household/EO MSME level. A list of identified best practices for innovative adaptation solutions is listed in **Annex D**. The selection criteria of beneficiary MSMEs will be further elaborated during the PPG phase but will include among others, i) detailed design and specific features, operations and implementation plan of the adaptation innovation technology, product or service and the extent to which the solution directly addresses the identified climate hazards and shocks, such as frequent droughts and floods, endemic crop diseases and high post-harvest loss and how these impact the EO sector in the short, medium and long-term ii) MSMEs need to develop and present projects that are technically, financially and operationally viable with clear assessment business as usual scenario (BAU), risks and mitigation options, sustainability of the project and clear strategy on how to avoid maladaptation iii) the extent to which the adaptation technology, products or service can be broadly deployed and replicated in order to serve vulnerable populations (especially youth and women) without regard to economic and social status in the country, iv) social, economic and environmental impact of the technology: improves quality of life, economic prosperity, reduces environmental damage and negative impacts on pre-existing stresses on communities, v), financials and investment structure, v) identification and mitigation of risks, etc. The detailed selection criteria will be developed at PPG stage through inter alia a detailed market assessment of the demand for the proposed services and extensive stakeholder consultations, especially with adaptation MSMEs, local financing institution, government counterparts and vulnerable communities. Coordination with ASAP will also streamline collaborations and linkages with regional accelerators.

Output 2.1.2 Four(4) pilot projects implemented to deploy innovative adaptation technologies and solutions

58) After going through the acceleration and business growth support, four key enterprises will be chosen as top adaptation innovators based on the potential of their ideas to be scaled up across Madagascar along the EO value chains. The selected enterprises will receive support to pilot their technologies and solutions. Specific focus will be given to the location the pilots, ensuring that the technologies and solutions will be deployed within the identified vulnerable regions of Madagascar. Geographical distribution within these regions will be taken into consideration. These companies will be used as case studies for the development of impact indicators. Chosen technologies/ideas must demonstrate that they can improve productivity and boost employment opportunities in EO, especially among the poor, youth and women.

Output 2.1.3 Results and experiences from the four(4) pilot projects documented and widely disseminated

59) The results and experiences gained from the adaptation technologies and solutions piloted under output 2.1.2, will be documented and widely disseminated after being validated by the CNHEO. Specific focus will be given to the role of the EO farmer cooperatives for the deployment of these adaptation technologies and solutions. Subsequently the CNHEO will showcase the achievements through the established the online platform (output 3.1.2) and foster further outreach at local demonstration/showcase fairs to be employed in Component 3. ASAP will also showcase the technologies and place them on their global website.

Outcome 2.2 Innovative financing to support deployment of adaptation technologies and services along essential oil value chains piloted

Output 2.2.1.

2.2.1 Model innovative financing mechanisms (FIR, FDA, MFIs) to provide dedicated (gender-responsive) catalytic financing designed and piloted in collaboration with actors in the financing ecosystem

60) This output will open up access to producers (both micro and small) and distillers, women and youth to targeted micro-finance so that they can acquire or rent the innovative adaptation-oriented technologies and solutions developed in Component 2. The project will work with Fahriana and Volamahaso due to their experience in providing credit lines and guarantees to the stakeholders involved from the start-to-end of the essential oil value chains. The project will work with other existing financial institutions and financing instruments such as FDR and FIR as well as other MFIs, to provide targeted lending instruments to rural people and associations that are depending on their livelihoods along the essential oil value chains. FSPs and MFIs will be selected on a competitive basis, based on their existing experience to receive training.^[32] Loans will be provided based on the condition that the technologies acquired are deemed supportive of adaptation and resilience building, taking into account the sustainable management of natural resources. FSPs will be trained to enable flexible payment schedules based on the timing of plant harvests/distillation or exporting before demanding repayment.

61) Furthermore, the project will explore innovative financial solutions such as lease models and digitally enabled solutions to improve consumer finance services. Subsequently, existing credit-worthy cooperatives/associations (emphasizing women's associations) will be mobilized and trained on using the loan products to access adaptation innovations. They will also be trained on how to manage loans and make repayments. The loans will also favor disadvantaged rural farmers such as youth and women.

62) During PPG, the project will assess the feasibility and viability of existing financial and insurance mechanisms in collaboration with DFIs, commercial lenders, brokers, MFIs and other international development programmes to tailor their products to climate adaptation and resilience actions. This feasibility study will also assess how existing funds/initiatives can be supported technically and operationally to coordinate with existing adaptation services (e.g., awareness-raising and coordination with the GCF project's Climate Change Trust Fund). The objective will be defining and developing suitable financial and insurance services suitable for the vulnerable populations along the EO value chains.

63) The project will focus on catalyzing additional public and private financing to develop and distribute climate adaptation-oriented technologies and services. This will be done by bringing private sector investments to expand and grow businesses of innovative MSMEs in the long term. During the PPG phase, a mapping of existing local, regional and international/ multinational financial service providers (FSPs) ? both private and public ? that could potentially provide financing, both for the innovator MSMEs as well as the target groups, will be conducted. These will include microfinance institutions, commercial banks, incubators, VC/equity funds, national and international / bilateral and multilateral finance institutions and programmes etc. The objective will be to identify potential partners that will provide additional early-stage capital as well as long-term financing for

high-potential MSMEs for business expansion and scaling up; as well as adapted financial products and services for the target customers of climate adaptation products and services.

Component 3. Knowledge sharing and Learning

Addressing Barrier 4: Limited awareness and access to climate-smart technologies and finance mechanisms to sustainably grow essential oil value chains, particularly small producers

Addressing Barrier 5: Limited value placed on the resilience of ecosystem services and their link to improved and sustained productivity along essential oil value chains

Outcome 3.1 Lessons from the project documented and widely disseminated

Output 3.1.1. Distribution and support channels established, strengthened and showcased to ensure that EO growers, distillers associations and cooperatives, including women and youth, of the identified vulnerable regions, access adaptation technologies and diversified livelihoods

- 64) Component 3 will then focus on raising the awareness of essential oil growers, distillers associations/cooperatives on the selected adaptation innovations, including sustainable production practices. Component 3 will initially establish regional CNHEO hubs to bring together all EO value chain stakeholders to support sustainable EO development research and capacity building on adaptation innovations. By supporting regional R&D efforts via existing research groups like CNRIT for specific EO value chains (e.g., cinnamon), will facilitate adopting and adapting adaptation technologies to local contexts.
- 65) Furthermore, through the regional CNHEO hubs, technical training and repair centers will be funded. These centers will ensure targeted training for EO stakeholder, including women and youth-based organizations, and encouraged to access products suited for productive outputs in the local context to sustain their livelihoods. Additionally, EO value chain specific equipment can be continually maintained, repaired and used.
- 66) The training and support will also include training on *sustainable plant sourcing, drought-resistant seeds, eco-processing, packaging and conservation, agroecology, agroforestry and organic fertilization practices* as well as manufacturing of ancillary products along the value chains, such as soap and cosmetic items (e.g., soaps, lotions, shampoos). Highlighting opportunities along the value chain will ensure that the rural populations can appreciate diverse sources of incomes. Building on PROSPERER, GEF funds will also be used to establish market linkages between producers and exporters. This project will ensure that exportation is enhanced even for small producers.

Output 3.1.2. Online platform to showcase adaptation technologies, their benefits and suppliers established and managed by CNHEO

CNHEO will develop an online platform to share knowledge on adaptation solutions in the EO sector in Madagascar. Knowledge and awareness-raising products will be streamlined with and made available for publication through that platform. This will help to further improve the awareness and access to climate-smart technologies and finance mechanisms to sustainably grow essential oil value chains, particularly small producers.

Output 3.1.3 3 Lessons learnt documented and widely disseminated

67) This output will also document knowledge on adaptation innovation best practices, including those captured from the PIC, ASAP and PROSPERER projects for the integration of suitable technologies into EO value chains. Lessons learned will be disseminated to communities of practice (e.g., AdaptationCommunity.net, CoP for Resilience, the Global Commission on Adaptation) through the CHNEO and continuously updated.

Component 4. Monitoring and Evaluation

Outcome 4.1 Monitoring of results and evaluation

Output 4.1.1 Project effectively monitored

68) As recommended by the GEF STAP,[33]³³ Component 4 Monitoring and Evaluation is a continuous learning process from what has been implemented (both success and failure) and acquiring new knowledge. Component 4 will update the PROSPERER M&E system, which came to a close in 2020. The project will link with the FDA M&E system that has been developed to track best practices for general IFAD projects and will work with MICA to capture lessons learned based on their extensive experience in knowledge management. The M&E include monitoring and evaluation of project activities, economic, environmental, social benefits, including capacities improvement of women and youth in the EO production. The project will collect gender-disaggregated data and indicators, and decision metrics will be chosen in a participatory manner with stakeholder involvement. Indicators will be identified and used to track intended changes resulting from the project intervention. Qualitative and quantitative indicators will be used to quantify in numbers and descriptive information such as the effectiveness of adaptation measures to the impact of climate shocks during essential oil scaling up. Training on M&E will be provided to enhance the national capacity to help systematic collection of data on the indicators on the extent of progress and achievement of the project objectives. This will help to further improve the implementation of the project and assess the degree of success of the project. Monitoring of the adaptive capacity of small-scale farmers with EbA focus will also be sought through indices previously developed and which can be systematically applied by MFIs or technical partners. A series of tools developed by MEbA[34]³⁴ that can be used through partner MFI will be explored.

