



ADAPTATION FUND

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Adaptation Fund Board
Project and Programme Review Committee
Thirty-eighth Meeting
Bonn, Germany, 19-23 October 2026

PROPOSAL FOR MADAGASCAR



ADAPTATION FUND

**ADAPTATION FUND BOARD SECRETARIAT
TECHNICAL REVIEW OF PROJECT PROPOSAL FOR
"ADAPTATION AND RESILIENCE THROUGH COMMUNITY HUBS AND LOCAL
ENTERPRISES"**

Project Title	Adaptation and resilience through community hubs and local enterprises
Project ID	AF00000570
Category	Regular size project (over \$1 million)
Type	Single country project
Stage	Concept
Country	Madagascar
Implementing Entity	UNIDO
Financing Requested	USD 25,000,000.00
Reviewer	Eveline Vasquez

Co-reviewer(s)

IE Contact Person

Fatou Haidara, Ganna Onysko, Mark Grigoryan, Najlae Boumia, Natale Guarnaccia, Olga Gordiievska, Sunyoung Suh

Secretariat's Overall Comment

The project “Adaptation and resilience through community hubs and local enterprises” aims “to realize the potential of locally led adaptation systems, local adaptation enterprises, producer organizations, and inclusive financial mechanisms to provide cost-effective and locally appropriate adaptation solutions to vulnerable communities in climate-susceptible geographies in Madagascar”.

The proposal includes a request for a project formulation grant of USD 150,000.

The initial technical review raises several issues, such as the need for more information about beneficiaries; insufficient stakeholder consultations; and the lack of a clear explanation to support the cost-effectiveness of the proposed interventions, as is discussed in the number of Clarification Requests (CRs) and Corrective Action Requests (CARs) raised in the review.

The second technical review finds that the proposal has addressed most of the CRs and CARs, with one remaining issue regarding the preliminary evidence and assumptions supporting the cost-effectiveness of the proposed interventions.

Country Eligibility

Is the country party to the Kyoto Protocol, or the Paris Agreement?

Response: Yes

Secretariat: Yes.

Madagascar ratified the Kyoto Protocol on November 5, 2002, and the Paris Agreement on September 21, 2016.

Is the country a developing country particularly vulnerable to the adverse effects of climate change?

Response: Yes

Secretariat: Yes.

Mozambique is a developing country with high exposure to recurrent tropical cyclones, severe droughts, and

erratic rainfall patterns. It is extremely vulnerable to those impacts due to a predominantly rural population living in acute poverty and relying on climate-sensitive agriculture, degraded ecosystems, and limited infrastructure.

Project Eligibility

Has the designated government authority for the Adaptation Fund endorsed the project/programme?

Response: Yes

Secretariat: Yes.

As per the endorsement letter dated February 11, 2026.

Does the length of the proposal amount to no more than Fifty pages for the project/programme concept, including its annexes?

Response: Cleared

Secretariat: Yes.

The proposal is 50 pages including annexes.

Does the project / programme support concrete adaptation actions to assist the country in addressing adaptive capacity to the adverse effects of climate change and build in climate resilience?

Response: Cleared

Secretariat: Yes.

The project identifies a set of concrete adaptation actions, responding directly to specific climate hazards and their expected impacts on key value chains. The proposal commits to clear, verifiable, on-the-ground outcomes; and the ToC clearly articulates how overcoming systemic barriers (information gaps, outdated technologies, financial exclusion) via four interlinked components would directly address the identified climate threats. The components are mutually reinforcing and directly aligned with the overarching objective. The proposal is explicitly aligned with the Adaptation Fund Strategic Results Framework.

Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?

Response: Not Cleared

Secretariat: Yes. However, more information is needed.

Part II.B (pp. 28-30) addresses economic, social, and environmental benefits with a targeted focus on benefits for vulnerable groups and explicit alignment with the Adaptation Fund's Environmental and Social Policy and Gender Policy. The proposal features a dedicated Initial Gender Assessment analyzing structural barriers and proposing concrete response measures. An ESMF will be established for ongoing screening of all activities (including USPs) against the 15 AF safeguard principles. However, there is insufficient information about beneficiaries in both Parts II.A and II.B, and there is no discussion of potential risks and consequences related to project activities.

CAR1: Please include additional details for each activity in Part II.A including the stakeholders involved; the number of beneficiaries, including gender-disaggregated data; and specific targets. Consider putting this information into a table format for each output.

CAR2: Please expand the information on beneficiaries in Part II.B to include quantitative estimates of both direct and indirect beneficiaries, disaggregated by gender and vulnerable groups. Consider putting this information into a table format.

CAR3: Please add some preliminary discussion of potential risks and negative consequences related to project activities.

Response: Not Cleared

IE: CAR 1

Thank you for the comment. The Concept Note has been revised to strengthen beneficiary targeting and expected results. Specifically, paragraphs 105 and 106 under Section B.2 (Social Benefits) have been updated to provide a clearer justification of the expected outreach, including gender and youth targets, and the methodology used to estimate beneficiaries. In addition, a new Table 8: Indicative Output-Level Stakeholders, Beneficiaries, Gender Targets and Adaptation Benefits has been included, providing output-level information on key stakeholders, indicative beneficiary coverage, gender targets, and expected adaptation benefits. The beneficiary estimates are linked to the scale of the targeted rice and essential oil value chains and will be further refined during the PFG phase through baseline assessments, stakeholder consultations, and detailed targeting exercises.

CAR 2

Thank you for the comment. This has been addressed in paragraphs 105-106 of Section B.2 and Table 8, which present beneficiary estimates and disaggregation by gender and vulnerable groups. The estimated number of direct beneficiaries will be further confirmed during the PFG phase, as well as quantitative estimates of indirect beneficiaries.

CAR 3

Thank you for the comment. A preliminary discussion of potential environmental and social risks and negative consequences associated with project activities has been added under paragraph 110 of Section B.4 (Environmental and Social Risk Management), together with the proposed approach for their avoidance, mitigation, and management.

Response: Cleared

Secretariat: N/A

Is the project / programme cost effective?

Response: Not Cleared

Secretariat: Yes. However, more information is needed.

Part II.C (pp. 30-31) presents a credible rationale for a cost-effective approach including sustainability considerations. The project concentrates on priority regions; builds directly from an ongoing GEF-funded project; and invests across the entire value chain; and supports systematic MEL efforts for replication. However, there is no direct evidence of cost-effectiveness, such as economic analysis or a comparison of alternatives.

CAR4: Please provide a logical and sequential explanation of the selected scope and approach for the cost-effectiveness of the proposed interventions, including some quantifications when possible.

Response: Not Cleared

IE: CAR 4

Thank you for the comment. The cost-effectiveness analysis has been strengthened in paragraphs 112-114 of Part II.C by providing a logical and sequential explanation of the selected scope and approach, preliminary quantifications, and a comparison with alternative implementation approaches.

Response: Not Cleared

Secretariat: Not Cleared.

CAR 4: The proposal provides a preliminary qualitative rationale for the cost-effectiveness of the selected approach and indicates that a more detailed economic and financial analysis will be undertaken during the PFG phase. However, the comparison with the identified alternatives is largely qualitative, and several expected efficiency gains—such as reduced implementation and coordination costs from geographic concentration and use of existing structures, and multiple benefits from the integrated value-chain approach—are not yet substantiated. Could the IE provide, to the extent possible at Concept Note stage, the preliminary assumptions, evidence, or relevant benchmarks supporting these expected cost-effectiveness advantages? A more detailed assessment of alternative adaptation options, lifecycle costs, avoided climate-related losses, and O&M requirements may be further developed during the PFG phase, as proposed.

Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments?

Response: Not Cleared

Secretariat: Yes. However, more information is required.

Part III.D (pp. 31-32) demonstrates general alignment with Madagascar's central climate and development frameworks. However, a comprehensive list of strategies and plans is not provided, nor is it clearly explained

how the proposed project specifically aligns with them.

CR1: Please consider adding other relevant policies and strategies, such as those related to the agriculture sector, in the table. Also provide greater detail about expected linkages between these plans and strategies and individual project components.

Response: Not Cleared

IE: CR 1

Thank you for the comment. Table 10 and paragraph 116 in Part II.D have been revised to include additional agriculture, rice, gender, and decentralization policies and strategies, with clearer linkages between these frameworks and the individual project components.

Response: Cleared

Secretariat: N/A

Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?

Response: Not Cleared

Secretariat: Yes. However, more information is required.

Part II.E (pp. 32-33) provides an initial list of technical standards that are relevant to the project, to be refined during the PFG phase. However, the list of standards does not provide sufficient detail about them and their relevance. The section also references a general process for complying with the Adaptation Fund's Environmental and Social Policy.

CAR5: Please provide additional details on relevant technical standards and how the proposed project will comply with them. This information should be presented as a table. For each identified standard, please include:

- (i) The scope and relevance in relation to the proposed project, i.e., the rationale for its selection.
- (ii) How the standard relates to the proposed project, clearly identifying the outputs and activities that will require compliance with the standard.

Response: Not Cleared

IE: CAR 5

Thank you for the comment. This has been addressed in paragraph 120 and Table 11: Relevant National Technical Standards, Scope and Application to ARCHE Scale Outputs and Activities of Part II.E, which now clarify the scope and relevance of each technical standard, identify the specific project outputs and activities requiring compliance, and describe the corresponding compliance measures.

Response: Cleared

Secretariat: N/A

Is there duplication of project / programme with other funding sources?

Response: Not Cleared

Secretariat: No. However, more information is required.

Part II.F (pp. 33-38) describes how the project is intended to scale an existing GEF-7 project and identifies potential synergies with other relevant projects. It also provides an initial discussion of lessons learned from those projects. However, there is no explicit discussion of potential duplication of effort and of how coordination with other projects will happen.

CR2: Please provide explicit no-duplication statements for each related project, for example specifying the distinct geographic areas and/or the different types of interventions involved.

CR3: Please provide details on how coordination efforts with relevant projects are envisioned.

Response: Not Cleared

IE: CR2

Thank you for the comment. Paragraph 123 and Table 12 of Part II.F have been revised to include explicit no-duplication statements for each relevant project, clarifying differences in geographic coverage, beneficiaries, intervention types, and eligible costs.

CR3

Thank you for the comment. the newly added paragraph 124 of Part II.F describe the envisioned coordination arrangements with related projects, including project mapping, beneficiary and investment cross-checking, workplan reviews, technical exchanges, and coordination through the Project Steering Committee and relevant national and regional platforms.

Response: Cleared

Secretariat: Coordination will be institutionalized through the ARCHE Scale Project Steering Committee and relevant national and regional technical platforms. Before approval of site-specific activities and USPs, the Project Management Unit will maintain and update a project-mapping and no-duplication register covering geographic locations, beneficiaries, enterprises, technologies, financing instruments and implementation schedules of related initiatives. Potential overlaps will be reviewed with the relevant implementing partners and government authorities.

ARCHE Scale will not finance any activity, asset, beneficiary cost or investment already financed by another project.

Does the project / programme have a learning and knowledge management component to capture and feedback lessons?

Response: Cleared

Secretariat: Yes.

The concept note includes a dedicated knowledge management and learning function under Component 4. Part II.G (p. 39) provides a detailed strategy outlining how learning will be captured across project components; and how results will be disseminated broadly.

Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations in compliance with the Environmental and Social Policy and Gender Policy of the Fund?

Response: Not Cleared

Secretariat: No.

Section II.H (pp. 39-40) describes initial consultations that took place with the project management unit for the existing ARCHE project. However, no consultations appear to have taken place with other relevant stakeholders at the national or local levels; they are anticipated only at the PFG phase. Similarly, an Initial Gender Assessment (Annex I) provides basic context and sets quantitative targets, but is very broad and does not include specific issues at the local level.

CAR6: Please carry out preliminary consultations with other key stakeholders and provide specific details on how the findings from these consultations influence the concept note.

Response: Not Cleared

IE: CAR6

Thank you for the comment. Paragraph 132 and Table 14 have been updated to reflect the preliminary stakeholder consultation mission conducted in Antananarivo from 22 to 26 June 2026. The revisions identify the stakeholders consulted, summarize their main recommendations, and explain how the findings influenced the Concept Note. Paragraph 132 also clarifies that more detailed regional and community-level consultations will be undertaken during the PFG phase.

Response: Cleared

Secretariat: Preliminary stakeholder consultations, including in-person meetings held in Antananarivo from 22 to 26 June 2026 with government institutions, climate and meteorological services, agricultural and research institutions, private-sector actors, and civil society representatives, including youth and women, helped validate and refine the project's geographic focus, climate rationale, proposed interventions, and institutional delivery arrangements.

Is the requested financing justified on the basis of full cost of adaptation reasoning?

Response: Cleared

Secretariat: Yes.

AF resources will finance all of the core activities required to achieve the project's objectives. The project does not rely on co-financing to achieve its adaptation outcomes. The proposal explicitly contrasts its approach with a

baseline scenario that does not include adaptation-related activities.

Is the project / program aligned with AF's results framework?

Response: Cleared

Secretariat: Yes.

Part III.A (pp. 45-46) describes alignment of project objectives and outcomes with the AF Strategic Results Framework. However, further clarification is required.

CAR6.b: Please add the numbers of the Fund Outputs and indicators and refer to the following guidance: <https://www.adaptation-fund.org/document/alignment-with-adaptation-fund-results-framework-template-and-guidance-dec-2025/>

Response: Not Cleared

IE: CAR6.b

Thank you for the comment and for sharing the relevant guidance. Table 16 in Part III.A has been updated accordingly to include the applicable Adaptation Fund Output numbers and corresponding indicator numbers, in alignment with the Fund's Strategic Results Framework.

Response: Cleared

Secretariat: N/A

Has the sustainability of the project/programme outcomes been taken into account when designing the project?

Response: Cleared

Secretariat: Yes.

Part II.J (pp. 42-43) describes a sustainability approach that is structured around two interlinked core pillars: (1) Institutionalization and long-term local ownership, and (2) Replication, local delivery systems, and reduced dependence on donor finance. All four dimensions of sustainability are addressed.

Does the project / programme provide an overview of environmental and social impacts / risks identified, in compliance with the Environmental and Social Policy and Gender Policy of the Fund?

Response: Not Cleared

Secretariat: Yes. However, more information is needed.

Part II.K (pp. 43-44) provides an overview of the environmental and social impacts and risks in compliance with the AF ESP and Gender Policy. The project is classified as Category B. Risks have been identified against each of the 15 ESP principles. An Initial Gender Assessment is included. The screening framework considers direct,

indirect, and cumulative impacts. Plans to develop an Environmental and Social Management Framework (ESMF) for USPs under the project are described. However, the risk assessment table needs to be edited as follows.