Output 4.1.2 Mid-term review and independent terminal evaluation conducted

69) The mid-term review focuses on operational aspects of the project and will assess the performance of the adaptation solutions in addressing the climate impacts and risks identified within the EO.

70) The terminal evaluation reviews expected and achieved accomplishments in building a resilient EO value chain by critically examining whether the project outputs helped to get the outcomes and that ultimately achieve the project objectives, especially assessing the relevance, impact, effectiveness, sustainability, scalability and replicability of the adaptation solutions. . The data collected will evaluate adaptation options, such as EbA, based on their potential to provide evidence of response to climate risk for medium and long-term effects according to the GEF's requirements and enrich lessons learned.

A table of the expected Outcomes, Outputs and indicative Activities is included in Annex A.

A1.4) Alignment with GEF focal area strategy

The proposed project aligns directly with the GEF Climate Change Adaptation Strategy 2018-2022:

Objective 1: Reduce Vulnerability and Increase Resilience through Innovation and Technology Transfer for Climate Change Adaptation.

71) The project directly supports innovation and technology transfer through the identification of innovative adaptation technologies for the EO sector. It also supports MSMEs with an accelerator and training to extract and support the growth of home-grown or locally adapted technologies that will make the essential oil chain more productive.

72) The project will further contribute to *Objective 2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact*, through the support of the sustainable EO development strategy, and *Objective 3: Foster Enabling Conditions for Effective and Integrated Climate Adaptation*, by fostering the engagement of MSMEs with the private sector stakeholders, MDBs, financial actors, MFIs, incubators and accelerators.

A1.5) Incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF, SCCF, and co-financing

73) Due to the urgent need to support vulnerable rural populations to adapt to existing and projected climate change impacts, the UNIDO-GEF project will be the first in Madagascar to support adaptation innovation proliferation and replication, specifically for sustainable essential oil value chains with the total requested GEF contribution for this project of USD 2 million.

74) The project is uniquely timed to support the new EO platform (CNHEO) to integrate adaptation and to coordinate other support for EO cultivators and producers. The proposed project will hence develop a sector specific strategy integrating climate resilience into the platform's agenda and giving the opportunity to emphasize on the specific needs of EO cultivators and producers in vulnerable regions vis-?-vis the challenges imposed by climate change. The project will work with BNCC's experience with the REDD+ policies and build

on ASAP's expertise with government decision-makers to develop the sustainable EO strategy. The project's support for the CNHEO platform will enable them to coordinate PIC's revolving grants and support from FDA and MFIs so that all geographic regions, EO value chains and marginalized small producers, including women and youth, receive support.

75) The project will also be the first to provide technical assistance (TA) through the acceleration of adaptation MSMEs and the piloting of their proven and high-impact technologies and solution for the EO value chain while ensuring the conservation and sustainable management of natural resources through the EbA approach. The project hence offers a market opportunity for these MSMEs that otherwise will be missed. Due to agreed collaborations during PIF development with AAP and ASAP, the project will maximize capacity building efforts for MSMEs by tapping into regional adaptation expertise and marketing efforts for business model scale-up and replication. By coordinating with PIC, ASAP and AAP, the proposed project will maximize and target business growth funding for the EO sectors. The ASAP toolkit and AAP curriculum will be used for the Madagascar accelerator to select SMEs. AAP will complement the proposed project by providing sector expertise and mentoring on agro-business development based on climate-resilient technology and sustainable production practices.

76) Reflecting on the increasing adaptation gap and vulnerability of EO cultivators and producers, the project will include the provision of training and showcasing for vulnerable EO stakeholders on adaptation innovations, including financing and insurance mechanisms to access and safeguard these innovations.

77) As a baseline, there has been no targeted support for adaptation in the essential oil sector. The PROSPERER project has been the most successful project relative to supporting a broad range of stakeholders in the target regions for their EO production. However, PROSPERER will come to an end in 2020 and was unable to support small growers and producers, women and youth. Its subsidies for equipment purchase with support from MFIs enabled more efficient distillation equipment to be purchased by EO distillers. However, due to limitations with funding, only a small subset of the producers was able to access more energy-efficient boilers, distillers and biomass briquettes, or other climate-resilient technologies and production practices for more efficient and sustainable production.

78) The proposed project will work with the Agricultural Development Fund (FDA) to provide the next and improved phase of PROSPERER. It will continue supporting EO efficient equipment acquisition by working with MFIs such as Valamahosoa. Energy-efficient distillation technologies identified by PIC will be replicated and adapted to the other essential oil sectors (and not just the World Bank PIC's support on ylang ylang) in all EO regions. Innovations detected via ASAP and PIC can provide answers applicable in the project's targeted localities provided that these innovations are effectively publicized and demonstrated. The promotion of EbA related technologies and practices has proven successful in previous experiences, and some tools developed by the MEbA project may be incorporated into proposed solutions both for MFIs and vulnerable populations[35]³⁵.

79) The project will also focus the support of FDA to the essential oil sector (since FDA is currently financing 80% of the rice, corn and honey production sectors) by supporting FDA and FIR (rural agricultural development funds) to have credit lines targeted to the EO sector focused on environmental sustainability and technological innovation. The project will train the FDA to empower essential oil producers and their

organizations to provide equity in access to finance and support the sustainable management of natural resource capital and progressive pooling of State / Sector / Donor resources.

80) It will also expand PROSPERER's professional training in marketing and management. As PROSPERER did not focus much on women and a small amount of training targeting youth, the proposed project will focus on capacitating women and youth in the essential oil sector.

81) The project will also expand the capacities of existing research institutes to focus on adaptation in the essential oil sector. For example, FOFIFA has had few mandates to support the essential oil value chain. In 2017, they were mandated by PROSPERER to develop a technical datasheet for geranium cultivation. In the context of this project, the project will help to identify and adopt essential oil technologies that promote adaptation and resilience with the support of research institutes such as FOFIFA and CNRIT. The research institutes can perform specialized activities such as preparing technical booklets on processing, conservation and storage of essential oil plants. The research centers can train technicians and farmers on best adaptation technologies and practices. Already, the FOFIFA Fianarantsoa center has offered to house laboratories that conduct research on essential oil production.

82) Once specific adaptation innovations are identified, the project will then support the capacities of the targeted beneficiaries on the ground to understand and provide feedback to improve the innovations. Support for building the capacities of lending and risk mitigation services will happen simultaneously so that the rural populations will have sustainable sources of credit to access the adaptation innovations. Communities will be provided training on how to use adaptation innovations and how to access credit lines to purchase or rent the innovations. With this approach, the project will enable a shift from having a patchwork of projects in different regions to providing scalable innovations in all EO sectors and geographies. Special attention will be given to climate-resilient technology (e.g., innovative water harvesting schemes, water/energy-efficient irrigation systems, solar dehydrators, efficient biomass stoves/ovens, renewable energy technologies ? RETs) and sustainable land management practices (e.g., agroecology, agroforestry, organic fertilization) as part of the technological packages offered through a variety of financial intermediaries and funding mechanisms.

Co-financing

83) Consultations with ongoing and planned baseline projects/initiatives were conducted during the PIF development phase. Through these consultations, UNIDO was able to mobilize or soft-circle the following amounts and types of co-financing.

? The project's support for CNHEO to coordinate grant and loan financing to MSMEs in the EO sector will enable the MFIs, Fahriana and Volamahaso, to become more heavily engaged. It is expected that the project will design a financial mechanism involving these MFIs and support its operationalization by CNHEO. The design and setup of the financial mechanism will be supported by UNIDO through its co-financing of *USD 169,350 (grant and in-kind)*.

? Co-financing will also come from the Ministry of Agriculture (*estimated USD 1.3 million in-kind*). The project will work with the Ministry of Agriculture to focus on adaptation in the EO sector. On the national level, it is estimated that the Ministry of Industry and the Ministry of Environment will also provide in-kind co-financing. Amounts will be confirmed during the PPG phase.

- ? *Private Sector partners* will provide contribution estimated at *USD 900,000* to the proposed project. The estimated contributions include provision of long-term funding through line(s) of credit through *National Banks and MFIs*, as well as additional equity funding through supported MSMEs and distilleries who are expected to raise additional capital into their businesses and projects. Through linking the project to the PFAN network ? MSMEs will leverage additional investments (grants, debt, equity) from their global private financing partners.
- ? Finally, the LDCF project will work with GIZ's PrAda to introduce climate risk insurance and will expand insurance products to support EOs other than ginger, cloves and vanilla, which are covered by PrAda. It has been estimated that PrAda will be able to provide *USD 300,000 in grant co-financing*.

A1.6) Adaptation benefits (LDCF/SCCF)

- 84) Mainstreaming climate change adaptation into the new EO production strategy and the development of Regulatory Instruments whereby the public authorities mandate for climate-resilience EO value chain will guide towards adoption of climate-resilient production of EO at the national level, generating multiple and beyond project scale climate benefits.
- 85) The project will transform the essential oil sectors to generates benefits from the climate change adaptation solutions by reducing climate risks such as flood and drought and sustaining more production of the EO. As a result, the EO value chain and the livelihoods of people involved in EO production will be less vulnerable to extreme weather events, and their income is expected to increase.
- 86) The project supports sustainable land management, at least 3,600 hectares. It has been assumed that throughout the project 6,000 growers/distillers will be trained, including **50% women** and 30% youth. Additionally, by adopting climate-adaptation oriented technologies and practices, the pressure on the ecosystems will be reduced and promotes sustainable land management. For example, the adoption of an alternative to firewood will allow to reduce pressure on forest and help to regenerate degraded forested areas. In addition to the share of financing of the project that is directly tied to climate actions, the project also generates climate co-benefits. Shifting to alternative energy sources for firewood allows regenerating degraded forested land, resulting in the reduction of GHG emissions and enhancing carbon sequestration. The use of drought and pest resistant EO plants seeds or implementation of ecosystem-based farming will require lower fertilizer levels and less labor inputs (current EO plant cultivation is labor intensive), resulting in higher productivity and low net emission hector output from the cultivation of the EO.
- 87) Along the essential oil value chains, the project will provide climate-smart technologies that will reduce post-harvest losses, improve processing and conservation techniques. In addition, the project will raise awareness from lessons learnt and knowledge sharing on environmental issues, ecosystem-based adaptation, and climate risk reduction. Incentives ? subsidies, insurance, index-based weather insurance and catastrophic bonds are potential financial instruments for risk mitigation, will be tailored to enhance climate resilience and loans and grants for adaptation solutions within the EO value chain.
- 88) **Additionally, the project is expected to promote entrepreneurship, including for women and youth in vulnerable communities, with income diversification and off-farm employment opportunities. This is likely to generate direct benefits to approximately 34,005 small-scale farmers involved in the EO sectors, of which 50% are foreseen to be women** (see Annex E). Through its planned cross-cutting gender activities, the project will give a special focus on fostering and improving resilience and adaptive capacity of local vulnerable groups and

in particular women groups. An emphasis will be put on the collection of sex-disaggregated data and indicators throughout the project monitoring in order to ensure the achieving of the set balance and foster gender balance in the EO sector. Detailed gender activities will be defined during the PPG phase based on a gender assessment.

A.1.7) Innovation, sustainability and potential for scaling up

Innovation

89) The project is innovative as it supports the acceleration and business growth of adaptation-oriented MSMEs with proven and high-impact innovative technologies and solutions for the EO sector. The project will have a replication model for scaling up the best climate-resilient technologies and sustainable production practices. To set the groundwork for adaptation innovation, the project will be the first to support the CNHEO EO platform to enact the first sustainable EO strategy. The timely ASAP program will jointly support an enabling framework for sustainable essential oil innovation that supports adaptation and building climate resilience among the rural population. Via CNHEO's improved coordination mechanisms, national institutions, higher education and technical institutions, and private banks and credit lending institutions will receive training on adaptation innovation successes and lessons learned.

90) Along with AAP and ASAP, the project will support large scale deployment of adaptation-oriented technology and business model innovations based on the need within the EO value chain instead of focusing on single track technology deployment. The deployment of different adaptation solutions will be based on the identified key intervention areas from the vulnerability assessments of Madagascar's essential oil value chains. MSME's will receive targeted technical support on how to best address the specific climate adaptation needs as well as respond to market-specific requirements and consumer demands. It is expected that this approach will provide cost-effective and tailored innovations according to the specific market needs along essential oil value chains (e.g., processing, storage and conservation).

Sustainability and Exit Strategy

To ensure the EO value chain continue adapting to climate change even without external support, the project has planned an exit strategy as presented below:

91) To ensure the sustainability of the adaptation-focused innovation, national ownership and national private sector engagement is crucial. Initially, the project will focus on building capacity in the CNHEO to identify early investors, support filling large seed funding gaps required for Madagascar MSMEs, and upscale deployment of adaptation solutions. Through institutional capacity building within the CNHEO and other relevant ministries, exchanges and linkages to industry associations, regional and international platforms will be facilitated to streamline cross-sectoral support and build national institutional capacities on adaptation innovation continue to receive support financially across sectors.

92) Component 2 will ensure project sustainability by enhancing access to adaptation MSMEs to technical assistance and growth financing. The project will attract and further nurture top talent MSMEs streamlined from baseline initiatives to find solutions for the most vulnerable to adapt to climate change for further acceleration and piloting of their proven and high-impact technologies and solutions. Furthermore, the establishment of

linkages to a partner network to provide business growth services to MSMEs will ensure the long-term sustainability of the MSMEs beyond the project duration.

93) The project will build on an existing microfinance lending foundation in Madagascar to extend credit to vulnerable growers and producers to acquire the adaptation technologies and services and deploy EbA and sustainable production practices. The project will link existing and new financing streams with credit lines to support adaptation innovation proliferation, such as the FDA, which channels funds (grants, loans, guarantees) to multiple financial institutions. Existing credit lending and risk insurance services will receive capacity development on adaptation innovation and adaptation, in general, to tap into their respective market opportunities and continue to offer and adapt such service after project termination. These interventions will enable the most vulnerable growers and producers to access the most sustainable production practices and energy-efficient and robust technologies that will build their overall resilience to climate change.

94) Furthermore, technical training and repair centers will be funded throughout the essential oil target regions so that equipment can be continually maintained, repaired and used. Women and youth-based organizations will receive targeted training and encouraged to access products suited for productive outputs in the local context to sustain their livelihoods. The target population will receive training on climate risk reduction through climate adaptation, such as EbA, ensuring resilient ecosystems for the sustainable production of EO.

95) Finally, while the project's activities will focus on the duration of the support, all project components are expected to continue beyond the closure of the project, ensuring their sustainability. For instance, the established CNHEO is foreseen to continue operating after the project completion. Furthermore, all knowledge on best practices and technologies will be stored in FDA's existing M&E database. Specifically, adding a learning emphasis and targeting the inclusion of gender dimensions will ensure that the best innovations are used by all actors along the essential oil value chains. Storing this knowledge will ensure national ownership and enable innovations to be easily identified for future support after project termination.

Scaling Up

The project will support the scaling up of adaptation innovations by addressing two key issues:

i) Lack of funding and investment vehicles aimed at early-stage companies:

96) The project will support establishing the required financing mechanism to ensure the successful graduation of MSMEs/start-ups into commercial businesses. Strategic alliances with identified partners, such as Fihariana will be established to set up suitable mechanisms to provide tailored technical and financial services to MSME's. The project will work with other innovation and adaptation innovation programmes such as AAP for financing the scaling up and deployment of MSME ideas in sectors even outside the EO value chains.

97) Innovation support will be provided via blended finance in the following structure: 1) Along with PIC and AAP, provide grant support for early-stage and forming businesses; 2) Repayable grants at zero-interest for the seed and growth phase, and 3) Support to regional ASAP and PFAN programs, for commercial investment to scale up mature products/technologies. Blending will be achieved through the provision of grants alongside development finance and commercial capital. The blended finance will reduce the implementation risk of adaptation-oriented technologies and is expected to create a conducive investment climate to attract large-scale investments and galvanize funding for large-scale deployment and replication. By tailoring lending and insurance products to groups working along the essential oil value chains, it will create a multiplier effect to encourage others to take out loans and obtain credit to acquire adaptation innovations or insurance products.

ii) *Limited access to financing by stakeholders working along the essential oil value chains:*

98) The project will support FDA to provide credit lines to the EO sector for the first time with the support of the new CNHEO platform. The credit lines will be essential so that the EO stakeholders can continue to pay for the adaptation technologies and services (e.g., energy-efficient boiler repair). The project will collaborate with GIZ to target the development of weather-based insurance products for the EO stakeholders. The project will also provide training to finance the intermediaries to develop targeted products and services throughout the EO value chain and ensure sustainable production and innovation in the processing.

[1]

https://reliefweb.int/sites/reliefweb.int/files/resources/2019_USAID_ATLAS_Madagascar_FFP_CRP.pdf

[2] World Bank Climate Change Knowledge Portal | for global climate data and information! CRU TS (Climate Research Unit gridded Time Series is widely used climate dataset.

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[13] USAID Climate Change Risk Profile ? Madagascar, June 2016.

[14] Madagascar Emergence Plan 2019-2023

[15] Maret, F. (2007) Distortions to Agricultural Incentives in Madagascar.

[16] Ibid.