CR4: In Table 10, please use check marks in column 2 to indicate risks that do not require further assessment. Leave others blank to indicate that they need to be assessed further. In the third column, please reframe each risk as follows: a) Provide a risk rating (low/medium/high); (b) Provide basic information on how the risk will be addressed starting with “To mitigate this risk, the project will...” for clarity.

Response: Not Cleared

IE: CR4

Thank you for the comment. Table 15 in Part II.K has been revised to include check marks only for principles that do not require further assessment, while the remaining cells have been left blank to indicate that further assessment will be conducted. The third column now provides a preliminary risk rating for each principle and describes the corresponding mitigation approach using the requested formulation. Paragraph 154 has also been added to clarify that the risk ratings are preliminary and will be reviewed during the PFG and full proposal stages through the ESMF and, where required, site-specific assessments and management plans.

Response: Cleared

Secretariat: N/A

Resource Availability

Is the requested project / programme funding within the cap of the country?

Response: Cleared

Secretariat: Yes.

The requested project funding of US\$25,000,000 is within the country cap and below the maximum for a single-country project. The PFG request is also correct in size (\$150,000).

Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?

Response: Cleared

Secretariat: Yes.

All figures are rounded to whole numbers. All budget figures within the text and tables are formatted as whole numbers with no decimals. The Implementing Entity Management Fee is just below 8.5%.

Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme budget (including the fee)?

Response: Cleared

Secretariat: Yes.

All figures are rounded to whole numbers and consistent across the tables. The Project Execution Cost is below 9.5%.

Eligibility of IE

Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?

Response: Cleared

Secretariat: Yes.

UNIDO is an accredited Multilateral Implementing Entity (MIE).
Accreditation Expiration Date: 31 October 2027.



CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Adaptation and resilience through community hubs and local enterprises

Country: Madagascar

Thematic Focal Area: Rural Development

Type of Implementing Entity: Multilateral Implementing Entity

Implementing Entity: United Nations Industrial Development Organisation (UNIDO)

Executing Entities: Le Bureau National des Changements Climatiques, du Carbone et de la Réduction des Emissions dues à la Déforestation et Dégradation des Forêts (BNCC-REDD+) and United Nations Industrial Development Organisation (UNIDO)

Amount of Financing Requested: 25,000,000 (in U.S Dollars Equivalent)

Project Formulation Grant Request: Yes ☒ No ☐

Amount of Requested financing for PFG: 150,000 (in U.S Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

Stage of Submission:

☒ This concept has been submitted before

☐ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 7/15/2026

Please note that concept note documents should not exceed 50 pages, including annexes.

Project/Programme Background and Context:

A. National Context of Madagascar

A1. Geographic and Demographic Profile

1. Madagascar, the world's fourth-largest island, lies in the Indian Ocean off the southeastern coast of Africa, characterized by a high degree of ecological diversity and geographic heterogeneity. It covers 587,000 km² and includes five major ecological zones: the humid east coast, the central highlands, the Tsaratanana Massif in the north, the dry western plains, and the arid southern zones¹. Elevations range from sea level to 2,876 meters at Mt. Maromokotro, producing sharp climatic contrasts. The east receives over 3,000 mm of rainfall annually, while parts of the south receive less than 400 mm, creating semi-desert conditions². The diverse geography of Madagascar, characterized by the five distinct regions creates a variety of climatic zones, from tropical to temperate and arid³. The central highlands and southern regions are critically important agricultural areas that have been severely impacted by recent climate events. This diversity underpins both the country's rich biodiversity and its complex exposure to climate risks.

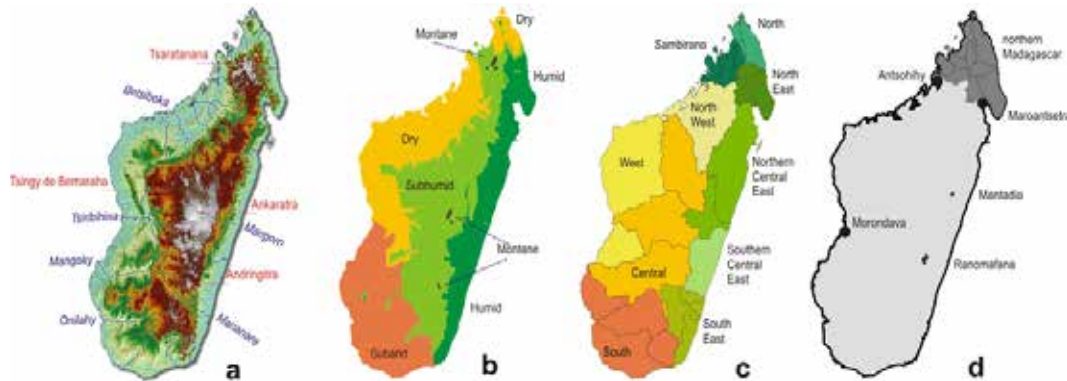


Figure 1: Maps of Madagascar. (a) topography with major mountain massifs and rivers, (b) major bioclimatic zones, (c) geographic regions, boundaries based on watersheds, and (d) delimitation of northern Madagascar including the Sambirano, North, and North East

2. Demographically, Madagascar is a nation with a population estimated at 31.9 million, with a rapid annual growth rate⁴ of 2.4% with over 40% under the age of 15⁵. The population is remarkably young, with a median age of 19.4 years, and a large portion of the population (59.1%) resides in rural areas and depends directly on natural resources⁶. This demographic profile presents a significant opportunity for development, but also a challenge, as a large, young, and predominantly rural population is trapped in a cycle of poverty. The World Bank reports that a staggering 75.2% of the national population is poor, with the rural poverty rate at an alarming 79.9%⁷. The lack of diversified economic opportunities and a dependence on low-productivity agriculture are key drivers of this persistent poverty. Approximately 75–80% of the population resides in rural areas and depends directly on natural resources for livelihoods, primarily through rainfed agriculture, livestock, and fisheries.⁸ Poverty is particularly acute in rural and remote areas, where access to infrastructure, markets, and basic services remains limited.⁹
3. Madagascar's demographic structure is characterized by a very young population, which presents opportunities for economic growth but also places increasing pressure on natural resources and public services. Regional disparities are significant: the southern regions (Grand Sud) experience chronic drought and food insecurity, while the eastern coastal regions are highly exposed to cyclones and flooding.^{10 11} These structural vulnerabilities, combined with high dependence on climate-sensitive sectors, make Madagascar particularly susceptible to climate shocks.¹²
4. Overall, Madagascar's geographic and demographic characteristics, marked by ecological diversity, regional disparities, rapid population growth, and a predominantly young and rural population, shape the country's development

¹ World Bank Climate Change Knowledge Portal, Madagascar – Country Overview <https://climateknowledgeportal.worldbank.org/country/madagascar>

² (World Bank CCKP – Madagascar). <https://climateknowledgeportal.worldbank.org/country/madagascar>

³ https://en.wikipedia.org/wiki/Geography_of_Madagascar - Wikipedia, "Geography of Madagascar"

⁴ World Bank Data, Madagascar country data <https://data.worldbank.org/country/madagascar>

⁵ <https://data.worldbank.org/country/madagascar> - World Bank, "Madagascar - World Bank Open Data"

⁶ <https://datareportal.com/reports/digital-2024-madagascar> - DataReportal, "Digital 2024: Madagascar"

⁷ <https://www.worldbank.org/en/country/madagascar/publication/madagascar-afe-poverty-assessment-navigating-two-decades-of-high-poverty-and-charting-a-course-for-change> - World Bank, "Madagascar Poverty Assessment"

⁸ World Bank, Madagascar Country Climate and Development Report (CCDR) <https://openknowledge.worldbank.org/entities/publication/dfacf3c2-e6cf-4927-b02c-ce4265309dec>

⁹ World Bank, Madagascar Country Overview <https://www.worldbank.org/ext/en/country/madagascar>

¹⁰ World Bank Climate Change Knowledge Portal, Madagascar – Country Overview / historical climate / projections hub <https://climateknowledgeportal.worldbank.org/country/madagascar>

¹¹ WMO, State of the Climate in Africa 2022 <https://wmo.int/resources/publication-series/state-of-climate-africa/state-of-climate-africa-2022>

Direct PDF: https://www.uneca.org/sites/default/files/ACPC/publication/State-of-the-Climates-in-Africa-2022_en.pdf

¹² World Bank, Madagascar Country Climate and Development Report (CCDR) <https://openknowledge.worldbank.org/entities/publication/dfacf3c2-e6cf-4927-b02c-ce4265309dec>

context. These factors influence patterns of resource use, economic activity, and spatial inequalities, and provide important context for understanding broader socio-economic and environmental dynamics.

A2. Environmental and Climate Overview

5. Madagascar is widely recognized as one of the most climate-vulnerable countries in the world due to its geographic exposure, socio-economic fragility, and limited adaptive capacity. The country's climate is highly variable and strongly influenced by the Indian Ocean, resulting in recurrent extreme weather events such as cyclones, floods, and droughts. Climate variability has already intensified over recent decades, with observed changes in temperature, rainfall patterns, and the frequency of climate-related shocks.¹³

A2.1. Historical Climate Trends

6. Over the past decades, Madagascar has experienced increasing climate variability and a rise in the frequency and intensity of extreme events. The eastern coast is regularly affected by tropical cyclones during the cyclone season, typically from November to April. These events often result in widespread flooding, infrastructure damage, and loss of crops and livelihoods. For example, Cyclones Batsirai and Emnati in 2022 caused major destruction and affected hundreds of thousands of people in Madagascar.¹⁴
7. In contrast, the southern regions of Madagascar have been facing recurrent and prolonged droughts, contributing to a severe food security crisis. Rainfall patterns in the Grand Sud have become increasingly erratic, with consecutive years of below-average precipitation severely affecting agricultural production and livelihoods. According to the World Food Programme, southern Madagascar has been repeatedly affected by drought, crop failure, and acute food insecurity.^{15 16}
8. Temperature trends across Madagascar also indicate a gradual increase over the historical record.¹⁷ The World Bank Climate Change Knowledge Portal shows warming trends alongside changes in rainfall distribution, including delayed onset of rainy seasons and increased intra-seasonal variability. Environmental degradation further exacerbates climate vulnerability. Madagascar has experienced extensive deforestation and land degradation, driven by agricultural expansion, fuelwood demand, and unsustainable land use practices.¹⁸ This has led to soil erosion, reduced water retention capacity, and loss of ecosystem services that are critical for resilience to climate shocks.

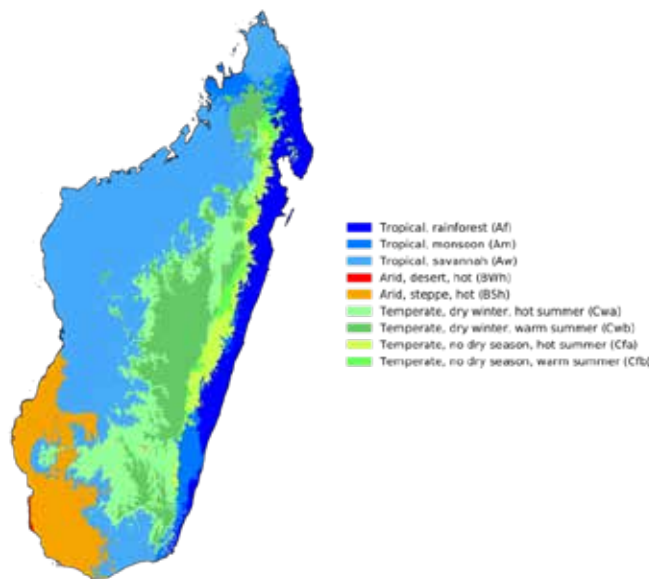


Figure 2: "High-resolution (1 km) Köppen-Geiger maps for 1901–2009 based on constrained CMIP6 projections". Scientific Data. DOI:10.1038/s41597-023-02549-6. 19.03.2024

9. **A2.2. Climate Projections¹⁹** Climate projections for Madagascar indicate that the country will face increasingly severe climate impacts in the coming decades. According to the IPCC Sixth Assessment Report and the World Bank Climate Change Knowledge Portal, average temperatures are projected to continue rising, with significant implications for evapotranspiration, soil moisture, and agricultural productivity. These changes are expected to be especially severe in already arid and semi-arid zones.
10. Temperature In response to increasing greenhouse gas (GHG) concentrations, air temperature over Madagascar is projected to rise by 1.5 to 3.2 °C (very likely range) by 2080 relative to the year 1876, depending on the future GHG emissions scenario (Figure 3). Compared to pre-industrial levels, median climate model temperature

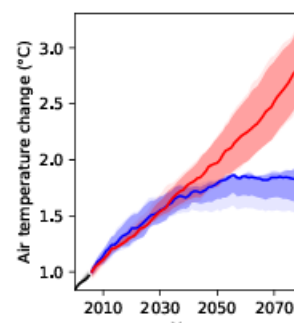


Figure 3: Air temperature projections for Madagascar for different GHG emissions scenarios.

¹³ World Bank Climate Change Knowledge Portal, Madagascar historical climate data <https://climateknowledgeportal.worldbank.org/country/madagascar/climate-data-historical>
ERA5 historical page: <https://climateknowledgeportal.worldbank.org/country/madagascar/era5-historical>

¹⁴ WMO, State of the Climate in Africa 2022 <https://wmo.int/resources/publication-series/state-of-climate-africa/state-of-climate-africa-2022>

¹⁵ World Food Programme, Southern Madagascar drought / famine risk alert <https://www.wfp.org/news/southern-madagascar-government-and-un-sound-alarm-famine-risk-urge-action>

¹⁶ World Food Programme, Madagascar country publications / annual reporting, WFP Madagascar page: <https://www.wfp.org/countries/madagascar>
2021 annual highlights: <https://www.wfp.org/publications/world-food-programme-madagascar-2021-annual-country-report-highlights>

¹⁷ World Bank Climate Change Knowledge Portal, Madagascar – Country Overview / historical climate / projections hub <https://climateknowledgeportal.worldbank.org/country/madagascar>

¹⁸ World Bank, Madagascar Country Climate and Development Report (CCDR) <https://openknowledge.worldbank.org/entities/publication/dfac3c2-e6cf-4927-b02c-ce4265309dec>

¹⁹ GIZ (2021). *Climate Risk Profile: Madagascar*. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and Potsdam Institute for Climate Impact Research (PIK).
https://www.pik-potsdam.de/en/institute/departments/climate-resilience/projects/project-paages/agrica/giz_climate-risk-profile-madagascar_en_final

increases over Madagascar amount to approximately 1.6 °C in 2030 and 1.8 °C in both 2050 and 2080 under the low emissions scenario RCP2.6. Under the medium / high emissions scenario RCP6.0, median climate model temperature increases amount to 1.5 °C in 2030, 2.0 °C in 2050 and 2.8 °C in 2080.