[17] MSMES in this project refers to start-ups, entrepreneurs, micro, small and medium sized enterprises

[18] USAID Translinks: Promoting Transformations by Linking Nature, Wealth and Power

[19] Sep 2019 workshop findings on the Advantages of the EO Sector

[20] [INVEST_IN_ESSENTIAL_OIL_MADAGASCAR_en.pdf](#) (edbm.mg)

[21] World Bank Madagascar overview <https://www.worldbank.org/en/country/madagascar/overview>
June 2019

[22] <http://iem-madagascar.com/>

[23] <https://banyanglobal.com/wp-content/uploads/2020/08/USAID-Madagascar-Gender-Analysis-for-the-2020-2025-CDCS.pdf>

[24] FDA : Fonds de Développement Agricole ;PROSPERER : Programme de Soutien aux Petites Micro-Entreprises Rurales et aux Economies Régionales ;MFI : Institution de Micro Finance ; GIE : Groupement d'Intérêt Economique ; GEHEM : Groupement des Exportateurs d' Huiles essentielles de Madagascar ;CCI : Chambre de Commerce et de l'Industrie ; CSA : Centre de Service Agricole ;DREDD : Direction Régionale de l'Environnement et de Développement Durable ; MEDD : Ministère de l'Environnement et de Développement Durable ; DRAEP (actuellement DRAE) : Direction Régionale de l'Agriculture et de l'Elevage ; MAEP (actuellement MAE) : Ministère de l'Agriculture et de l'Elevage ; DRICA (actuellement DRICC) : Direction Régionale de Industrie, du Commerce et de la Consommation (avant Artisanat) ; MICA (actuellement MICC): Ministère de Industrie, du Commerce et de la Consommation (avant Artisanat) ; SREP : Service régionale de l'Economie et du plan ; FOFIFA : Foibe Fikarohana sy Fampandrosoana ny Ambanivohitra (Centre National pour le Développement Rural) ; MENSUPRES : Ministère de l'Enseignement Supérieur et de la Recherche Scientifique ; CNRIT : Centre National de Recherches Industrielle et Technologique ; CNRE : Centre National de Recherches sur l'Environnement ; CIRAD : Centre de Coopération Internationale en Recherche Agronomique pour le Développement ; MEH : Ministère de l'Energie et des Hydrocarbures

[25] <http://iem-madagascar.com/place-de-la-femme/>

[26]

<https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Madagascar%20First/Madagascar%20I NDC%20Eng.pdf>

[27] <https://fihariana.com/mg/ny-fihariana/>

[28] <http://www.ilab.mg/>

[29] <http://hni.org/hni-madagascar/>

[30] <https://unepmeba.org/>

[31] Global Commission on Adaptation: <https://gca.org/global-commission-on-adaptation/solutions>

[32] refers to project support for the FSPs and MFIs to develop loan products for individual farmers, associations and MSMEs to purchase the adaptation technologies and solutions.

[33] Strengthening M&E of Climate Change Adaptation, GEF STAP and UNEP, May 2017

[34] <https://unepmeba.org/>

[35] The MEbA project was implemented in the period 2012-2020 in two phases. Phase 1 (2012-2017) focused on training 5 MFIs in Colombia and Peru. In its second phase (2018-2020) MEbA provided technical assistance (TA) to nine MFIs in 8 countries including Benin and Senegal in Africa. An initial institutional assessment and green strategy was provided to **Vahatra** NGO in Madagascar. A leverage

ratio of 5:1 was obtained (5 USD of private funds disbursed towards EbA for each 1 USD invested in TA).

1b. Project Map and Coordinates

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

93) The regions for project intervention have been identified based on analysis of other projects such as PIC and where they have focused resources. The stakeholder consultations have also indicated that the region along the National Road 7 (RN7) lacks support and requires urgent adaptation interventions to improve the sustainable production of essential oil value chains.

94) A site close to a protected area will also be chosen as a pilot site due to the significant amount of climate impacts and pressure on the natural resource from essential oil production. There is an urgent need to promote sustainable use of natural resources and enhance the livelihoods of the local communities living near the protected areas. The objective of engaging with the local communities is to enhance their livelihoods through technical assistants to improve their production of EO. As a result, their pressure on the natural resources will be reduced, allowing recovery of ecosystem services to build a climate-resilient ecosystem and overall well-being of the Malagasy population.

95) A feasibility study, including risk analysis, an analysis of the population's interest in joining the project, and an analysis of the prospects for the sustainability of good practices, will be carried out during the PPG phase. The project will be reassessed against environmental and social safeguards. Specifically, the site will be chosen with respect to GEF's Standards and will abide by UNIDO's Operational Safeguard 2 requirement on the Protection of Natural Habitats and Biodiversity. Additional analyses will take place during the PPG phase when more information becomes available on the areas. During PPG, customization of potential adaptation solutions, adoption of EbA and avenues for applying circular economy within the EO value chain will ensure they are relevant and have the potential for adoption by the target populations.

96) Based on the maps and targeted regions, there are indigenous populations (peuples autochtones) in Marolambo; Manjakatombo-Ankaratra; Ambositra-Vondrozo; Ranomafana; Ivohibe and South Befotaky-Midongy. The aforementioned analyses will be conducted with inclusive consultations with the Indigenous Associations mentioned in the Stakeholder Table below during the PPG phase to make scientifically informed decisions and adjust proposed solutions to local customs and perceived needs.

97) Details on specific project locations will be determined during the PPG phase as per the project map below.

TARGET REGIONS AND INTERVENTION AREA OF OTHER PROJECTS / PROGRAMS

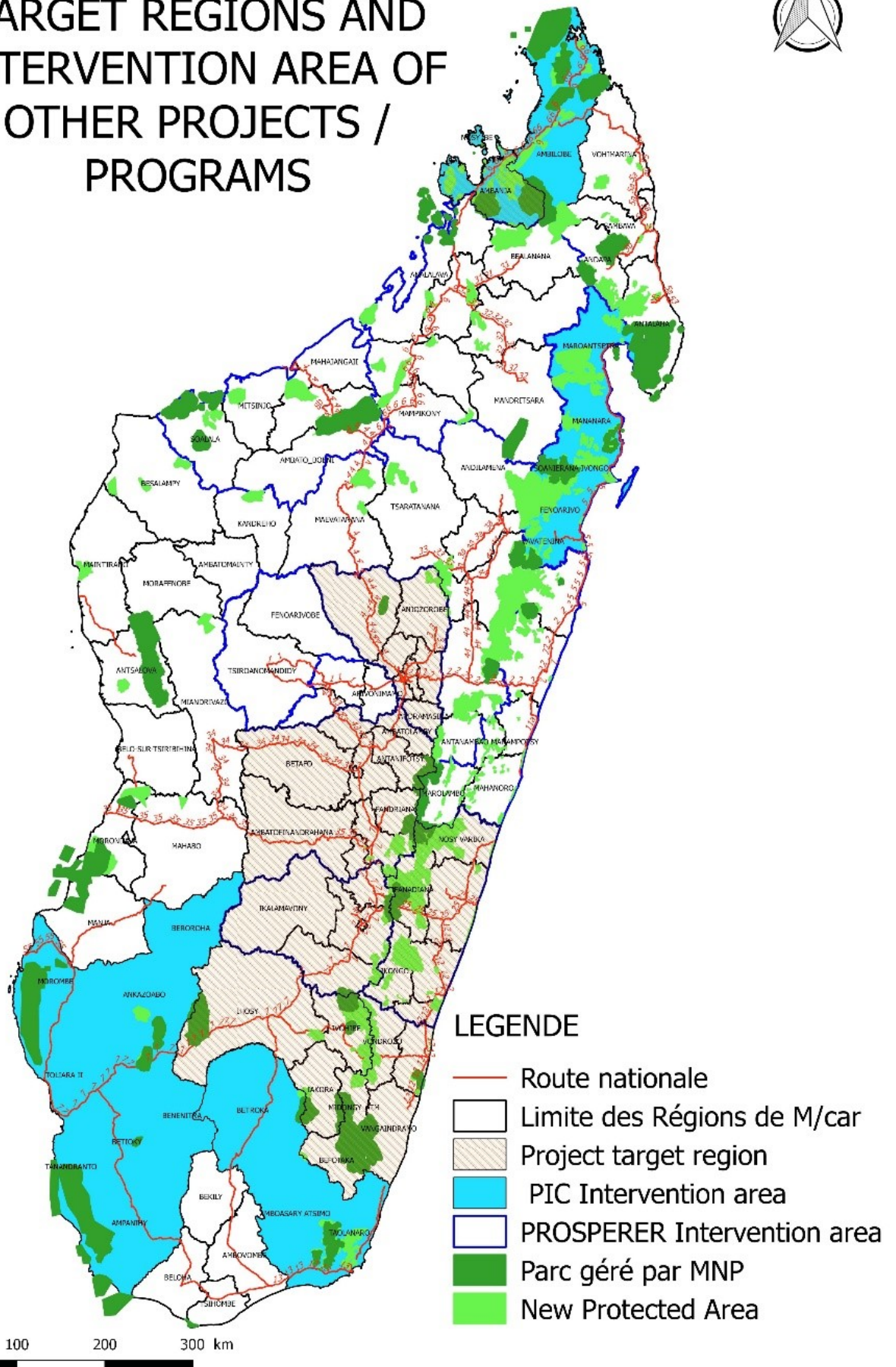


Figure 6: Map of target areas

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:

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

This project will establish cooperation through various means with the Government institutions, academia, research institutes, producer/distiller associations/cooperatives, women's and youth associations, private industrial players and NGOs, as well as with financial organizations (commercial banks and microfinance institutions) and other insurance agencies. The general roles of these groups for the project are described below.

During the development of the present PIF, a national expert has conducted data collection missions and interviews with relevant organisations and stakeholders, such as FDA, FOFIFA and multiple MSMEs active in the EO sector. Additionally, the UNIDO field office engaged closely with the National Bureau for Climate Change, the Ministry of Environment, Ministry of Industry, Ministry of Agriculture as to assess their interest and enable the inclusion of their insights and needs. Furthermore, online meetings have been conducted with AFDB, Conservation International and Lightsmith group to discuss synergies between projects.

The draft PIF has been shared with the National Bureau of Climate Change and respective comments have been integrated into the PIF. During the PPG stage, a detailed mapping and consulting exercise will be conducted.

Table 5: EO Stakeholders in Madagascar

Stakeholders	Role in Project	Current Role in the EO value chain
Government		

<p>National Bureau for Climate Change (BNCC) ? Ministry of Environment and Sustainable Development</p> <p>General Directorate of Environment</p>	<p>Project Executing Entity and member of the Project Steering Committee</p> <p>Support to CNHEO and improving links to sustainable land use management</p> <p>Support for the sustainable EO development strategy</p> <p>Information and awareness on adaptation alternatives</p> <p>Environmental monitoring of sustainable businesses</p> <p>Development of policies related to EbA in the EO value chain</p>	<p>Regulation on the use of wood as an energy source</p> <p>Application of the APA decree</p>
<p>Ministry of Industry Commerce & Crafts (MICA)</p> <p>? General Directorate of Industry</p> <p>? General Directorate of Trade</p>	<p>Member of the Project Steering Committee</p> <p>Executing Partner for Components 2 and 3</p> <p>Support to CNHEO's coordination, mapping and market analysis efforts</p> <p>Support in establishing the Adaptation Accelerator and in helping MSMEs</p> <p>Advocacy for the sustainable EO development strategy and in developing EO standards</p> <p>Represented in CNHEO</p>	<p>Promotion of entrepreneurship and cooperatives</p>
<p>Ministry of Economy and Finance</p> <p>Directorate General of Finance</p> <p>General management of taxes</p> <p>National coordination of inclusive finance</p>	<p>Member of the Project Steering Committee</p> <p>Facilitation of the reduction in the interest rate on bank credit / MFI</p> <p>Implementation of incentive taxation for sustainable microenterprises and the import of materials or equipment for the manufacturing of sustainable technologies</p> <p>Economic monitoring and evaluation</p> <p>Represented in CNHEO</p>	<p>Taxes for business/industry in the finance law</p>

<p>Ministry of Agriculture, Livestock and Fishery</p> <p>? General Directorate of Agriculture</p>	<p>Member of the Project Steering Committee</p> <p>Executing Partner for Component 3</p> <p>Lead in the development of an adaptation plan for the cultivation of resilient essential oil plants to climate change</p> <p>Support to expand the FDA and FIR funds to cover all actors in the EO value chain</p> <p>Popularization of the agricultural practice of adaptation to climate change</p> <p>Financing of irrigation / watering infrastructure</p> <p>Extension training for rural populations on adaptation practices and technologies</p> <p>Represented in CNHEO</p> <p>Implementation of EbA-related policies</p>	<p>Financing of the sector through the PROSPERER program</p>
<p>Ministry of Water, Sanitation and Hygiene</p> <p>? General Directorate of Water (DGE)</p>	<p>Facilitation of access to equipment and practices to ensure sustainable water management in EO production/distillation</p>	<p>Development and application of the water code</p>
<p>Minist?re des Transports, du Tourisme et de la M?t?orologie</p> <p>? General Directorate of Meteorology (DGM)</p>	<p>Installation and management of weather stations to be used for climate risk insurance</p>	<p>General meteorological data collection and publication</p>
<p>National bodies attached to ministries</p>		
<p>National Climate Change Coordination Office (BNCC)</p>	<p>Executing Agency for the project</p> <p>Responsible for coordination (especially with GEF and GCF projects), reporting and conducting the climate risk and vulnerability assessments (CRVAs) of the essential oil sectors</p> <p>Support in prioritization of adaptation technologies/practices</p> <p>Provision of awareness and training on climate change adaptation (EbA and technological innovation focus)</p> <p>Monitoring of the project implementation on the ground.</p>	<p>Development of national adaptation action plan.</p>

National Office for the Environment (ONE)	Member of the Project Steering Committee Support for the EO sustainable development decree Provision of awareness and training on climate change adaptation (EbA and innovation focus)	Environmental impact study Environmental control of companies Environmental permit/authorization
Decentralized Services		
Regional Environment and Sustainable Development Directorates (DREDD)	Member of CNHEO Improving regional regulatory frameworks on REDD+ Monitoring and evaluation of sustainable businesses	Control of the exploitation of endemic and/or introduced essential oil trees and wild plants Fixing / Collection of EO operating fee
Universities / Research Institutes		
CIRAD - Centre International de Recherche Appliquée au Développement	Co-financing of tests and popularization of agricultural adaptation practices Training to MSMEs on adaptation technologies/practices, with focus on EbA	Conducts research to enhance the exceptional Madagascan biodiversity, manage environmental services and promote an agroecological approach for sustainable agriculture, especially for family farms in the Highlands. These activities are carried out in partnership with the main research institutions, universities and development stakeholders. Contributes to various observatories in the service of development and public policies (land, value chains, world agriculture, etc.) and collaborates in regional networks.
CNRIT	Co-financing of the creation of CNRIT's antennas at the regional level Training to MSMEs on adaptation technologies/practices, with focus on EbA and innovation	Research and popularization of distillation equipment Development of energy-efficient stoves, renewable energy sources Development of new products derived from essential oils

<p>FOFIFA Department of Forest Research and the Protection and Sustainable Management of Natural Resources Regional research center</p>	<p>Development and popularization of research on the agricultural practice of adaptation to climate change Establishment of a regional research center on the essential oil sector</p>	<p>Research on the essential oil of ravintsara and cinnamon fragrances Research on the cultivation of wild essential oil plants Elaboration of geranium technical sheet Research on carbonization technique</p>
<p>Associations, NGOs and development partners</p>		
<p>UNIDO</p>	<p>M&E / GEF Agency Responsible for the monitoring of the executing entity(ies) and the mid-term and terminal evaluation</p>	<p>Support for enhancing EO value chain productivity</p>
<p>PFAN</p>	<p>Member of the Project Steering Committee Support for Component 2 relative to providing training and mentoring for MSMEs Support with connections to investment groups and regional investor convenings</p>	<p>Provide personalized one-on-one coaching and targeted introductions to investors, providing a fast track to commercial investment</p>
<p>Finance institutions</p>		
<p>Agriculture Development Fund (FDA)</p>	<p>Provision of subsidized equipment and low-interest loans Access to production factors (materials, inputs, equipment and infrastructure) Structuring and promoting value chains Agricultural training and the installation of young farmers Strengthening support systems for producers Support for integration of products into the market economy</p>	<p>Financing: direct services to farms for technical, economic and management support, applied research, access to markets access to production factors (materials, inputs, equipment and infrastructure) strengthening POs, structuring and promoting value chains agricultural training and the installation of young farmers strengthening producer support systems</p>

Fihariana	Release of guaranteed funds from banks for the provision of special rate credit for microenterprises for young people and women.	Financing of microenterprises through SONAPAR Development of subsidized rate credit with primary banks The Malagasy State, through the Fihariana plays the role of guarantor. The BNI and BOA banks, which are the main partners in implementing this project, will grant loans repayable at subsidized rates to young entrepreneurs (4 to 9%).
Insurance Agencies		
ARO HAVANA Allianz SAHAM	Study and creation of a "climate risk insurance" offer Awareness of insurance products targeted for small-scale producers and the essential oil sector	Business interruption insurance Standing crop insurance (ARP) (Assurance ARO)
Local/National Production Groups		
Group of Exporters of Essential Oils, Extracts and Oleoresins from Madagascar (GEHEM)	Management of research centers and laboratories focused on resilient farming practices in the EO sector Popularization of technologies among MSMEs Member of CNHEO	EO sustainable development strategy support Member training
GIE Regional	Management of research centers and laboratories focused on resilient farming practices in the EO sector Popularization of technologies among MSMEs Member of CNHEO	Establishment of grouping center and standardization of the quality of essential oils Advocacy for the relaxation of EO regional fee
Federation of Growers' Groups	Popularization of agricultural technologies and practices for adaptation to climate change via training and awareness-building Member of CNHEO	Defense of grower's interests Defense of distiller's interests

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).

98) Madagascar's Human Development Index, HDI for 2018, is 0.521 which places the country in the low human development category positioning it at 162 out of 189 countries and territories.[1] When the value is discounted for inequality, the HDI falls to 0.386, a loss of 25.8 per cent. The IHDI, a development indicator that discounts the HDI for inequalities, has decreased by 33% in the past years in the country due to inequalities in education and income that favour adult men in Madagascar. Vulnerability indices revealed that female-headed households are more sensitive to the impacts of climate change and variability. However, female-headed households have the least adaptive capacities.[2] A 2016 study recommends that female-headed households should be given priority in the agricultural sector by empowering them through financial resource support to venture into other income-generating activities. In agreement, the National Gender Policy emphasizes women's empowerment and youth employment.

99) In general, very few projects have supported women in the agricultural sector. The project will build on the support for women, such as the Pilot Program for the Promotion of Rural Women Leaders in Madagascar (PPPFRLM).