11. Very hot days In line with rising mean annual temperatures, the annual number of very hot days (days with daily maximum temperature above 35 °C) is projected to rise substantially and with high certainty, in particular over western Madagascar (Figure 4). Under the medium / high emissions scenario RCP6.0, the multi-model median, averaged over the whole country, projects 5 more very hot days per year in 2030 than in 2000, 8 more in 2050 and 24 more in 2080.
12. Future projections of precipitation are less certain than projections of temperature change due to high natural year-to-year variability (Figure 5). Out of the four climate models underlying this analysis, two models project a decrease in mean annual precipitation over Madagascar and two models project little change. Median model projections show a precipitation decrease of 114 mm per year by 2080 under RCP6.0, while median model projections for RCP2.6 show a decrease at the beginning of the century, which settles at a decrease of 47 mm by 2080 compared to year 2000. Higher greenhouse gas emissions suggest an overall drier future for Madagascar.
13. Sea level rise: In response to globally increasing temperatures, the sea level off the coast of Madagascar is projected to rise (Figure 6). Until 2050, very similar sea levels are projected under both emissions scenarios. Under RCP6.0 and compared to year 2000 levels, the median climate model projects a sea level rise by 11 cm in 2030, 22 cm in 2050, and 43 cm in 2080. This threatens Madagascar's coastal communities and may cause saline intrusion in coastal waterways and groundwater reservoirs.
14. Climate variability is already shaping Madagascar's development context, with rising temperatures, uncertain rainfall patterns, and more frequent extreme events affecting natural and economic systems. According to the GIZ climate risk profile, temperatures could increase by 1.5 to 3.2°C by 2080, while precipitation is expected to become more erratic. At the same time, per capita water availability is projected to decline due to growing demand. These trends are likely to affect water-dependent production systems and increase variability in agricultural conditions.
15. Overall, these projected changes are expected to have profound implications for Madagascar's economy, food systems, and human development prospects. Agricultural productivity is likely to decline due to water stress, extreme weather events, and land degradation, while fisheries and coastal livelihoods will also be affected by changing ocean and coastal conditions. Without significant adaptation action, climate change is expected to deepen poverty, increase vulnerability, and constrain Madagascar's ability to pursue sustainable and inclusive development.

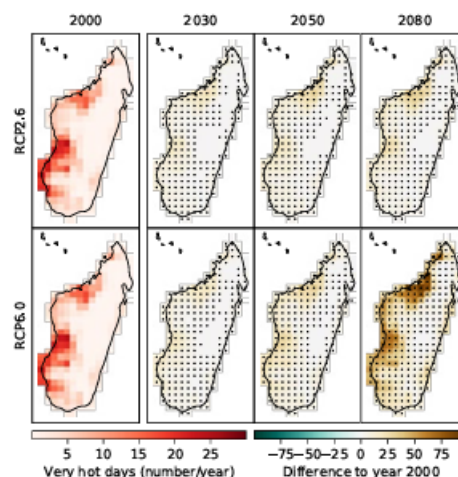


Figure 4: Projections of the annual number of very hot days (daily maximum temperature above 35 °C) for Madagascar for different GHG emissions scenarios.

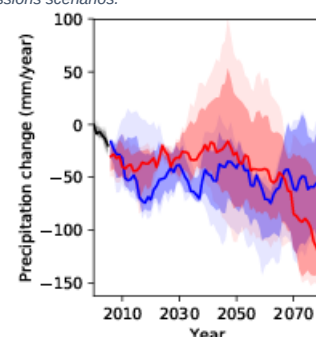


Figure 5: Annual mean precipitation projections for Madagascar for different GHG emissions scenarios, relative to the year 2000.

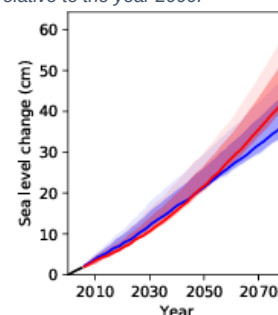


Figure 6: Projections for sea level rise off the coast of Madagascar for different GHG emissions scenarios, relative to the year 2000.

A3. Economic and Political Overview/Economic and Rural Development Context

A.3.1 Structure of the Rural Economy

16. Madagascar's economy is characterized by a significant contribution of the primary sector, alongside a larger share of value added generated by the services sector. As reflected in (Table 1), agriculture accounts for approximately 69% of total employment, while contributing around 22% of GDP, compared to the services sector, which contributes nearly 48% of GDP and employs about 20% of the workforce. The industrial sector contributes around 23% of GDP and represents a relatively smaller share of employment. This distribution reflects a high concentration of labor in lower-productivity sectors and a limited level of structural transformation. Economic performance remains influenced by structural constraints, including limited diversification and a strong dependence on climate-sensitive activities.²⁰

Table 1: Sectoral Distribution of Employment and Economic Contribution in Madagascar

Indicator	Agriculture	Industry	Services
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²⁰ Economic Development Board of Mauritius (EDB). Madagascar: Economic and Political Outline.

https://trade.mu/en/portal/explore-new-markets/country-profiles/madagascar/economic-and-political-outline#classification_by_products

Employment by Sector (% of total employment)	69.38	10.12	20.5
Value Added (% of GDP)	22.46	22.79	47.72
Value Added (Annual % change)	4.78	3.56	3.04

17. From a policy perspective, Madagascar has established national strategies aimed at supporting economic development, improving productivity, and strengthening resilience. The economy remains reliant on the export of primary commodities such as vanilla, cloves, and other agricultural products, which are subject to both market and climatic variability. At the same time, access to infrastructure, services, and markets remains uneven, particularly in rural areas. In this context, the rural economy plays a central role in livelihoods and economic activity and constitutes an important entry point for addressing vulnerability and supporting resilience.
18. Madagascar's rural economy is central to its socio-economic structure and is characterized by a high dependence on natural resources, limited diversification, and strong exposure to climate variability. Approximately 60–80% of the population resides in rural areas, with livelihoods largely based on agriculture, fisheries, and forestry.²¹ These activities are predominantly small-scale and subsistence-oriented, with limited access to infrastructure, finance, and markets. Rural production systems are shaped by geographic and climatic conditions, with significant regional disparities. The central highlands and eastern regions support more intensive agricultural activities, while the southern regions face water scarcity and recurrent drought. Across regions, low levels of mechanization, limited irrigation, and weak integration into value chains contribute to low productivity and income instability.²²
19. In this context, rural value chains play a critical role in linking production to markets and supporting livelihoods. However, these value chains often remain fragmented and constrained by logistical, institutional, and financial barriers. Limited access to storage, climate resilient processing facilities, and transport infrastructure reduces value addition and increases vulnerability to external shocks. As a result, rural economies are highly sensitive to both economic and climatic disruptions.²³

A.3.2 Key Value Chains in the Rural Economy

20. Madagascar's rural economy is structured around a set of key value chains that support both food security and income generation. Among these, rice production and essential oils are particularly significant, alongside other crops such as cassava, maize, cloves, and vanilla²⁴. Agriculture, forestry, and fisheries employ around 80% of Madagascar's labor force and contributed 21.1% of GDP in 2023, confirming that the national economy remains heavily dependent on climate-sensitive rural production systems²⁵. Subsistence crops include rice, cassava, and maize, while cash crops: vanilla, cloves, coffee, cocoa, and essential oils, generate foreign exchange. Agribusiness exports accounted for 48% of Madagascar's total export earnings in 2017, showing how strongly the country's macroeconomic performance depends on rural value chains²⁶. Rice is particularly central to Madagascar's economic and social fabric: it is grown by about 85% of agricultural households, represents nearly 70% of agricultural production, and accounts for about 48% of total calorie consumption, making the rice value chain essential not only for food security but also for rural incomes, domestic markets, and economic stability²⁷. IFAD further notes that rice is grown by 86% of households and describes rice production as the leading economic activity, generating livelihoods for approximately 10 million inhabitants²⁸. Cash crops, especially vanilla, cloves and essential oils, generate foreign exchange. Vanilla alone contributes 25–30% of export revenues, but essential oils are increasingly important. The World Bank's 2024 Country Environmental Analysis identifies vanilla as accounting for about 26% of export value, while essential oils and cloves together account for about 7%, confirming that the essential oils value chain is already a significant contributor to Madagascar's export economy²⁹. Trade data also show that Madagascar exported about US\$95.1 million of essential oils in 2024, highlighting the sector's growing commercial relevance and its potential as a climate-resilient income-generating value chain³⁰.
21. Essential oils and aromatic plants, including ylang-ylang, ravintsara, and geranium, represent an important export-oriented value chain. These products contribute to income diversification in several regions and are linked to international markets. The sector has shown responsiveness to targeted investments and regulatory improvements,

²¹ World Bank Data <https://data.worldbank.org/country/madagascar>

²² World Bank Poverty Assessment <https://www.worldbank.org/en/country/madagascar/publication/madagascar-afe-poverty-assessment-navigating-two-decades-of-high-poverty-and-charting-a-course-for-change>

²³ World Bank CCDR (2024) <https://openknowledge.worldbank.org/entities/publication/dfacf3c2-e6cf-4927-b02c-ce4265309dec>

²⁴ World Bank CCDR (2024) <https://openknowledge.worldbank.org/entities/publication/dfacf3c2-e6cf-4927-b02c-ce4265309dec>

²⁵ World Bank Group, *Madagascar Country Climate and Development Report*, 2024. <https://documents1.worldbank.org/curated/en/099120524094529941/pdf/P179685-b64adbbd-6341-4f80-996d-27788bdef963.pdf>

²⁶ World Bank. (2018, August 29). *Project appraisal document for the Integrated Growth Poles and Corridor Project 2*. World Bank.

<https://documents1.worldbank.org/curated/en/348081537500634040/pdf/Madagascar-Integrated-PAD-08292018.pdf>

²⁷ World Bank Independent Evaluation Group, *Implementation Completion Report (ICR) Review: MG-BVPI PHRD Rice (P128831)*, 2018.

<https://documents1.worldbank.org/curated/en/260191541609116796/pdf/Madagascar-MG-BVPI-PHRD-Rice.pdf>

²⁸ International Fund for Agricultural Development, *Madagascar*, IFAD, accessed March 13, 2026. <https://www.ifad.org/en/w/countries/madagascar>

²⁹ World Bank Group, *Madagascar Country Climate and Development Report*, 2024. <https://documents1.worldbank.org/curated/en/099120524094529941/pdf/P179685-b64adbbd-6341-4f80-996d-27788bdef963.pdf>

³⁰ Observatory of Economic Complexity, *Essential Oils*, OEC, accessed March 13, 2026. https://oec.world/en/profile/hs/essential-oils?selector2767id=trade_i_baci_a_17

with export values increasing in recent years in supported segments. However, production systems remain sensitive to environmental conditions and are constrained by limited processing capacity and market access. In 2023, Madagascar's essential oil exports were valued at approximately \$45.7 million, and the sector serves as a primary source of livelihood for over half a million families³¹. However, despite its immense potential and unique resources, Madagascar holds only a marginal share of the global essential oil market due to structural challenges within the value chain. These structural challenges are now compounded by climate change, which poses a significant and growing threat to the essential oil sector. At the same time, rice is indispensable to Madagascar's socioeconomic fabric and must be considered alongside essential oils in any climate-resilient value-chain intervention.

22. Rice is the country's main staple crop a central component of the rural economy, it is grown by about 85 percent of rural households, which represents nearly 70 percent of agricultural production, making it a central component to both rural incomes and national food security³². Rice systems are largely rainfed or dependent on basic irrigation infrastructure, making them sensitive to water availability and seasonal variability. Despite its importance, productivity remains low due to limited access to input, irrigation, and improved practices.³³ FAO further notes that Madagascar has one of the longest traditions of rice cultivation outside Asia and that rice is cultivated in almost all districts of the country, underscoring the breadth and strategic relevance of the rice value chain for livelihoods, markets, and resilience³⁴. IFAD likewise emphasizes the economic importance of rice, reporting that it is grown by 86 percent of households, covers 40 percent of cropland in use, and accounts for 37 percent of agricultural cash income, confirming that the rice value chain is not only a subsistence system but also a major commercial and livelihood backbone for rural households³⁵.
23. The country's socio-economic foundation is highly fragile, with over 85% of the population engaged in farming activities, most of which are small-scale and rain-fed³⁶. These communities are at the forefront of the climate crisis, facing increasingly frequent and intense extreme weather events. A series of exceptional droughts in the country's south since 2019 have critically impacted agricultural production, pushing over one million people into acute food insecurity³⁷. Furthermore, recurring tropical cyclones cause extensive damage to crops, infrastructure, and markets. These climate shocks exacerbate a cycle of poverty, compelling farmers to adopt environmentally damaging coping mechanisms, such as slash-and-burn agriculture, which further contributes to deforestation and soil erosion³⁸.
24. More broadly, agricultural value chains in Madagascar are characterized by fragmentation and limited value addition. Weak linkages between production, processing, and commercialization reduce efficiency and resilience. These constraints are particularly relevant for smallholder farmers and micro-enterprises, which play a central role in these value chains but often lack the resources to adapt to changing conditions.

A.4 Climate Adaptation Policy and Institutional Framework

A.4.1 National Adaptation Policy Framework

25. Madagascar's adaptation policy framework has evolved from a set of urgent, project-based responses under its National Adaptation Programme of Action (NAPA) to a broader, more programmatic approach under the National Adaptation Plan (NAP/PNA). Madagascar's NAP³⁹ as published in 2022, is intended to strengthen adaptation governance, mainstream adaptation across priority sectors, and mobilize finance. The NAP process was developed through a participatory and intersectoral approach⁴⁰ and identifies adaptation priorities in agriculture, water resources, infrastructure, forests and biodiversity, coastal zone management, human health, and climate risk management.

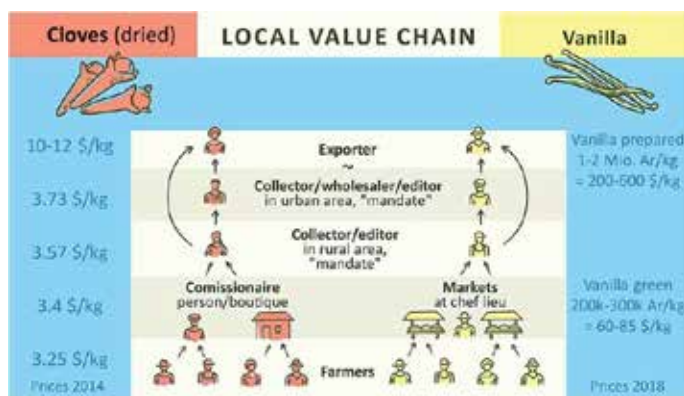


Figure 7: Local- to regional-level value chain structure for clove and vanilla. Remark: Different years for price development along the value chains

³¹ <https://oec.world/en/profile/bilateral-product/essential-oils/reporter/mdg> - The Observatory of Economic Complexity, "Essential Oils in Madagascar Trade"

³² World Bank Independent Evaluation Group. (2018). *Implementation completion report (ICR) review: MG-BVPI PHRD Rice (P128831)* (Report No. ICRR0021396). World Bank.

³³ <https://documents1.worldbank.org/curated/en/260191541609116796/pdf/Madagascar-MG-BVPI-PHRD-Rice.pdf>

³⁴ World Bank AgPER (2025) <https://documents1.worldbank.org/curated/en/099145312092519386/pdf/IDU-52843189-d4fd-4fb0-9c66-6910b75319c9.pdf>

³⁵ Food and Agriculture Organization of the United Nations (FAO). "A Higher-Yield Rice Variety Moves Madagascar Further on the Path to Self-Sufficiency: How South-South Cooperation Helps Ensure Food Security for Family Farmers." *Family Farming Knowledge Platform*, 2020. <https://www.fao.org/family-farming/detail/en/c/1604280/>

³⁶ International Fund for Agricultural Development. (2022, March). *Investing in rural people in Madagascar*. IFAD.

³⁷ https://www.ifad.org/documents/48415603/49748822/Investing-in-rural-people-Madagascar_e.pdf/d344dbee-1ae7-5495-8b0e-7577ae48f16f?t=1726642699205

³⁸ <https://www.worldbank.org/en/results/2023/11/19/madagascar-making-an-impact-on-land-reform-and-agriculture> - World Bank, "Madagascar: Making an Impact on Land Reform and Agriculture"

³⁹ <https://www.imf.org/-/media/Files/Publications/Selected-Issues-Papers/2023/English/SIPEA2023037.ashx> - IMF, "Food Insecurity and Climate Shocks in Madagascar"

⁴⁰ <https://www.greenclimate.fund/story/climate-smart-farming-boosts-forests-and-food-security-madagascar> - Green Climate Fund, "Climate-smart farming boosts forests and food security in Madagascar"

³⁹ National Adaptation Plan of Madagascar : <https://unfccc.int/documents/488094>

⁴⁰ Madagascar NAP Approach: [chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://napglobalnetwork.org/wp-content/uploads/2018/02/napgn-en-2019-madagascar-nap-process-poster.pdf](https://efaidnbmnnnibpcajpcgclefindmkaj/https://napglobalnetwork.org/wp-content/uploads/2018/02/napgn-en-2019-madagascar-nap-process-poster.pdf)

26. The earlier NAPA remains relevant because it shows how adaptation priorities were initially framed in operational terms for vulnerable rural systems. In the UNFCCC NAPA priorities database, Madagascar's priority actions include mobilization of water management associations, support to the intensification of crop and livestock production, erosion control and dune stabilization, reforestation of rural areas, transfer of forest management to local communities, communication infrastructure to increase exchange and trade in high-potential production areas, and information-sharing systems to reach rural communities. Taken together, these priorities show that Madagascar's early adaptation agenda already linked rural production, water management, ecosystem protection, local institutions, and market connectivity.
27. For ARCHE-scale concept note, the main policy shift from the NAPA to the NAP is important. The NAPA was oriented toward urgent near-term interventions, often at project level, while the NAP moves toward integration of adaptation into sector planning, coordination, and financing. This matters for rural economies and value chains because adaptation needs are no longer confined to farm-level responses alone. The current policy framework increasingly recognizes that resilience depends on irrigation, local institutions, infrastructure, and the broader enabling environment that links producers to processing and markets.

A.4.2 Policies Relevant to Rural Economies and Value Chains

28. The Madagascar Agriculture Public Expenditure Review (AgPER) 2025 is particularly useful because it translates this policy agenda into concrete issues of expenditure, implementation, and value-chain performance. It finds that the government's PSAEP and subsequent PNIAEP 2016–2020 provided the main investment framework for agriculture, livestock, fisheries, and forestry, aligned with the Malabo Declaration and CAADP. The AgPER states that these frameworks were supported by sector and sub-sector strategies covering food security, rice production, seed development, mechanization, irrigation management, training and capacity-building, fertilizer development, and technical services for farmers. The PNIAEP investment plan totaled US\$3.2 billion for 2016–2020, but the financing gap was estimated at US\$1.8 billion, equivalent to 58% of total needs.⁴¹
29. For rural value chains, the AgPER highlights several practical gaps that are directly relevant to adaptation. On rice, it recalls that the National Rice Development Strategy (SNDR) aimed to strengthen rice research, irrigation, mechanization, input use, road infrastructure for market access, post-harvest quality, and governance of the rice value chain, including through the Rice Concertation Platform. However, the review notes that rice production stagnated, fertilizer and certified seed use remained below targets, and financing for irrigation maintenance remained a persistent challenge. This is important because it suggests that adaptation for the rice value chain depends not only on agronomic measures but also on maintenance systems, governance, and post-harvest performance.
30. The AgPER also provides useful evidence on extension and irrigation, both of which are central to climate adaptation in rural economies. It notes that Madagascar has lacked a national extension service strategy since 2000, contributing to uncertainty and fragmented approaches, and that the shares of extension services and capacity building in donor-funded farmer support fell from about 30–40% before 2016 to around 20% in 2020–2022. On irrigation, it concludes that successive governments expanded irrigated areas with heavy reliance on external finance, but project effectiveness has been constrained by Water Users' Associations, limited state involvement in infrastructure management, insufficient capacity-building, and the infrastructure quality. The report therefore points to the need for stronger operation and maintenance arrangements and climate-smart infrastructure standards.
31. The same review also underlines that competitiveness and resilience in value chains are shaped by more than production support alone. It finds that negative price incentives for producers have been associated with high transport costs, weak market access, regulatory and legal obstacles, financial and technical constraints, and inefficiencies along value chains, especially in post-harvest and export processes. It also notes that inadequate rural infrastructure, particularly roads, electricity, and water systems, continues to constrain production, value addition, and market access. In this sense, adaptation policy for rural economies and value chains needs to be understood as a combination of climate resilience, service delivery, market functioning, and institutional coordination. Madagascar's National Adaptation Plan (NAP) for 2021⁴² identifies community-based adaptation, ecosystem restoration, and climate-resilient livelihoods as key pillars of national resilience strategies. The NAP and ongoing subnational adaptation planning processes (Table 2) similarly prioritize nature-based and locally led approaches to reduce vulnerability. This project directly responds to these national priorities by focusing on strengthening the adaptive

⁴¹ World Bank, Madagascar Agriculture Public Expenditure Review (AgPER): [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://documents1.worldbank.org/curated/en/099145312092519386/pdf/IDU-52843189-d4fd-4fb0-9c66-6910b75319c9.pdf](https://documents1.worldbank.org/curated/en/099145312092519386/pdf/IDU-52843189-d4fd-4fb0-9c66-6910b75319c9.pdf)

⁴² Madagascar's National Adaptation Plan: <https://www.preventionweb.net/publication/madagascar-plan-national-dadaptation-au-changement-climatique-pna>

capacity and resilience of vulnerable communities in Madagascar.

Table 2: Madagascar's key policy and institutional frameworks supporting climate-resilient rural economies and agricultural value chains

Policy / framework	What it covers	Relevance to rural economies and value chains
National Adaptation Programme of Action - NAPA (2006)	Early priority adaptation actions focused on urgent needs. UNFCCC-listed priorities for Madagascar include water management associations, intensification of crop and livestock production, erosion control, reforestation, local forest management, communication infrastructure, and rural information systems.	shows that Madagascar's adaptation agenda has long linked water, production, ecosystems, local institutions, and market access .
National Adaptation Plan of Madagascar (NAP / PNA (2021/2022))	Strengthens adaptation governance, mainstreams adaptation in priority sectors, and aims to mobilize finance. Priority sectors include agriculture, water resources, infrastructure, forests and biodiversity, coastal zone management, human health, and climate risk management.	frames adaptation as systemic and cross-sectoral , rather than only project-based. Supports an ARCHE approach that links farm resilience to infrastructure, institutions, and finance.
Programme Sectoriel Agriculture, Élevage et Pêche PSAEP / PNIAEP 2016–2020	Main agricultural investment framework aligned with Malabo and Comprehensive Africa Agriculture Development Programme (CAADP). Covered food security, rice, seeds, mechanization, irrigation, training, fertilizer, and technical services. Total plan size US\$3.2 bn; financing gap US\$1.8 bn (58%).	policy ambition exists, but implementation depends on financing and expenditure quality.
Rice policy instruments: National Rice Development Strategy (SNDR), mechanization, fertilizer strategy)	Rice strategy sought to strengthen research, irrigation, mechanization, input use, roads for market access, post-harvest quality, and governance of the rice chain; AgPER notes stagnation in production and persistent maintenance/financing challenges.	Directly relevant to a value-chain lens: resilience in rice depends on irrigation, inputs, roads, post-harvest management, and coordination .
Extension and irrigation systems Water Users' Association (WUA) / Association des Usagers de l'Eau (AUE)	AgPER notes no national extension strategy since 2000; extension/capacity-building shares in farmer support fell from 30–40% pre-2016 to about 20% in 2020–2022. Irrigation effectiveness is limited by weak WUAs, limited state management, weak capacity-building, and poor infrastructure quality.	identifies implementation bottlenecks for adaptation in rural value chains.

B. Target Regions and Priority Value Chains

B.1 Preliminary Geographic Focus

B.1.1 Indicative Target Regions

32. The proposed ARCHE Scale intervention regions remain tentative and will be confirmed during the PFG phase through detailed assessments and stakeholder consultations. Their preliminary identification has been guided by Government of Madagascar recommendations and focuses on areas where essential oil value chains overlap with rice production systems, rural livelihoods, and high climate vulnerability, including **Diana (particularly Nosy Be–Ambanja), Analanjirofo, Atsinanana, SAVA, Alaotra-Mangoro, and Haute Terre**. These regions combine essential oil production, food-security value chains, and significant exposure to climate-related risks, making them potential priority areas for intervention.
33. Madagascar's target regions for a value-chain-based adaptation intervention can be understood as a combination of highly exposed production zones and economically significant rural territories. In the present concept, three regional clusters stand out: Diana, particularly Nosy Be–Ambanja for ylang-ylang and related essential-oil activity⁴³; Analanjirofo and Atsinanana along the east coast, where cloves and clove-derived products are closely linked to rural incomes⁴⁴; and Alaotra-Mangoro and Haute Terre, where rice production remains central to food systems and where aromatic and tree-based production systems also intersect with broader land and water management issues. Together, these clusters provide a geographically differentiated intervention area that links export-oriented value chains, food-security value chains, and productive landscapes exposed to distinct but overlapping climate risks.

B.1.2 Regional Climate Vulnerability and Adaptation Rationale

34. Diana is located in the north of Madagascar and includes the island of Nosy Be as well as the Ambanja area, both cited in industry as important locations for ylang-ylang production in Madagascar. In poverty terms, Diana is comparatively less deprived than many other regions, but it still records substantial multidimensional poverty, with an MPI of 0.256 and 52.1% of the population classified as multidimensionally poor in the OPHI regional profile. Its coastal and island geography also increases exposure to cyclones, coastal hazards, transport disruptions, and ecosystem degradation, which can affect both production and market continuity.

⁴³ Essential oil Production Nosy-be : <https://iacarandas-international.com/en/huile-essentielle-ylang-ylang-notre-production-de-nosybe/>

⁴⁴ Agroforestry innovation by smallholders facing uncertainty: The case of clove-based cropping systems in Madagascar. <https://www.sciencedirect.com/science/article/abs/pii/S1161030120302252?via%3Dihub>

35. Analanjirofo and Atsinanana are eastern coastal regions with strong agroforestry and export-crop linkages. Academic and sector literature consistently identifies the east coast as the core zone for clove-based systems, and recent analysis notes that clove production in eastern Madagascar is largely undertaken by smallholders and remains an important source of rural income⁴⁵. In OPHI's regional poverty mapping, Analanjirofo records an MPI of 0.278, while Atsinanana is more deprived at 0.349; the share of the population in multidimensional poverty reaches 57.0% in Analanjirofo and 66.5% in Atsinanana. These regions are also highly relevant from an adaptation perspective because eastern coastal production systems are exposed to tropical cyclones, intense rainfall, soil erosion, landslides, and damage to rural infrastructure, all of which can disrupt production, processing, transport, and income generation.
36. Alaotra-Mangoro occupies a different position in the national economy. It is one of Madagascar's most important rice-producing areas and has long been treated in adaptation planning as a strategic agricultural basin. The region combines a strong agricultural role with persistent vulnerability: OPHI⁴⁶ reports an MPI of 0.341 and a multidimensional poverty headcount of 64.9%. Earlier Adaptation Fund documentation also identified Alaotra-Mangoro as a priority area for adaptation investment because of its economic importance and its exposure to climate-related risks affecting irrigated rice systems. For ARCHE Scale, this cluster provides the rationale for integrating the rice value chain alongside essential oils, as requested by national stakeholders, given its central role in food security, rural livelihoods, water management, and climate-sensitive production systems. The region's adaptation needs are closely linked to rainfall variability, water availability, irrigation performance, soil degradation, and the resilience of producer organizations and post-harvest systems.
37. Taken together, these regions illustrate why a geographically differentiated approach is needed. They do not face the same hazards or have the same socio-economic profile, but they share three characteristics relevant for ARCHE-scale intervention: a high dependence on rural livelihoods, a material connection to value chains with either food-security or export importance, and exposure to climate-related disruptions that extend beyond farm production to water systems, infrastructure, and market access.

B.2 Rice Value Chain

B.2.1 Importance of the Rice Value Chain

38. Rice occupies a central place in Madagascar's economy, food system, and rural livelihoods. It is the country's most widely consumed and produced crop, and average annual rice consumption is estimated at 153.5 kg per person, representing more than half of daily caloric intake for the average Malagasy consumer. The rice sector is therefore not only a production system but also a core pillar of food security and social stability. The IMF notes that annual rice production increased by 76 percent between 2002 and 2022, reaching 4.6 million tons in 2022, yet domestic output has continued to lag behind demand as population growth has outpaced production growth.
39. The value chain is equally important from a livelihoods perspective. Rice production in Madagascar is dominated by small rural producers, and the broader rural economy remains highly dependent on agriculture. The IMF reports that the government is targeting rice self-sufficiency by 2027 and production of 11 million tons by 2030, reflecting the strategic importance of the value chain for national development and import substitution. At the same time rice productivity remains structurally low, which limits the ability of the sector to fully meet domestic demand under current production systems.