100) In practical terms,

- A **gender analysis** will **identify the differentiated needs and roles of women and men** with respect to the project interventions. An appropriate response will be developed and, based on that, a gender action plan.
- To the extent possible, efforts will be made to promote **equal participation of women and men** in training activities, both at managerial and technical levels, as participants and facilitators;
- **Gender-sensitive recruitment** will be practiced at all levels where possible, especially in selecting project staff to ensure **diversity in team composition**.
- Both Staff and project stakeholders will receive **training on gender awareness**, including sensitization on gender dimensions and bias.
- Whenever possible and reasonable, gender focal points of stakeholders, women's groups and associations, gender experts and/or other **stakeholders** that promote gender equality will be consulted.
- The project will target to include at least 30% women in decision-making. All **decision-making processes will consider gender dimensions**. Also, at the level of project activity implementation, efforts will be made to consult with stakeholders focusing on gender equality and women's empowerment issues. This is especially relevant in policy review and formulation as well as for capacity building activities;
- The project will focus on the provision of technology innovations that reduce the manual, intensive labor of women involved in the planting and cultivation of essential

oil plants. It will provide targeted access to finance for women to purchase adaptation technologies and insurance products to provide payouts if climate shocks occur. Whenever possible, dedicated financial products and services targeting women's needs will be developed. Priority will be given in accessing technical assistance and financing opportunities to groups and organizations led by women.

101) The project strategy and implementation modalities for gender equality and women's empowerment will also be designed by using a guide for gender integration to ensure that it is in line with both the requirements of UNIDO (UNIDO Energy Department's Guide on Gender Mainstreaming Energy and Climate Change) and GEF (the Guidance to Advance Gender Equality in GEF Projects and Programs (GEF/C.54/Inf.05 June 1, 2018)).^[3]

102) Finally, in the Monitoring and Evaluation Component 4, gender-disaggregated indicators and related targets at the project's outset will be participative designed to consistently measure the impact of the project regarding gender dimensions. This will include the percentage of women in training in the CNHEO, the percentage of new green jobs for women, particularly along essential oil value chains, as well as representation in consultation processes. When data collection or assessments are conducted, gender dimensions will be considered.

[1] http://hdr.undp.org/sites/all/themes/hdr_theme/country-notes/MDG.pdf

[2] <https://www.emerald.com/insight/content/doi/10.1108/IJCCSM-10-2016-0156/full/html>

[3] To collect gender-related information and gender-disaggregated beneficiary data, and to determine the baseline situation; ? inform or form part of the project's Social and Environmental Screening procedure; ? integrate gender considerations into the program/project theory of change to understand how and why a given intervention will lead to a specific change; ? determine program/project activities required to respond to gender risks, differences, gaps, and opportunities; and ? support the formulation of indicators relating to gender disaggregation and gender sensitivity, to be included in program/project results framework.

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; Yes

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.

103) The project will expand the catalytic grant investments brought by the LDCF, AAP and PIC projects to establish an enabling environment for the private sector to act as agents for market transformation in the field of adaptation innovation. Via first time support to CNHEO, the project will establish partnerships with local banks, microfinance institutes and Madagascar funds to pool financial resources to support adaptation innovation. The goal will be to tailor financial products to MSMEs that focus on environmental sustainability, climate resilience and adaptation-oriented technologies and solutions and that need patient and non-dilutive capital to grow and expand their businesses. Financial support by various private sector parties will be provided at different stages of the innovation cycle. For instance, seed capital can be provided by PIC, AAP, FDA and the CTCN, which provides up to USD 250k per sub project, which may involve one or more SMEs and must be validated by the national designated authority. Later on, financial support with regional partners such as ASAP and PFAN can support entrepreneurs / SMEs to have viable business models and their products commercially ready.

104) The project will work with the existing MSME support services to build their capacities on adaptation innovation, develop better management capacities and bankable business models. The MSMEs will be highlighted in Adaptation Calls. The Adaptation Calls will enable the private sector to see how innovations can make EO cultivation and production processes more cost-effective and sustainable.

105) At the local level, the private sector will also be engaged. Under Component 3, the project will work with Microfinance Institutes such as Volamahaso to create unique products for rural populations working in the essential oil sectors. GEF funds will create a credit line for the EO sector in collaboration with the FDA and FIR (national agricultural development funds). Private financial channels will be used to reduce risks associated with innovation. Collateral requirements can be made more flexible. Due to having revenues bound by cultivation cycles, the project will reinforce the capacities of existing financial services to have more flexible loan products for stakeholders along the value chain that can be given on the condition that their productivity is enhanced or becomes more efficient applying adaptation innovation. Tools developed in previous projects will be adapted and made accessible to MFIs, so they may improve their risk and information management through the use of ICTs.

106) Similarly, the project's support for EO-focused insurance projects and working with private insurance agencies will support the resilience of small-scale growers and producers to climate

change impacts. In this regard, any innovations that facilitate climate and weather data collection will be available to insurance and re-insurance groups as a first step to establishing weather-index based insurance products.

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)

Table 6: Risks and Mitigation Actions (P = Probability and I = Impact)

Risk	Risk Level	Mitigation Action
Development risk	P= 2 I=2	In Component 1, the project will support the newly established CNHEO to provide collaborative support for the scaling up of adaptation technologies and business models. All the relevant administrative levels of Government will be engaged in the process and represented in the platform, together with private sector representatives, NGOs and other stakeholders. Thus far, very little support has been given to innovation in Madagascar, as evidenced by the WEF 2018 report. Ongoing and planned initiatives in the EO sector have been studied in depth with consultations at the national level. Only synergies are seen. CNHEO will ensure coordination with the existing projects and initiatives to enhance efforts and create synergies.
Management risk	P=2 I=2	The establishment of the PMU and the CNHEO will ensure proper coordination, cooperation and communication between the various project stakeholders.
Political risk	P= 2 I=2	Component 1 includes streamlining the importance of adaptation innovation into the Sustainable EO Production Strategy and coordinating with relevant actors across sectors. This includes reinforcing sector capacities in understanding the cost-benefits of adaptation so that they will prioritize adaptation initiatives. Also, support for the private sector Adaptation MSMEs including financial products, will enable continued and sustained support for innovation that business forces will drive. The MSMEs and FSPs will be trained to identify outlying risks such as pandemics so that they can be prepared with appropriate mitigation measures.

<p>Financial risk including Risk that insufficient financing from commercial and other FSPs will be mobilized Risk of unfavorable terms & conditions of commercial financing for MSMEs (high interest rates, collateral requirements etc.) Repayment risk of MSMEs Risk that access to finance for target customers remains limited resulting in low ability to scale up adaptation technologies and ideas</p>	<p>P=2 I=3</p>	<p>The project seeks to strengthen the provision of appropriate funding instruments and mechanisms to enable the deployment of adaptation technologies and services. Training and capacity building programmes for existing national agricultural financing and insurance mechanisms (FIR, FDA, MFIs) will focus on risk assessment of climate adaptation technologies and on MSMEs active in this sector. The project will provide specific technical assistance with designing financial products & services adapted to the needs of MSMEs including training to existing national agricultural financing and insurance mechanisms on risk assessment and structuring and on adequate risk mitigation measures. The project will provide extensive business development support to MSMEs, including business plan development, financial forecast, risk assessment, market analysis in order to reduce repayment risk. The project will include dedicated activities to assist existing national agricultural financing and insurance mechanisms with developing and adopting financial products & services adapted to the needs of vulnerable populations, including digital finance solutions.</p>
<p>Environment risk</p>	<p>P=2 I=4</p>	<p>In Component 1, the project puts a strong emphasis on strengthening sustainable land and forest management. Only by having a strong policy and strategy foundation to use the natural resources sustainably will an adaptation technology be able to scale up. . In Component 3, target populations will be trained on improved, sustainable production and management practices.</p>
<p>Climate risk</p>	<p>P=2 I=4</p>	<p>Component 2 will provide the government tools to conduct Climate Risk Vulnerability Analyses. During the PPG phase a CVRA will be conducted in order to specifically identify climate risks and vulnerabilities in the target regions. This CRVA will inter alia be based on data from The World Bank Climate Change Knowledge Portal, ThinkHazard, Resourcewatch by the WRI, as well as data from relevant IPCC reports. The adaptation innovations will be chosen based on the highest vulnerability priority regions and the most appropriate interventions for the local context. Vulnerabilities will be quantified in order to guide the strategies and roll-out plans for adaptation innovations. Focusing on these regions with targeted adaptation innovations that emphasize an ecosystem-based approach will build resilience climate shocks. This project will also strengthen adaptation and resilience measures by enabling the most vulnerable to access adaptation innovations via tailored lending and insurance products. Innovations will enable the most vulnerable to fully exploit their value chains sustainably. With an asset base and risk mitigation measures, the vulnerable populations, particularly women and youth, will have higher asset bases and become more resilient during climate shocks. The implementation of EbA solutions will diversify income and ensure that essential ecosystem services to sustain the livelihoods of small-scale producers are maintained.</p>