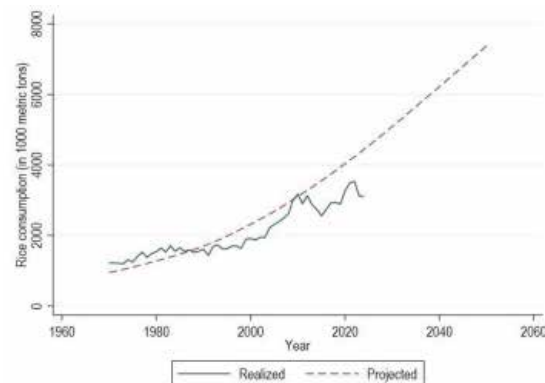


Figure 8: Projected Annual Rice Consumption in Madagascar (in 1000 metric tons)

⁴⁵ Danthu, P., Sarron, J., Penot, E., Mariel, J., Razafimaharo, V., & Michel, I. (2024). *The agroforests of the east coast of Madagascar*. In E. Torquebiau (Ed.), *Agroforestry at work* (Tropical Forest Issues 62, pp. 136–142). Tropenbos International. https://www.tropenbos.org/app/data/uploads/sites/2/3-8Danthu-1.pdf?utm_source=chatgpt.com

⁴⁶ Global MPI Country Briefing 2025: Madagascar (Sub-Saharan Africa), Oxford Poverty and Human Development Initiative (OPHI)

B.2.2 Current State and Main Constraints

40. The current state of the rice value chain is defined by high economic and food-system relevance, but also by low average yields, fragmented production systems, and persistent reliance on imports. The IMF paper indicates that Madagascar has substantial room to increase yields and notes a large gap between realized and potential yields, even before considering more ambitious technological improvements. This suggests that the main challenge is not the absence of production potential, but rather constraints related to inputs, irrigation, farm systems, and value chain performance.

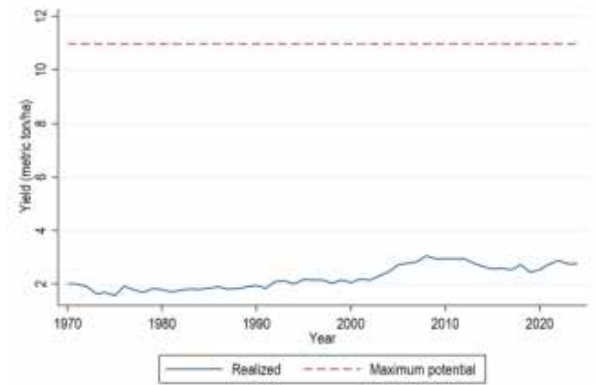


Figure 9: Rice Yield in Madagascar (Realized Vs Potential in metric ton/hectare)

41. The production base is predominantly smallholder and remains vulnerable to weak access to fertilizer, irrigation, and quality seed. In this context, the rice value chain is characterized by relatively low resilience to shocks and limited ability to translate production gains into stable national self-sufficiency. The IMF also notes that local rice supply responds positively to price incentives, but only with a lag of several years, indicating that production expansion is possible but requires sustained supply-side support rather than short-term market measures alone.
42. The current structure of the value chain also reflects geographic diversity. Rice production is spread across different agroecological systems, including irrigated lowlands, rainfed systems, and wetland cultivation zones. This spatial diversity is important because climate impacts will not affect all rice areas equally. Areas currently favorable to wetland rice are projected to shift over time, which has direct implications for where future investments in irrigation, adaptation, and extension services will be most effective.

B.2.3 Projected Climate Change Impacts

43. Climate change is expected to affect the rice value chain through declining potential yields, increasing production risk, and shifts in the geographic suitability of rice cultivation. According to the IMF, under RCP 4.5, annual potential rice yield in Madagascar would be around 5 percent lower by 2050 under current input conditions, while under RCP 8.5 annual rice production could decline by 25 percent by 2080. These projected declines under current input conditions are illustrated in Figure 10, which shows the extent of production losses in the absence of major adaptation measures. The paper emphasizes that these estimates likely understate total risk because they are based on agro-climatic conditions and do not fully include the additional effects of cyclones, droughts, and floods, which are also expected to intensify.
44. These projected losses are especially important in a context where the country is already trying to close a structural gap between domestic demand and local production. Lower yields, more erratic rainfall, and greater exposure to extreme events would directly weaken self-sufficiency prospects and increase food insecurity risks. The IMF further notes that climate change may disrupt water availability, which is critical because irrigation is one of the key factors that could otherwise help offset climatic stress. This is further illustrated in Figure 11, which compares production outcomes under ideal input conditions, highlighting how improved access to irrigation, fertilizer, and inputs could partially mitigate climate-induced losses.

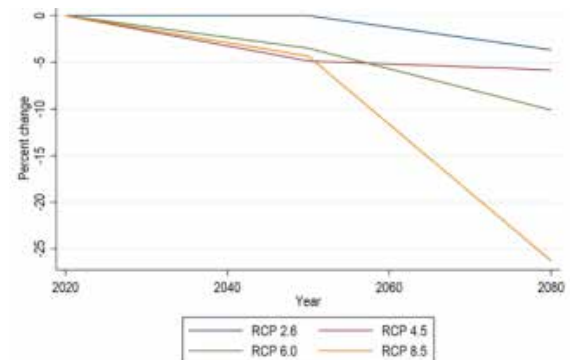


Figure10: Decline in Madagascar's Rice Production Under different RCP Scenarios (Current input conditions)

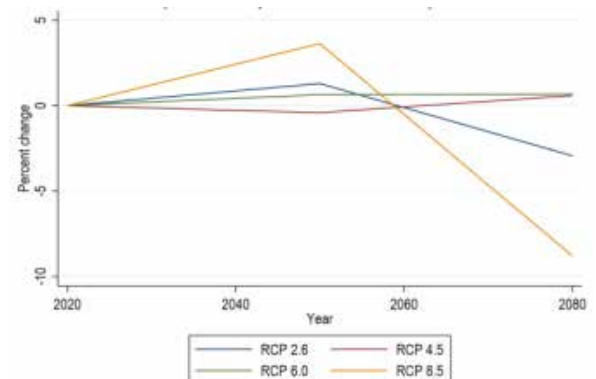


Figure 11: Decline in Madagascar's Rice Production Under RCP Scenarios (Ideal Input Condition)

45. The spatial effects are also significant. Under RCP 4.5, the projected suitability index for wetland rice cultivation is expected to increase in the north and east, while declining in the southwest over time. This spatial shift is illustrated in Figure 12, which maps projected changes in suitability and highlighted emerging and declining production zones. This indicates that climate change is likely to reshape the regional geography of the rice value chain, with implications for land use, adaptation planning, and investment prioritization. In practice, this means that current production zones in the central highlands and other established rice areas may require stronger resilience measures, while emerging or increasingly suitable areas in the north and east may need better planning, irrigation, and land governance to accommodate future expansion sustainably.

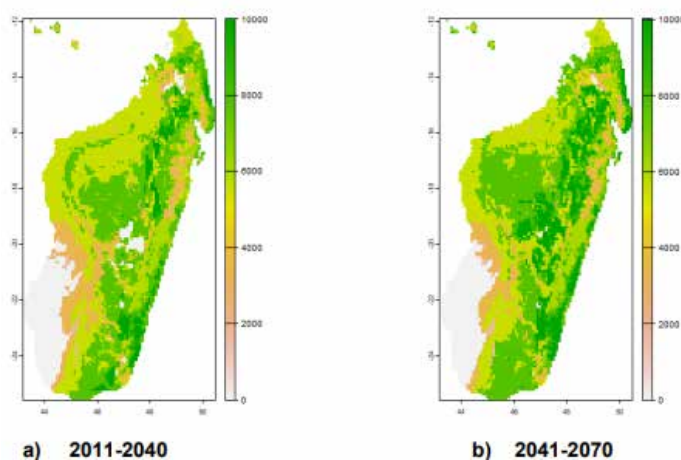


Figure 12: Projected Suitability Index for Wetland rice cultivation in Madagascar under RCP 4.5

46. More broadly, Madagascar's climate hazard profile reinforces these concerns. Droughts are more frequent in the southwest, while cyclones predominate in the east and parts of the north, and floods affect the east and central regions. For the rice value chain, this means climate risks vary sharply by region and production system. Irrigated and wetland systems may face increasing flood and storm-related disruption in some areas, while rainfed systems face stronger drought and rainfall variability in others.

B.3 Essential Oils Value Chain

B.3.1 Importance of the Essential Oils Value Chain

47. The essential oils (EO) and aromatic plants value chain represents an important agro-industrial segment of Madagascar's rural economy, linking biodiversity-based production systems to international markets. Madagascar is recognized as a producer of high-value essential oils such as ylang-ylang, clove (bud and leaf oil), cinnamon, ravintsara, and vetiver, which supply global fragrance, cosmetic, pharmaceutical, and aromatherapy industries.
48. While earlier assessments identified a relatively small but export-oriented sector, more recent data show significant growth. Essential oils exports reached approximately USD 95 million in 2024, while clove exports, closely linked to the EO value chain, reached USD 248 million in 2023, positioning Madagascar among the leading global suppliers of these products. In addition, the sector has demonstrated strong growth dynamics, with an estimated average annual growth rate of around 21% between 2010 and 2020, and potential to reach USD 450 million in exports by 2030.
49. From a livelihood's perspective, the EO value chain engages tens of thousands of rural actors, including smallholder farmers, collectors, and artisanal distillers. Production and primary processing are highly decentralized, with a significant share of value addition occurring at the local level. For example, in the ylang-ylang sub-sector, up to 80% of distillation is carried out by artisanal units, reflecting both the inclusiveness of the sector and its limited level of industrialization.

B.3.2 Current State and Main Constraints

50. The EO value chain follows a multi-stage agro-industrial structure, including production, collection, primary processing (distillation), secondary processing, and export. However, despite its export orientation, the sector remains fragmented and under-industrialized, with significant inefficiencies across stages.

Key constraints include:

- Low processing efficiency due to outdated distillation technologies and reliance on firewood
- Limited industrial upgrading, including lack of modern equipment, testing facilities, and certification systems
- Weak vertical integration and coordination between producers, processors, and exporters
- Limited access to finance and business development services for MSMEs
- High informality, affecting traceability and market access: recent analysis shows that 75% of sellers and 65% of processors operate without formal compliance, highlighting systemic governance and regulatory gaps.

These constraints reduce the sector's competitiveness and its ability to scale while increasing vulnerability to climate and market shocks.

B.3.3 Projected Climate Change Impacts

51. Looking ahead, projected climate change is expected to further intensify risks across Madagascar's EO value chain. Climate projections indicate continued temperature increases across Madagascar through the end of the century, with maximum and minimum temperatures projected to rise by 3.5°C to 4.2°C under a high-emissions scenario, and a strong increase in tropical nights in several regions, including the north-eastern coast where clove-based systems are concentrated⁴⁷. These projected changes may affect EO crops through heat stress, altered flowering and harvesting periods, changes in plant development, pest and disease pressure, reduced raw material availability and possible changes in oil quality. The ARCHE climate-risk assessment further notes that projected decreases in rainfall, longer dry periods, sea-level rise, cyclones, floods and droughts are expected to increase stress on climate-sensitive natural resource-based agriculture, including EO production, with implications for plants and biodiversity-dependent value chains. More intense tropical cyclones are also expected to become more frequent in Madagascar, which could further damage clove, ylang-ylang and other aromatic production areas, disrupt rural roads and infrastructure, and increase erosion, flooding and supply interruptions. Recent research on ylang-ylang essential oils also notes that compositional shifts may occur over time due to climate change, suggesting that projected climate trends could affect not only production volumes but also quality parameters and market standards⁴⁸. These projected impacts reinforce the need for anticipatory adaptation measures across the EO value chain, including climate information services, agroforestry and ecosystem restoration, resilient harvesting and post-harvest systems, cleaner and more efficient distillation, and locally validated support to smallholders, collectors, distillers and MSMEs.

Table 3: Indicative Geographic Focus and Adaptation Justification for ARCHE Scale

Region	Rice value chain relevance	Essential oil value chain relevance	Climate vulnerability and adaptation needs	Rationale for ARCHE Scale
Alaotra-Mangoro	One of Madagascar's most strategic rice-producing areas, including irrigated and lowland rice systems.	Relevant for ravintsara and other aromatic/tree-based systems, particularly around the central-east/highland interface, including Moramanga/Anjoro areas.	Exposed to rainfall variability, drought, water stress, land degradation, flash floods and post-harvest losses affecting rice systems. Needs include climate-smart rice production, water management, ecological restoration, resilient storage and advisory services.	Strong candidate for integrating rice resilience with aromatic/tree-based systems and ecosystem-based adaptation. It also allows ARCHE Scale to build on previous Adaptation Fund experience in the rice sector.
Analanjorofo	Rural livelihoods include food crops, including rice, alongside export-oriented agroforestry systems.	Madagascar's main clove-producing region; clove products and clove leaf oil are major income sources for smallholders.	Highly exposed to tropical cyclones, intense rainfall, landslides, soil erosion, infrastructure disruption and market volatility. Needs include cyclone-resilient agroforestry, clove regeneration, energy-efficient distillation, soil conservation, and local climate information services.	Strong candidate because it combines high climate exposure, smallholder vulnerability, clove/clove oil production, and food-crop dependence.
Atsinanana	Eastern coastal rice and food-crop systems are important for rural livelihoods and food security.	Part of the eastern agroforestry belt where clove, cinnamon and other aromatic crops are produced and processed.	Exposed to cyclones, flooding, intense rainfall, erosion, landslides and transport disruptions. Needs include climate-resilient agroforestry, post-harvest technologies, resilient rural infrastructure linkages, and processing improvements.	Relevant for a value-chain-based adaptation approach linking aromatic crops, food security, rural livelihoods and climate-risk management in coastal production systems.
SAVA	Scientific literature on northeastern Madagascar notes that rural livelihoods are heavily based on rice, despite the importance of cash crops.	Strong aromatic/export-crop region, especially vanilla and clove; clove can be linked to essential oil and eugenol-based value chains.	Very exposed to cyclones, flooding, crop damage, soil fertility declines and market shocks. Needs include diversified climate-resilient livelihoods, agroforestry restoration, climate information, improved storage, and adaptation support for smallholder systems.	cluster if ARCHE Scale wants to link rice, aromatic export crops and high cyclone vulnerability in northeastern Madagascar.
Diana	Ambanja/Sambirano farming systems include rice among other crops, but the strength of rice value-chain relevance should be further validated during consultations.	Strategic ylang-ylang production area, especially Nosy Be and Ambanja, with distillation and smallholder-linked production systems.	Exposed to cyclones, coastal hazards, rainfall variability, transport disruption, ecosystem degradation and pressure on biomass resources used in distillation. Needs include resilient ylang-ylang production, energy-efficient distillation, agroforestry, watershed protection and climate services.	Important if ARCHE Scale maintains a strong essential-oil focus, particularly ylang-ylang. It should be retained if the project wants to build on ARCHE EO experience, but the rice linkage should be verified locally.