Delay risk	P=2 I=2	<p>Execution of activities to be implemented under this project will be carried out with the support of international experts/companies with demonstrated and successful past experience, as well as in close collaboration with PIC, ASAP and AAP.</p> <p>Only proven and high-impact adaptation technologies are being considered to be piloted.</p> <p>Capacity building and enabling activities will pay special attention to further defining the existing baseline in order to develop effective tailored and well-targeted training programmes and curricula.</p> <p>The status of the pilots will be regularly reviewed and any necessary corrective steps will be promptly taken.</p>
Social and Gender Risk	P=2 I=3	<p>To mitigate this risk, the project will pursue thorough and gender-responsive communication showing the benefits of gender equality for both women and men and ensure stakeholder involvement at all levels, with special regard to involving both women and men and CSOs and NGOs promoting GEEW, and gender experts. This shall mitigate social and gender-related risks, promote gender equality, create a culture of mutual acceptance and understanding, and maximize the project's potential contribution to improving gender equality in the EO value chain. A category for female-led teams will be introduced as part of the accelerator programme. Furthermore, the project seeks to nominate female entrepreneur ambassadors. This is expected to build awareness and participation of female entrepreneurs in the project.</p> <p>To attract qualified female candidates to the project, an adequate and gender-responsive communication strategy will be carried out by reaching out to women's groups and associations while also making trainings and workshops accessible for women, e.g., by providing safe transport, offering childcare, offering training at suitable times for women when children are in school and day-care, etc. If necessary and in the scope of the project, additional bridging courses for women will be considered, developed and implemented to empower women.</p>

COVID-19 risk analysis

Risk	Risk level	Risk mitigation measure
Operational Risk ? On-going global restrictions due to global evolution of the pandemic remain	Medium/High	If travel or group gatherings and meetings are not possible due to restrictions for people traveling from/to Madagascar, or commuting around the country, virtual / on-line meetings will be conducted to the extent possible.

Technical expertise is not readily available due to the pandemic	Low	Necessary efforts will be made to identify alternative technical experts in case it is required (e.g., having a list of alternative experts). Planning will be flexible enough to reschedule activities onsite that require specific expertise.
Possible re-instatement of COVID-19 containment measures limits available capacity or effectiveness of project execution/ implementation	Medium	The capacity of stakeholders, and especially the beneficiaries, for remote work and online interactions will be strengthened by securing access to commercially available conferencing systems. The current design of the curriculum for entrepreneurs is based on online interactions and deliverables, using webinars and web platforms, and therefore COVID-19 is not expected to pose a significant risk to the conduct of the acceleration cycles. The PMU will also be continuously monitoring the national restrictions and rules in order to foresee and plan ahead of potential changes in measures.
Some project supporters, co-financiers or beneficiaries may not be able to continue with project execution/ implementation	Low	The situation will be closely monitored by the PMU and the PEE in order to find alternate supporters or co-financiers, or to readjust the list of beneficiaries, if needed.
Price increases for procurement of goods/services	Medium	The project team will undertake efforts needed to find alternative providers and make sure that competitive pricing is obtained.

COVID-19 opportunity analysis

Opportunity	Opportunity level	Opportunity optimization measure
New business opportunities created in response to COVID-19 related restrictions and measures	High	Response to COVID-19 restrictions, such as remote working arrangements and no-contact business modalities, will require solutions that can be turned into new business models. These opportunities will be analyzed at the national levels and shared with entrepreneurs as part of the market intelligence information. Additionally, based on spurred international trade due to COVID restrictions, this project will support the uptake of domestic markets to substitute missing products from global value chains.

New business opportunities to build back better for business continuity and economic recovery post-COVID-19	High	By design, the project engages the private sector (especially MSMEs) to promote adaptation technologies, business models with resilience to climate change, and circular business practices. New business opportunities and management suggestions will be provided to the new Adaptation Accelerator so that the entrepreneurs are fully informed of the market and environment trends.
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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.

107) UNIDO as GEF agency will be responsible for the implementation of the project and liaise with the GEF Secretariat. UNIDO will also be responsible for all inquiries regarding the Project implementation progress, Project-level reporting, the terminal evaluation, and tracking final project completion and the achievement of higher-level impacts on the global environment.

108) The National Bureau for Climate Change (BNCC) under the Ministry of Environment, has been identified as the leading executing partner and will be in charge of coordinating the executing of the activities under the project and ensure synergy and collaboration with relevant stakeholders and the on-going GEF/GCF program and projects related to the scope of this project and initiatives funded by other donors/institutions such as GIZ and the World Bank. The coordination team will include some technicians from BNCC to be based within that Bureau. BNCC currently ensures the role of coordinating, facilitating, supervising and monitoring of the effective implementation of all the measures/actions provided within this NDC. The BNCC works closely with sectorial ministries, the National Climate Change Committee, sectorial and regional environmental offices, and other non-governmental actors operating in the fight against climate change. The Financial capacity of BNCC will be assessed and validated during the PPG phase.

109) The Ministry of Industry has been identified as a potential execution partner under Component 2. This will be assessed, selected and validated during the PPG. As such, the project seeks to build their institutional capacities through knowledge sharing and expert trainings to establish and run the competition-based Adaptation Accelerator program for business development. The Ministry of Agriculture and farmer?s, women and youth associations have been identified as potential execution partners under Component 3. They will be assessed, selected, and validated during the PPG phase. The project seeks to build their institutional capacities through knowledge sharing and expert trainings to conduct awareness raising, trainings and ensuring market linkages so that vulnerable populations can deploy appropriate climate adaptation-oriented technologies and services.

110) The Project Steering Committee (PSC) will be integrated into the EO sustainable development platform, CNHEO. The main role of the PSC will be to provide operational guidance as well as overall high-level coordination and project validation during the implementation of the project. The CNHEO / PSC will meet regularly at least biannually to track progress and provide opportunities

for identifying potential synergies and increasing the uptake of lessons and building synergies. The CNHEO / PSC will act as an advisory mechanism to maximize synergies and ensure the successful design and implementation of the project. The Terms of Reference for the PSC will be developed in the inception phase of the project implementation, and its chair appointed in consultation with the BNCC.

111) The CNHEO platform already includes representatives from each of the relevant institutions:

- The Minister in charge of Forests or his representative;
- The Minister in charge of Trade or his representative;
- The Minister in charge of Industry or his representative;
- The Minister in charge of Agriculture or his representative;
- The Directorate General of Taxes, representing the Minister in charge of Finance;
- A representative of the National Office for the Environment;
- Six representatives from the private sector of essential oils, vegetable oils, extracts and oleoresins.

112) The CNHEO / PSC will include the aforementioned representatives and some from GEHEM, GIE and relevant national institutions identified during PPG. This will ensure that the project is aligned to national roadmaps & plans and will ensure national ownership and sustainability. At the discretion of the CNHEO / PSC, relevant national stakeholder such as MSME Promotion Agencies/Business Associations will be invited to participate in the CNHEO / PSC to ensure local ownership and guidance for the project.

113) A Project Management Unit (PMU) will be established by the BNCC and will consist of a National Project Coordinator and National Project Assistant. The PMU will ensure regular project monitoring and evaluation, implemented through Components 4 as described in the above section on an alternative scenario. The PMU will directly report to the Project Manager and the BNCC. Figure 7 gives an overview of the foreseen institutional arrangements.

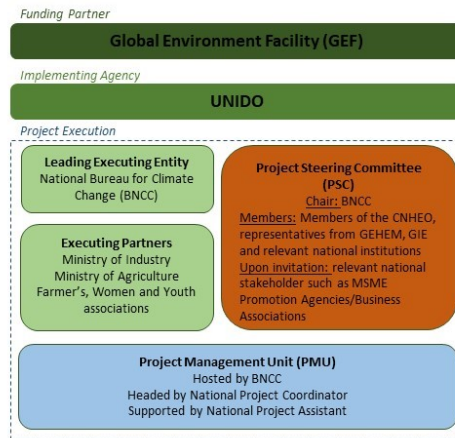


Figure 7: Institutional Arrangements

114) As evidenced during the PIF stage, the project will have strong coordination mechanisms with the AAP in Madagascar and the regional ASAP programs. During consultations with both Conservancy International (AAP) and the Lightsmith Group (ASAP), it was agreed that identified MSMEs will be cross-referenced to ensure that innovative ideas that are applied in the EO value chain could be replicated to other value chains and vice versa so that technologies and solutions will be shared across sectors. Also, there will be exchange with the network of mentors and experts in business plan development and sharing of online training. All programs will also share participation at regional convenings. In fact, through the support of PFAN and ASAP, there is a huge potential to link to regional innovation networks and for successful adaptation-focused business models to be replicated.

115) The project will link strongly with the National Adaptation Plans (NAPs) process and will link with ongoing GCF funded projects and assess the gaps for building the capacities of private sector MSMEs. The harmonization of climate change responses within implementation objectives can help achieve multiple ends. Increased awareness of how to actively engage the local private sector in the adaptation space will reduce the likelihood of maladaptation when efforts are harmonized.

116) The specific coordination with the abovementioned baseline initiatives will be identified and elaborated in the PPG phase.

117) Full or partial title and ownership of equipment purchased under the project may be transferred to national counterparts and/or project beneficiaries during the project implementation as deemed appropriate by the UNIDO Project Manager in consultation with project stakeholders.