47 Building adaptation and resilience to climate change in the essential oil sector in Madagascar (ARCHE) https://cdn.climatepolicyradar.org/navigator/MDG/2022/building-adaptation-and-resilience-to-climate-change-in-the-essential-oil-sector-in-madagascar-arche_648455593bd524988b1a59e363a3d927.pdf

48 Improving the Quality of Ylang-Ylang Essential Oils [Cananga odorata (Lam.) Hook.f. & Thomson] Through Microwave-Assisted Extraction Compared to Conventional Extraction Methods, <https://www.mdpi.com/2223-7747/14/20/3217>

C. Climate Adaptation Barriers and Proposed Solutions

C.1 Climate Adaptation Barriers

52. The resilience of Madagascar's essential oil (EO) and rice value chains is shaped by a set of structural constraints that influence the capacity of institutions, markets, and local actors to respond effectively to climate variability and long-term change. These constraints operate across governance, knowledge systems, finance, market access, and ecosystem management, and are particularly relevant in rural areas where livelihoods depend heavily on climate-sensitive sectors.

C.1.1 Institutional and Coordination Barriers

53. Institutional frameworks for climate adaptation have been developed at national level, including the National Adaptation Plan (NAP) and sectoral strategies; however, evidence indicates that challenges remain in translating these frameworks into coordinated and operational actions at decentralized levels⁴⁹. Coordination across institutions responsible for agriculture, forestry, water, and environment is often uneven, and differences in technical and administrative capacity across regions may affect implementation⁵⁰. This can limit the effective integration of climate adaptation into value chain development and local planning processes.

C.1.2 Technology, Knowledge and Innovation Barriers

54. Access to appropriate technologies, innovation systems, and business support services also affects the capacity of value chain actors to adapt to climate change. The availability of locally adapted climate-resilient technologies remains uneven, and linkages between research institutions, innovation providers, and producers are still evolving⁵¹. In addition, business development services that support MSMEs in developing viable models, accessing markets, and scaling innovations are not consistently accessible, particularly in rural areas (UNIDO, ARCHE Project⁵²). These factors may limit the ability to translate adaptation solutions into sustainable economic opportunities within EO and rice value chains.

C.1.3 Financial Barriers

55. Access to finance adapted to climate risks is another factor influencing the adoption of climate-resilient practices. While financial inclusion has expanded in recent years, smallholders, cooperatives, and MSMEs in rural areas continue to face constraints related to collateral requirements, informality, and the limited availability of tailored financial products⁵³. Financial institutions may also have limited experience in assessing climate-related investments, and climate risk insurance products remain relatively underdeveloped⁵⁴. These conditions can affect the capacity of actors to invest in technologies, infrastructure, and practices that support adaptation.

C.1.4 Infrastructure and Market Barriers

56. The performance of EO and rice value chains is also influenced by infrastructure, market access, and coordination among actors. In rural areas, transport infrastructure and logistics systems remain limited, and these constraints can be exacerbated by climate-related disruptions such as cyclones and flooding (World Bank, 2023)⁵⁵. Access to market information, distribution networks, and value addition opportunities remain uneven, while coordination among producers, processors, and traders is often fragmented. These factors may affect both the resilience and competitiveness of value chains under changing climatic conditions.

C.1.5 Ecosystem and Natural Resource Barriers

57. Finally, ecosystem conditions play a central role in shaping the resilience of agricultural and natural resource-based value chains. In Madagascar, land degradation, deforestation, and unsustainable land-use practices—such as slash-and-burn agriculture (tavy)—are widely documented and contribute to declining soil fertility, reduced water retention, and increased exposure to drought and flooding⁵⁶. At the same time, the uptake of ecosystem-based and nature-based adaptation approaches remains limited, despite their recognized potential to enhance both resilience and productivity⁵⁷. Strengthening the integration of ecosystem management into value chain development is therefore an important consideration.

⁴⁹ Government of Madagascar (2021). *Plan National d'Adaptation (PNA)* <https://www4.unfccc.int/sites/NAPC/Documents/Parties/Madagascar%20NAP.pdf>

⁵⁰ World Bank Climate Change Knowledge Portal – Madagascar <https://climateknowledgeportal.worldbank.org/country/madagascar>

⁵¹ World Bank (2017). *Agricultural Sector Public Expenditure Review (AgPER), Madagascar* <https://documents.worldbank.org>

⁵² Building adaptation and resilience to climate change in the essential oil sector in Madagascar: <https://compass.unido.org/projects/190280>

⁵³ World Bank (2020). *Madagascar Country Economic Memorandum* <https://documents1.worldbank.org/curated/en/699781575279412305/pdf/Madagascar-Country-Economic-Memorandum-Scaling-Success-Building-a-Resilient-Economy.pdf>

⁵⁴ MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets

<https://openknowledge.worldbank.org/entities/publication/ff4c9839-21ac-5676-a23a-7c6f745df0c>

⁵⁵ World Bank (2023). *How are roads changing lives in Madagascar?*

<https://www.worldbank.org/en/results/2023/02/10/how-are-roads-changing-lives-in-madagascar>

⁵⁶ FAO (2021). *Madagascar Country Programming Framework* <https://www.fao.org/evaluation/list/cpe-madagascar>

⁵⁷ World Bank (2020). *Environment and Natural Resources Assessment – Madagascar* <https://openknowledge.worldbank.org/entities/publication/9aebc6fd-0f84-5fc8-9129-3bd1b7ede885>

C.2 Proposed Climate Adaptation Solutions

58. Taken together, these constraints highlight the importance of integrated approaches that address climate risks across the full value chain, from production and processing to market access and ecosystem management. Strengthening institutional coordination, improving access to climate information and finance, supporting innovation systems, and promoting ecosystem-based approaches are key elements for enhancing resilience in Madagascar's EO and rice value chains.
59. ARCHE Scale adopts a systems-based approach to adaptation that considers resilience across production systems, productive landscapes, ecosystem services, processing, market linkages, and supporting institutions. Adaptation solutions will be co-designed and validated with local stakeholders through climate risk-informed and participatory processes that take into account local agroecological conditions, projected climate risks, ecosystem health, biodiversity, upstream and downstream value chain dependencies, and potential maladaptation risks. Before wider deployment, proposed solutions will be assessed to ensure they are technically appropriate, environmentally sustainable, economically viable, and responsive to the specific needs and priorities of target communities and value chain actors.
60. The solution areas presented below are indicative examples intended to illustrate the types of adaptation options that may be discussed during project preparation and local consultations. They should not be understood as pre-selected or recommended solutions for communities. In line with locally led adaptation principles, the final selection, prioritization and design of solutions will be determined through participatory assessments, community consultations and stakeholder validation in each target region, ensuring that local actors retain decision-making agency and that interventions respond to locally identified risks, needs and capacities

Table 4: Indicative climate risks, vulnerable groups and potential adaptation solution areas in the proposed ARCHE Scale target regions

Region	Main climate challenges	Most climate-vulnerable sectors / groups	Indicative examples of possible solution areas
Alaotra-Mangoro	Rainfall variability, drought and water stress, flash floods, land degradation and post-harvest losses affecting rice and aromatic/tree-based systems.	Rice smallholders; women involved in rice production, processing and trade; poor rural households; ravintsara and aromatic plant collectors and processors.	Climate-smart rice systems; improved seed systems; water management; soil fertility restoration; improved drying, storage and processing; climate advisories.
Analanjirifo	Cyclones, intense rainfall, landslides, soil erosion, tree damage, blossom loss and market or transport disruptions.	Smallholder clove farmers; clove leaf collectors; women and youth involved in harvesting, processing, local trade and seasonal labour.	Cyclone-resilient agroforestry; clove regeneration; mixed cropping; soil conservation; slope restoration; energy-efficient distillation; climate advisories.
Atsinanana	Cyclones, flooding, intense rainfall, erosion, landslides, post-harvest losses and transport disruptions in coastal production systems.	Food-crop and rice producers; aromatic crop producers; processors and exporters; women and youth involved in post-harvest handling, processing and trade.	Climate-resilient agroforestry; improved harvesting, drying and processing; resilient storage; soil and water conservation; climate information services.
SAVA	Cyclones, flooding, rainfall variability, crop damage, pest and disease pressure, soil fertility declines and market shocks affecting export crops	Smallholder rice and agroforestry producers; vanilla, clove and aromatic crop producers; women and youth workers; cooperatives and traders.	Diversified climate-resilient livelihoods; climate-smart agroforestry; soil restoration; improved post-harvest handling and traceability; enterprise and cooperative support.
Diana	Cyclones and coastal hazards, salt spray, heavy rainfall, waterlogging, ecosystem degradation and pressure on biomass resources used for distillation.	Ylang-ylang producers and distillers; smallholder flower pickers; women harvest and distillation workers; processors using firewood boilers; mixed farming households.	Resilient ylang-ylang production; agroforestry, windbreaks and shade trees; watershed protection; cleaner and more efficient distillation; biomass-efficient technologies; local validation of rice linkages.

D. Project Objectives:

61. The project seeks to realize the potential of locally led adaptation systems, local adaptation enterprises, producer organizations, and inclusive financial mechanisms to provide cost-effective and locally appropriate adaptation solutions to vulnerable communities in climate-susceptible geographies in Madagascar. It therefore aims to increase the climate resilience of vulnerable groups by fostering, deploying, and scaling commercially and institutionally viable adaptation solutions that are responsive to locally identified needs, thereby generating positive and sustainable economic, social, and environmental externalities, particularly for vulnerable groups integrated into priority value chains and local adaptation markets.
62. In light of these challenges, ARCHE Scale addresses financial, informational, technical and institutional barriers that limit the sustained uptake of locally appropriate adaptation solutions by vulnerable communities, producer groups, rural SMEs

and value chain actors in climate-susceptible areas of Madagascar. It will focus on reducing vulnerability to key climate risks, including cyclones, droughts, erratic rainfall, flooding, land degradation and ecosystem decline, by supporting locally led adaptation planning, access to relevant adaptation solutions, and mechanisms for their financing and long-term use.

63. The project will support climate-resilient production practices, nature-based solutions, adaptive post-harvest and processing technologies, and local enterprises that can provide context-appropriate goods and services. By linking community needs, local service provision, inclusive finance and institutional support, the project aims to strengthen the conditions for the uptake of adaptation solutions in rice production areas and other priority climate-sensitive and high-value value chains, including essential oils. It will also support local governance, planning, monitoring, learning and policy processes to improve the coordination, sustainability and potential replication of adaptation actions.

D.1 Overall Objective

64. To reduce the vulnerability and increase the climate resilience of vulnerable communities, producer groups, rural SMEs and value chain actors in priority climate-sensitive production landscapes in Madagascar by addressing financial, informational, technical and institutional barriers to the uptake of locally appropriate adaptation solutions.

D.2 Specific Objectives

- Strengthen locally led adaptation planning, community-based governance systems and decision-support mechanisms to support vulnerable communities, producer groups, SMEs and local institutions in identifying climate risks, prioritizing adaptation needs and coordinating local action.
 - Support the adoption and scaling of locally relevant climate-resilient solutions across production systems, productive landscapes, post-harvest functions and processing stages, including nature-based solutions, climate-smart practices and adaptive technologies tailored to rice and other priority value chains, including essential oils.
 - Strengthen local adaptation enterprises, market systems and inclusive financial mechanisms to improve access to affordable adaptation solutions, support climate-resilient livelihoods and enable women, youth and vulnerable groups to participate in and benefit from adaptation-related opportunities.
 - Strengthen adaptive management, learning, safeguards and institutional sustainability to support inclusive, evidence-based and responsive implementation, and to create conditions for effective approaches, tools and partnerships to be sustained and replicated beyond the project period.
65. The project will apply locally led adaptation principles by integrating participatory approaches into design and implementation. Adaptation measures will be informed by local climate risks, community priorities and agro-ecological conditions, while taking into account the participation of women, youth, vulnerable groups, producer organizations, local enterprises and institutions. This approach is intended to support local ownership, reduce maladaptation risks and improve the sustainability of climate-resilient livelihood and enterprise models.

D.3 Target Groups and Beneficiaries:

66. This project focuses on vulnerable communities and local actors in Madagascar's climate-sensitive production landscapes, particularly smallholder farmers, producer groups, cooperatives, SMEs, local adaptation enterprises, women, youth, and marginalized groups engaged in rice production areas and other priority climate-sensitive and high-value value chain areas, including essential oils. The project gives particular attention to local enterprises and organizations that combine local embeddedness, responsiveness to community needs, and a clear adaptation-oriented rationale, including those that provide climate-resilient products and services or facilitate their uptake. These actors are expected to contribute to reducing gender and socio-economic inequalities by improving access to adaptation solutions, enterprise support, finance, and participation in decision-making for women, youth, and other underserved groups. While the project will directly support SMEs, producer organizations, cooperatives, community-based structures, and other local delivery actors, smaller and more informal micro-enterprises and vulnerable households that form part of their value chains and local economic systems are also expected to benefit indirectly through improved access to adaptation goods, services, financing, knowledge, and market opportunities.

E. Project/Programme Components and Financing:

Table 5: Project Components, Expected Outcomes, Outputs, and Indicative Budget Allocation

Project Components	Expected Outcomes	Expected Outputs	Amount per Output (US\$)	Amount per Component (US\$)
Component 1: Strengthening Locally led Adaptation Systems and, Institutional Capacities	Outcome 1: Local institutions, community networks, producer groups and relevant value chain actors are equipped with participatory processes, localized tools and capacity to co-design and implement inclusive, climate risk-informed adaptation actions.	Output 1.1: Community Climate Adaptation Hubs (CCAH) established and operational in target regions to coordinate locally led adaptation planning, capacity-building and service delivery.	1,000,000	2,500,000
		Output 1.2: Digital and community-based decision-support, monitoring and learning tools developed and piloted through CCAHs to support localized adaptation planning and investment decision-making.	750,000	
		Output 1.3: Participatory policy recommendations developed to strengthen the enabling environment for locally led adaptation in priority value chains.	750,000	
Component 2: Deploying Locally Relevant Climate-Resilient Solutions for Adaptive Livelihoods	Outcome 2: Communities and value chain actors adopt climate-resilient practices, technologies, and nature-based solutions that reduce vulnerability in production landscapes and strengthen adaptive livelihoods.	Output 2.1: Locally appropriate and innovative climate adaptation solutions for resilient climate-smart production practices and technologies (e.g., Integrated Resilient Rice Model, seed systems) identified, co-designed validated and scaled through local enterprises and cooperative-led delivery mechanisms	5,000,000	11,000,000
		Output 2.2: Nature-based solutions and adaptive post-harvest storage and processing technologies adopted and piloted across productive landscapes and priority value chains through enterprise, community and producer group partnerships.	4,000,000	
		Output 2.3: Applied research and innovation partnerships with national and local institutions, CBOs, and producer networks established to co-design, pilot, and validate innovative adaptation solutions that reflect local priorities and generate learning for replication	2,000,000	
Component 3: Strengthening Local Adaptation Enterprises and Financial Innovation for Inclusive Resilience	Outcome 3: Local adaptation enterprises are enabled to develop and deliver climate-resilient products and services, supported by inclusive financial innovation and market mechanisms that expand access for communities and value chain actors	Output 3.1: Local adaptation enterprises, particularly women and youth led, receive acceleration, business development and investment facilitation services to innovate, develop, and deliver climate-resilient solutions tailored to local needs	2,000,000	5,000,000
		Output 3.2: Inclusive financial instruments for adaptation solutions co-designed through partnerships with local financial institutions, buyers, and community-based entities, informed by participatory assessments of local needs, barriers, and delivery channels.	1,500,000	
		Output 3.3: Targeted financial instruments (e.g., microcredit, input financing, insurance, off-take mechanisms) deployed to enable vulnerable communities and value chain actors, particularly women and youth, to adopt adaptation solutions	1,500,000	
Component 4: Enabling Adaptive Project Management, Learning, and Institutional Sustainability	Outcome 4: Project implementation is inclusive, adaptive, and evidence-based, strengthened institutional capacities to sustain and scale up climate resilience outcomes.	Output 4.1: Adaptive project governance and inception operationalized.	750,000	2,560,495
		Output 4.2: Participatory execution, safeguards, and learning systems established	1,000,000	
		Output 4.3: Knowledge products, communication, and dissemination	810,495	
5. Project/Programme Execution cost			1,980,980 USD	
6. Total Project/Programme Cost			23,041,475 USD	
7. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			1,958,525 USD	
Amount of Financing Requested			25,000,000 USD	

F. Projected Calendar:

Table 6: Project Milestones and Expected Timeline

Milestones	Expected Dates
Start of Project Implementation	January 2028
Mid-term Review (if planned)	July 2031
Project/Programme Closing	December 2034
Terminal Evaluation	July 2034

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

A.1 Proposed Intervention

67. At the core of the proposed project is the strengthening of locally led adaptation systems and climate-resilient value chains in Madagascar so that vulnerable communities, producer groups, SMEs, and local enterprises can better anticipate, absorb, and respond to climate risks while sustaining adaptive livelihoods. The project is designed around a four-pronged approach that links locally identified adaptation needs with the institutions, solutions, enterprises, and systems required to address them in an inclusive and scalable manner.
68. Rural communities, producer groups, cooperatives, SMEs, and local enterprises engaged in Madagascar's priority value chains face multiple and interconnected climate risks, including cyclones, erratic rainfall, drought, flooding, soil degradation, pest and disease pressure, and increasing pressure on natural resources. These risks directly affect the productivity, quality, processing, storage, and market reliability of climate-sensitive value chains such as essential oils and rice. While potential adaptation solutions are recognized in Madagascar's national climate and development priorities, including the NAP and NDC, their sustained uptake remains constrained by financial, technical, informational, institutional, and market-related barriers. Many producers and enterprises lack access to localized and actionable climate information, affordable adaptation technologies, climate-resilient inputs, improved processing equipment, and practical advisory services. Existing support systems remain fragmented, while local enterprises and service providers often lack the capacity, financing, and market incentives to deliver adaptation solutions at scale. Women and youth face additional barriers, including unequal access to land, finance, training, decision-making spaces, and productive assets, making a gender-responsive and inclusive approach essential.
69. To promote the sustained adoption and scaling of climate-resilient solutions, the project will address these barriers by strengthening locally led adaptation systems, developing functioning local markets for adaptation solutions, and improving the resilience of priority value chains. The project will support communities and value chain actors to identify, co-design, validate, and adopt locally appropriate adaptation solutions, including climate-smart production practices, nature-based and ecosystem-based adaptation measures, circular economy approaches, and adaptive post-harvest and processing technologies. At the same time, it will strengthen local SMEs, cooperatives, service providers, and innovation actors so they can supply affordable and context-appropriate adaptation products and services. This will help link local demand for resilience with local supply capacities, while improving livelihoods, reducing climate-related losses, and strengthening the competitiveness of climate-sensitive value chains.
70. The project will be rooted in locally led adaptation principles by embedding participatory planning, community-level consultations, and inclusive decision-making throughout project design and implementation. Community Climate Adaptation Hubs will serve as decentralized platforms to identify local risks and priorities, coordinate service delivery, facilitate access to climate information, and support monitoring, learning, and feedback. Particular attention will be given to women, youth, smallholder producers, informal workers, and other vulnerable groups to ensure that adaptation solutions are accessible, relevant, and socially acceptable. The project will also build on the experience, findings, institutional relationships, and lessons generated by the ongoing UNIDO ARCHE project, while ensuring clear complementarity and non-duplication. In line with national stakeholder requests, the proposed intervention will also integrate the rice value chain, given its strategic importance for food security, livelihoods, and climate resilience in Madagascar.
71. The project will explore and scale climate adaptation solutions that are locally relevant, context-specific, and innovative. Some solutions may already be known or tested in Madagascar or in comparable contexts, such as agroforestry, intercropping, soil and water conservation, improved nursery systems, low-emission processing, climate-resilient storage, traceability, and circular use of agricultural and processing by-products. However, their integration into coordinated, value chain-specific adaptation packages represent a more systematic and scalable approach. The project will also promote partnerships with research institutions, technical service providers, local enterprises, financial institutions, and public agencies to ensure that scientific knowledge, traditional practices, and market-oriented innovation are connected to frontline adaptation support. This approach will strengthen long-term adaptive capacity, improve the flow of practical guidance to producers and enterprises, and create the conditions for sustained and replicable climate resilience across Madagascar's priority value chains.

A.2 Project Structure and Intervention Logic :

72. The project is structured around four interlinked components designed to strengthen locally led adaptation systems and climate-resilient value chains in Madagascar. Component 1 builds the institutional and community foundations for adaptation by establishing decentralized Community Climate Adaptation Hubs, strengthening local capacities, and introducing climate risk assessment, digital decision-support, and community-based monitoring tools. Component 2 supports the identification, validation, and deployment of locally relevant climate-resilient solutions across priority value chains, including climate-smart production practices, nature-based solutions, and adaptive post-harvest and processing technologies that directly respond to the needs of vulnerable producers, cooperatives, SMEs, and local enterprises. Component 3 strengthens the role of local adaptation enterprises and financial actors by supporting women- and youth-led businesses, improving access to tailored financial mechanisms, and expanding local markets for climate-resilient products and services. Component 4 ensures adaptive project management, inclusive governance, safeguards, monitoring, learning, and knowledge sharing, so that project approaches remain responsive to evolving climate risks and can be sustained and scaled beyond the project lifetime. Together, these components create mutually reinforcing pathways that combine local ownership, institutional capacity, practical adaptation solutions, enterprise innovation, and financial inclusion to advance resilient livelihoods and climate-resilient value chains in Madagascar.

A.3 Unidentified Sub-Projects (USP)

73. The project includes several interventions under Components 1 and 2 that may fall under the Adaptation Fund's definition of Unidentified Sub-Projects (USPs). These include:
- The final selection and deployment of locally appropriate climate adaptation solutions for smallholder producers, cooperatives, rural households, MSMEs and value chain actors in the essential oils and rice value chains, based on the indicative menu of potential adaptation solutions to be further refined during project preparation and consultations;
 - The identification and support of local MSMEs, cooperatives, producer organizations, service providers and innovation actors to deliver or scale appropriate climate adaptation solutions across production, processing, post-harvest handling, storage, circular economy and market access;
 - The piloting and customization of climate information services, digital tools, traceability systems, decision-support instruments and advisory services tailored to the needs of smallholders, cooperatives, EO and rice value chain actors;
 - The final selection of demonstration sites, community-level adaptation packages, nature-based and ecosystem-based adaptation measures, and value chain resilience investments in targeted districts and regions.

A.3.1 Rationale for Unidentified Sub-Projects

74. These interventions are not fully pre-defined at the concept stage to uphold the principles of locally led adaptation (LLA) and ensure that the project remains responsive to localized climate risks, evolving community priorities, value chain needs, and dynamic market and technology environments. Climate vulnerabilities differ significantly across Madagascar's essential oil and rice-producing landscapes, including exposure to cyclones, erratic rainfall, drought, soil degradation, water stress, pest and disease pressure, post-harvest losses and market disruptions. Site-specific agro-ecological conditions, institutional capacities, social dynamics and socio-economic vulnerabilities also vary considerably across regions and value chain actors. A uniform or pre-determined approach would therefore be technically inappropriate and could risk generating maladaptive outcomes.
75. In accordance with the Adaptation Fund's Updated Guidance for Implementing Entities on USPs, including Decision B.39/52, the use of USPs is justified on the basis that:
- The nature, location and final design of certain sub-projects cannot yet be determined without the results of participatory planning processes, stakeholder consultations, value chain assessments and localized climate risk and vulnerability assessments;
 - Deferring the final selection of sub-projects allows for demand-driven and inclusive co-design of adaptation solutions with producers, cooperatives, MSMEs, women, youth, local authorities and other value chain actors, thereby increasing ownership, uptake, social acceptability and long-term sustainability;
 - The proposed flexibility is necessary to allow the project to build on the findings and lessons generated by the ongoing UNIDO ARCHE project, while avoiding duplication and ensuring that ARCHE Scale delivers additional adaptation benefits, including through the inclusion of the rice value chain as requested by national stakeholders;
 - The benefits of flexibility, responsiveness and locally grounded design outweigh the increased safeguards complexity, provided that robust environmental and social safeguards, gender-responsive planning and grievance mechanisms are applied throughout the project cycle.

A.3.2 Environmental and Social Management of Unidentified Sub-Projects

76. All USPs will fall within permissible categories defined in the Adaptation Fund guidance, including partially unidentified sub-projects and fully unidentified sub-projects within a fixed project framework. They will be governed by a comprehensive Environmental and Social Management Framework (ESMF), to be prepared during the full proposal stage. The ESMF will outline:
- A clear process for screening all USPs for environmental and social risks prior to implementation. Adaptation solutions will be validated through detailed agro-ecological, climate risk, value chain and social analysis, alongside extensive stakeholder consultations with smallholder producers, cooperatives, MSMEs, women's groups, youth representatives, local authorities, technical services and private sector actors;
 - Eligibility and selection criteria for sub-projects, including relevance to climate adaptation, alignment with community-defined priorities, contribution to resilience of the essential oils and/or rice value chains, feasibility, sustainability, cost-effectiveness, and potential to benefit vulnerable groups;
 - MSME and service provider selection criteria, including operational presence in target areas, technical capacity, alignment with locally identified adaptation needs, ability to deliver or scale climate-resilient solutions, and commitment to inclusive service delivery, particularly for women, youth and vulnerable communities;
 - Defined exclusion criteria for activities, locations or technologies that could generate significant adverse environmental or social impacts, lead to maladaptation, create land tenure conflicts, undermine biodiversity or natural habitats, increase inequality, or duplicate activities already financed under other projects;
 - Stakeholder engagement provisions, including gender-responsive and socially inclusive planning, meaningful participation of vulnerable groups, and accessible grievance redress mechanisms at all USP locations;
 - Clear roles and responsibilities for UNIDO as Implementing Entity, BNCC-REDD+ and other national/local Executing Entities and partners in the implementation, monitoring and supervision of safeguards.
77. Budgetary provisions will be allocated to cover the full cost of USP safeguards screening, stakeholder consultations, gender assessments, environmental and social assessments, value chain diagnostics, climate risk analysis, grievance redress mechanisms, and adaptive safeguards management. The project's Monitoring and Evaluation (M&E) system will track the identification, screening, approval, implementation and safeguards performance of each USP, with results disaggregated by sex, age and other relevant social identifiers, in alignment with the Adaptation Fund's results framework. The final design, selection mechanisms, eligibility criteria and safeguards measures for all USPs will be further elaborated in the full project proposal, ensuring compliance with the Adaptation Fund's Environmental and Social Policy (ESP), Gender Policy (GP), and USP guidance.