118) Legal context: The Government of the Republic of Madagascar agrees to apply to the present project, mutatis mutandis, the provisions of the Standard Basic Assistance Agreement between

the United Nations Development Programme and the Government, signed on 19 March 1991 and entered into force on 14 April 1992.

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

- National Development and Emergence Plan (2019-2023)
- National Adaptation Plan (2019)
- Climate Change Action Plans (2020)
- Third National Communication (5 Nov 2017) in addition to the first and second NCs
- INDC (2015)
- National Climate Change Policy (2010)
- National Action Plan for Adaptation (NAPA - 2006) under LDCF/UNFCCC
- Madagascar's National Climate Change Bureau (BNCC)
- National strategy and action plans on Biodiversity (2015 ? 2025)
- Technology Needs Assessment (TNA) under UNFCCC
- National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD
- National Implementation Plan (NIP) under POPs
- Poverty Reduction Strategy Paper (PRSP)
- National Portfolio Formulation Exercise (NPFE) under GEFSEC
- Biennial Update Report (BUR) under UNFCCC

119) The project concept was developed taking into account the national development objectives and priorities stated in main national strategic documents including the Plan National de D?veloppement 2019-2023, the National Adaptation Plan (2019), the Third National Communication to the UNFCCC (2017), the NDC (2016), the Politique G?n?rale de l?Etat, and the Politique Nationale de lutte contre le Changement Climatique (2010), the Plan d?Actions National de Lutte contre le Changement Climatique. Regarding the INDC, the project will support a diversified reforestation programme to act as carbon sinks. It will also support large scale implementation of ecosystem-based adaptation, conservation agriculture and climate-smart agriculture.

120) Regarding the recent Third National Communication to the UNFCCC, the project will be essential for the goal of technology transfer. As stated in the 3NC, the transfer of environmentally sound technologies is essential to reduce vulnerability to climate change.

121) The project will also adhere to the NAP's core Strategic Axes 1 and 3: 1) Strengthening governance and integration of adaptation and 3) Financing adaptation to climate change. Within Component 3, the project will adhere to the NAPs by promoting by-products and developing income-generating sectors for improved profitability of farms. It will also adhere to strengthening the socio-economic resilience of rural populations through the development of value chains by reinforcing the resilience to climate change of income-generating activities in the essential oil sectors (vanilla, cloves, etc.); Finally, the project will promote sustainable management of ecosystems, in line with identified priorities of the NAP.

122) With regards to the National Climate Change Policy, this project is addressing its first strategic target to "Strengthen adaptation to climate change, considering Madagascar's realistic needs."

123) The project furthermore helps to address the Paris Agreement's Global Goal on Adaptation by (i) facilitating the establishment of Madagascar's first Adaptation Accelerator for MSMEs that will mobilize public and private finance for adaptation in developing countries, (ii) supporting the development of adaptation and climate resilience focused MSMEs, and (iii) providing technical assistance for market entry and capacity building for climate adaptation and resilience solutions in developing countries.

124) In such a manner, the project will be in alignment with the UNIDO Country Programme (CP) and will build on baseline co-financing contributions that support the following UNIDO CP components: 1) Agro-Industry and agribusiness development, including value chain development & entrepreneurship in promising sectors, 2) Renewable energy development, energy efficiency, environmental protection, 3) Support to agro-processing Zone and industrial parks development and 4) Institutional strengthening and governance support for competitiveness, innovation & investment promotion

125) Insofar as this project will result in incubator/accelerator programs focused on adaptation and climate resilience, this project is consistent with and promotes the goals of the UNFCCC and the UNCBD and particularly the pursuit of adaptation and resilience to climate change in developing countries. In addition, this project is consistent with and supports the Sustainable Development Goals (Goal 3 ? Good Health and Well-Being, Goal 6 ? Clean Water and Sanitation, Goal 7 ? Affordable and Clean Energy, Goal 9 ? Industry, Innovation, and Infrastructure, Goal 11 ? Sustainable Cities and Communities, Goal 13 ? Climate Action, and Goal 17 ? Partnerships for the Goals).

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.

126) Component 3 and 4 will establish a Monitoring, Evaluation and Learning (MEL) system to be managed by CNHEO. CNHEO will be responsible for developing a monitoring and evaluation framework and the continuous outreach and sharing of gained knowledge, lessons learned and best practices. They will also be responsible for developing an online marketplace to highlight adaptation solutions offered in Madagascar. The project will coordinate with AAP and ASAP, who are simultaneously developing a curriculum, taxonomy, adaptation technology database and measurement metrics on best adaptation technologies/practices. The project will build on the existing FDA monitoring/evaluation system. The existing M&E system will be enhanced and focused on adaptation, with clear indicators for impacts on innovation and ecosystem conservation. Within this system, a gender-disaggregated knowledge base will be developed to share best practices and lessons learned and a support information exchange with policymakers at global forums and regional events (such as those convened by ASAP) on climate adaptation relevant information and results. The MEL will link with ASAP's global website to highlight entrepreneur success stories and lessons learned. As the project progresses and implementation results become demonstrable, the MEL knowledge management system will develop benchmarks for innovations and develop case studies on climate change adaptation in essential oil value chains. In order to ensure the sustainability of this project after the project completion, the Knowledge Management Expert to be housed within CNHEO will conduct more frequent evaluations to iteratively improve the impact of the Adaptation Accelerator and the home-grown ideas that graduate from the Accelerator. Different communication channels to disseminate lessons learned and success stories will include training manuals, good practice guides, datasheets, posters, videos, radio programmes and regular updating on the UNIDO website. The results will be actively used to better inform policy dialogue and to strengthen methods to build resilience for the most vulnerable rural populations through a learning process. The MEL will support future entrepreneurs and potential investors to learn from past successes and failures. It will also raise public awareness of the importance of innovation and deployment of adaptation-oriented technologies in priority essential oil value chains.

127) Under Component 4, the project will conduct an independent terminal evaluation. The Terminal Evaluation will be used as a tool to assess project results. The Long-Term Evaluation (LTE) will feed into learning and knowledge sharing for other adaptation projects in Madagascar and abroad so that successes can be repeated.

128) All knowledge management activities will be gender mainstreamed. This includes integration of gender dimensions into publications, for instance, presenting gender-disaggregated data, gender-energy nexus theory, gender-sensitive language in publications, photos showing both women and men, and avoid presenting stereotypes, as well as assuring that women, men and the youth have access to and benefit from the knowledge created.

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.

A preliminary environmental and social risk screening was conducted according to the UNIDO Environmental and Social Safeguards Policies and Procedures (AI/2017/04). The preliminary screening shows that this project belongs to Category B as the project envisages to deploy climate adaptation-oriented technology innovations along the Essential Oil (EO) value chains. A category B project is likely to have less adverse impacts on human populations or environmentally important areas than those of Category A projects. Likely impacts will be few in number, site-specific, and few if any will be irreversible. An ESMP will need to be completed as per UNIDO and donor requirements.

Based on the requirements for category B projects, specific project intervention and potential E&S impacts are as following:

With regard to the directly or indirectly use renewable natural resources as a main purpose:

Climate adaptation innovations will be deployed along Essential Oil (EO) value-chains. The detailed ESS assessment will explore potential impacts in the identified EO value-chains as well as engage environmental experts when validating identified technologies prior to deployment.

With regard to potential threat at the working environment:

During the identification and selection of the SMEs to be supported under the projects, a screening measure will be placed to ensure that they (i) promote fair treatment, non-discrimination, and equal opportunity for workers; (ii) promote compliance with national employment and labor laws, which comply with the mentioned standards; (iii) protect workers, including vulnerable categories of workers such as children, women, and migrant workers; (iv) promote safe and healthy working conditions and the health of workers; and to avoid the use of forced labor or child labor.

With regard to whether the project through a direct execution and/or a contractual arrangement: (i) generate or cause generation of solid, liquid or gaseous waste/emissions; (ii) use, cause use of, or manage the use, storage or disposal of hazardous materials and chemicals,

including pesticides; (iii) significantly consume or cause consumption of water (> 5,000 m3/day), energy, or other resources:

During the identification of the SMEs to be supported under the project, a screening measure will be placed to ensure that no technology that may have adverse impacts of pollution on human health and the environment are selected. The ESMP will confirm the selected project approach and technologies are appropriate for the avoidance or minimization of project-level wastes, emissions, and pollution.

With regard to risks and potential negative impacts to the health, safety and security of the project-affected communities during its lifetime:

During the identification of beneficiaries including vulnerable communities such as farmers, women and youth, the project will conduct an assessment and screening on potential risks and negative impact when introducing adaptation measures, technologies and services in order to minimize exposure.

Supporting Documents

Upload available ESS supporting documents.

Title	Submitted
E&S_Screening_Template_UNIDO ID 190280_Madagascar_LDCF	

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
Dr Hery A. Rakotondravony	GEF Operational Focal Point	MINISTERE DE L'ENVIRONNEMENT ET DU DEVELOPPEMENT DURABLE	7/1/2020

ANNEX A: Project Map and Geographic Coordinates

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

TARGET REGIONS AND INTERVENTION AREA OF OTHER PROJECTS / PROGRAMS



LEGENDE

- Route nationale
- Limite des Régions de M/car
- Project target region
- PIC Intervention area
- PROSPERER Intervention area