Table 7: Justification for USPs

Related Outputs	USPs	Justification for non-identification at this stage	Benefits for non-identification	Benefit/risk trade-off
Outputs 1.1, 1.2 and 1.4	Participatory identification of climate risks, adaptation needs and locally appropriate solutions for essential oils and rice value chains	The final adaptation priorities, target groups and local solution packages cannot be fully defined at concept stage, as climate risks and vulnerabilities vary across regions, production systems, value chains and communities.	Enables the project to follow locally led adaptation principles and ensure that solutions are demand-driven, context-specific and accepted by producers, cooperatives, SMEs, women and youth.	All identified solutions will be screened under the ESMF and Gender Action Plan. Only eligible activities aligned with AF safeguards and non-duplication requirements will be financed.
Output 1.3	Climate information services, digital decision-support tools, climate risk maps and value chain digital tools	The final design of digital tools cannot be fully determined before assessing data availability, user needs, institutional hosting arrangements and digital access constraints.	Ensure that tools are practical, accessible and tailored to the needs of producers, cooperatives, SMEs, local authorities and service providers.	Risks related to exclusion, low digital literacy, data quality and limited connectivity will be addressed through training, offline options, local-language communication and safeguards screening.
Outputs 2.1, 2.2	Deployment of climate-resilient production, nature-based, post-harvest, processing and circular economy solutions	The exact technologies, practices and sites will depend on participatory assessments, value chain diagnostics, agro-ecological conditions and consultations with local actors.	Allows the project to select solutions that are technically relevant, climate-responsive, affordable and adapted to local production and market constraints.	Site-specific environmental and social screening will be conducted before implementation to avoid maladaptation, biodiversity impacts, land-related risks or unequal access to benefits.
Output 2.1 and Component 3 outputs	Selection and support of SMEs, cooperatives, service providers and local adaptation enterprises	The final list of enterprises and service providers will be identified through transparent calls, consultations and technical screening based on locally defined adaptation needs.	Enables the project to support actors best positioned to deliver or scale climate-resilient products and services, including women- and youth-led enterprises.	Clear eligibility, fiduciary, gender and safeguards criteria will be applied to avoid exclusion, elite capture, weak delivery capacity or financing of non-adaptation activities.
Component 3 outputs	Inclusive financial mechanisms to support	The final financial mechanisms will depend on consultations with producers, cooperatives, SMEs,	Allows financing support to be demand-driven, inclusive and adapted to the realities of	Financial support will be governed by clear eligibility, transparency, fiduciary and safeguards criteria

	adoption of adaptation solutions	financial institutions and buyers, as well as the affordability and investment needs of selected solutions.	vulnerable producers and local enterprises.	to avoid over-indebtedness, exclusion or misuse of resources.
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A.3.3 Consultation and Selection Process

78. Consultation processes for Unidentified Sub-Projects will be differentiated according to the type of intervention, including: (i) locally identified and co-designed adaptation solutions for the essential oils and rice value chains under Outputs 2.1, 2.2 and 2.3; (ii) the selection and support of SMEs, cooperatives, service providers and local adaptation enterprises under Output 2.4 and Component 3; and (iii) the design of inclusive financial mechanisms under Component 3. For adaptation solutions, facilitated community consultations, value chain dialogues and co-design sessions will be used to validate priority climate risks, local adaptation needs, preferred solution packages, operation and maintenance requirements, and transparent selection criteria for beneficiaries and partners. These processes will ensure the explicit inclusion of women, youth, smallholder producers, vulnerable groups, cooperatives, SMEs and local institutions. For enterprise support and financial mechanisms, consultations with producers, cooperatives, SMEs, financial institutions, buyers and local actors will help identify locally prioritized adaptation investments, relevant products and services, and inclusive eligibility criteria for recipients. In all cases, validated beneficiaries, enterprises, service providers and investments will be confirmed through stakeholder and community meetings and documented as part of the technical, fiduciary, gender, environmental and social screening process for each USP by the Project Management Unit, the national Executing Entity and relevant local partners.

A.4 Theory of Change

79. The Theory of Change outlines how the project's four components interact to strengthen locally led adaptation systems and climate-resilient value chains in Madagascar. It identifies the causal pathways through which improved local adaptation planning, stronger institutional capacities, access to localized climate information, deployment of practical adaptation solutions, support to local adaptation enterprises, and inclusive financial mechanisms will enable vulnerable communities and value chain actors to better anticipate, absorb and respond to climate risks.

A.4.1 Component-Level Change Pathways

Component 1: Strengthening Locally-led Adaptation Systems and Institutional Capacities

- **IF** local institutions, community networks, producer groups, SMEs, and relevant value chain actors are equipped with participatory processes, localized climate risk and adaptation-needs assessment tools, and practical capacities for adaptation planning; and
- **IF** Community Climate Adaptation Hubs are established and operational as decentralized platforms for community-led planning, coordination, and service delivery; and
- **IF** digital decision-support tools such as climate risk maps and value chain digital twins are piloted to strengthen localized planning and investment decision-making; and
- **IF** community-based monitoring, learning, and feedback systems are introduced to support adaptive management and ensure that local experience informs ongoing implementation; and
- **IF** policy recommendations are generated through participatory processes to address institutional barriers, maladaptation risks, and policy gaps affecting locally led adaptation in priority value chains.
- **THEN** local adaptation systems will become more inclusive, coordinated, evidence-based, and capable of identifying and implementing climate risk-informed adaptation actions.

Which in turn enables local priorities and lessons to inform subnational and national planning, while strengthening the institutional foundations for sustainable and scalable locally led adaptation.

Component 2: Deploying Locally Relevant Climate-Resilient Solutions for Adaptive Livelihoods

- **IF** locally appropriate and innovative climate adaptation solutions for climate-smart production are identified, co-designed, validated, and scaled through cooperative-led and enterprise-led delivery mechanisms; and
- **IF** nature-based solutions are adopted in productive landscapes to reduce erosion, improve water management, restore ecosystem functions, and strengthen resilience to climate shocks; and
- **IF** adaptive post-harvest storage and processing technologies are piloted among producer groups across priority value chains to reduce climate-related losses and improve product quality; and
- **IF** applied research and innovation partnerships with national and local institutions, CBOs, and producer networks are established to ensure that solutions respond to local realities and generate practical learning.
- **THEN** communities and value chain actors will adopt climate-resilient practices, technologies, and nature-based solutions that reduce vulnerability in production landscapes and strengthen adaptive livelihoods.

Which in turn leads to more resilient and productive value chains, reduced climate-related losses, stronger livelihood security, and greater capacity of communities to cope with and adapt to climate shocks.

Component 3: Strengthening Local Adaptation Enterprises and Financial Innovation for Inclusive Resilience

- **IF** local adaptation enterprises, particularly women- and youth-led businesses, receive acceleration, business development, and investment facilitation support to develop and deliver climate-resilient products and services; and
- **IF** inclusive financial instruments are co-designed with local financial institutions, buyers, community-based organizations, and other actors based on a clear understanding of local needs, barriers, and delivery channels; and
- **IF** targeted financial mechanisms such as microcredit, input financing, insurance, and off-take arrangements are deployed to help vulnerable communities and value chain actors adopt locally relevant adaptation solutions; and
- **ASSUMING** that financial institutions, market actors, and local enterprises see sufficient value and viability in climate-resilient business models and are willing to engage in innovation partnerships.
- **THEN** local adaptation enterprises and financial actors will be better able to develop, finance, and deliver adaptation solutions that are accessible to vulnerable communities and value chain actors.

Which results in more inclusive and sustainable local adaptation markets, stronger delivery systems for adaptation goods and services, and improved uptake of adaptation solutions by women, youth, producers, and communities.

Component 4: Enabling Adaptive Project Management, Learning, and Institutional Sustainability

- **IF** project governance, coordination, and inception systems are established in a way that is inclusive, adaptive, and responsive to local realities; and
- **IF** participatory execution, safeguards, monitoring, and learning systems are operationalized to ensure accountability, risk management, and continuous course correction; and
- **IF** knowledge products, communication efforts, and dissemination mechanisms are developed to capture evidence, lessons learned, and good practices from implementation; and
- **IF** institutional capacities are strengthened to absorb, sustain, and build on project results over time;
- **THEN** project implementation will remain evidence-based, inclusive, and adaptable, while generating the knowledge and institutional ownership needed to sustain and replicate successful approaches.

Which in turn supports the long-term sustainability, policy uptake, and scaling of climate resilience outcomes beyond the duration of the project.

A.4.2 Overall Change Pathway

80. Together, these four components create a coherent locally led adaptation model in which:

- local systems and institutions identify and prioritize adaptation needs;
- practical and locally relevant solutions are co-designed and deployed in response to those needs;
- local enterprises and financial systems help deliver and sustain those solutions at scale;
- and adaptive management, learning, and institutional strengthening ensure that results are monitored, improved, and carried forward over time.

In this way, the project moves beyond isolated adaptation interventions and instead builds an integrated ecosystem for locally led adaptation in priority value chains. The project's added value lies in its ability to connect demand for adaptation, identified through participatory local processes, with the supply of adaptation solutions, enterprises, and financing mechanisms needed to respond to that demand in a sustained and inclusive manner.

The project therefore contributes not only to reduced climate vulnerability at community and value-chain level, but also to stronger local governance, more resilient livelihood systems, greater economic inclusion of women and youth, and a more enabling institutional environment for climate adaptation in Madagascar.

A.4.3 Added Value of the Project Approach

81. The project approach provides the following added value:

Component 1 creates the institutional and knowledge foundations for locally led adaptation by anchoring climate risk assessment, planning, coordination, and feedback systems at local level.

Component 2 ensures that adaptation priorities identified through local processes are translated into practical solutions across production systems, landscapes, post-harvest functions, and value chains.

Component 3 addresses one of the key missing links in adaptation programming by strengthening the local enterprises, service providers, and financial mechanisms needed to make adaptation solutions accessible, viable, and scalable.

Component 4 ensures that implementation remains adaptive and accountable, while generating the evidence, learning, and institutional sustainability required to replicate and scale successful approaches.

Together, these pathways converge toward a more inclusive, climate-resilient, and locally driven rural economy in Madagascar, in which vulnerable communities, producer groups, SMEs, and local enterprises are better able to anticipate, manage, and adapt to climate risks while sustaining resilient livelihoods.

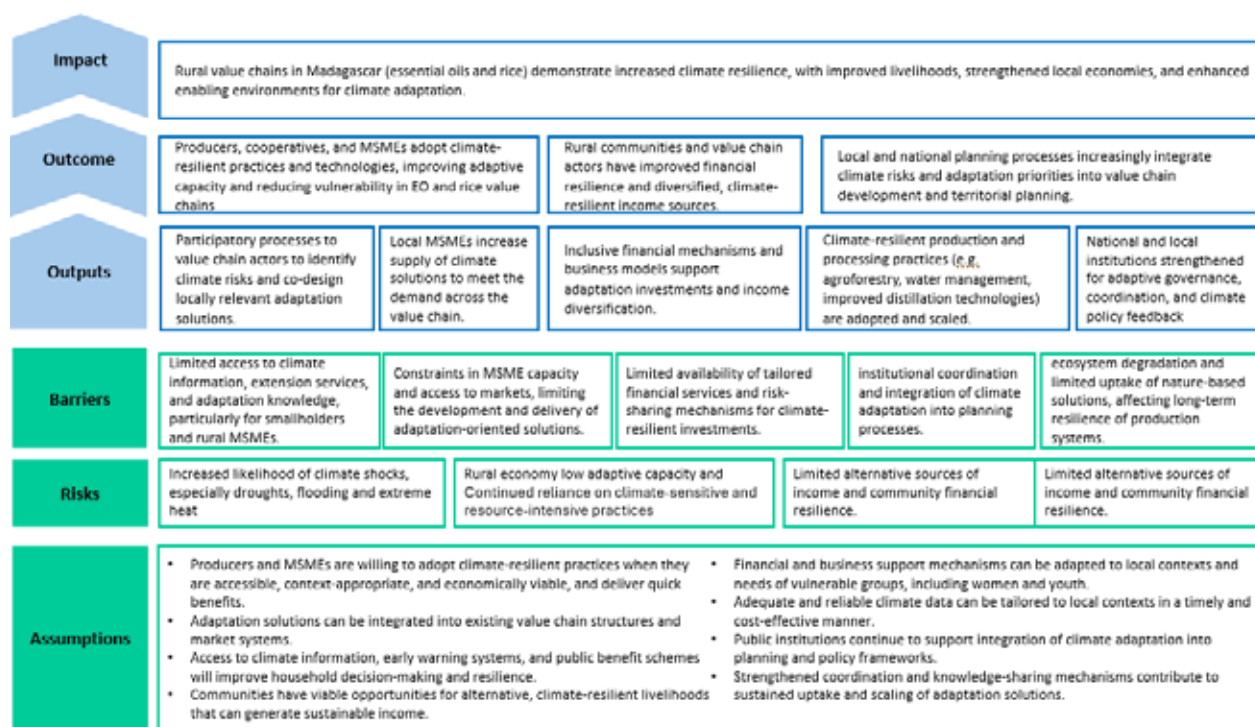


Figure 13: Theory of Change ARCHE Scale

A.5 Component Overview

82. The project is structured into four main components, each with specific outputs and activities designed to build climate resilience within the essential oil value chain. The activities are highly concrete and focus on strengthening local capacities, deploying new technologies, and improving financial and market access.

Here is a breakdown of the project components and their contribution to climate resilience.

Component 1: Strengthening Locally led Adaptation Systems and Institutional Capacities

83. **Purpose:** This component aims to strengthen the local systems, institutions, and capacities required to enable inclusive and climate risk-informed adaptation planning and action in priority value chains. It focuses on equipping local institutions, community networks, producer groups, SMEs, and other relevant value chain actors with participatory processes, localized tools, and practical capacities to identify climate risks, assess adaptation needs, co-design solutions, and implement locally led adaptation responses. By strengthening the interface between communities, local institutions, and national adaptation frameworks, the component helps ensure that adaptation action is grounded in local realities while contributing to broader policy coherence and systemic resilience.

84. **Baseline situation:** Local institutions, producer groups, and SMEs often lack the tools, localized data, and capacities needed to assess climate risks and plan adaptation responses. Climate information, when available, is often not accessible or actionable for communities and value chain actors, while community knowledge and experience are not systematically integrated into planning and decision-making. These gaps are reinforced by fragmented coordination, limited spaces for collective planning, and weak feedback loops between local and national levels. As a result, responses to cyclones, erratic rainfall, droughts, floods, and ecosystem degradation remain largely reactive and uncoordinated, affecting production systems, livelihoods, and local resilience. Stronger operational mechanisms are therefore needed to connect Madagascar's national adaptation priorities with localized planning and action.

Contribution to the Adaptation Fund Strategic Results Framework

85. This component contributes to the Adaptation Fund Strategic Results Framework by strengthening institutional capacities, enhancing knowledge generation and dissemination, supporting locally led adaptation planning, and informing improvements in policies and enabling conditions relevant to climate-resilient livelihoods and value chains. It aligns with results related to strengthened capacities of national and subnational institutions, improved generation and use of adaptation knowledge, and stronger integration of climate resilience into planning and decision-making processes.

Alignment with Madagascar's national frameworks

86. Component 1 is aligned with Madagascar's national adaptation and development priorities, particularly those related to decentralized climate governance, community resilience, climate-smart and ecosystem-based approaches, and the strengthening of climate-resilient livelihoods. It also supports national objectives related to improving the participation of local communities, women, and vulnerable groups in climate decision-making, and to enhancing the institutional basis for adaptation across productive sectors and territories.

Output 1.1: Community Climate Adaptation Hubs (CCAHS) established and operational in target regions to coordinate locally led adaptation planning, capacity-building and service delivery.

Activity 1.1.1: Identify target locations for the establishment of CCAHS based on climate vulnerability, value chain relevance, institutional presence, accessibility, and the needs of vulnerable communities, producers, cooperatives, SMEs and local enterprises.

Activity 1.1.2: Establish the governance, operational model and coordination arrangements of the CCAHS, including roles and responsibilities of local authorities, community representatives, producer organizations, cooperatives, women and youth groups, SMEs, service providers and technical institutions.

Activity 1.1.3: Equip and operationalize the CCAHS as decentralized platforms for climate information sharing, adaptation planning, training delivery, service coordination, peer learning and community feedback.

Activity 1.1.4: Deliver capacity-building sessions through the CCAHS on locally led adaptation, climate risk-informed planning, climate-resilient value chains, inclusive participation, gender-responsive adaptation, and the identification of locally appropriate climate technologies and services.

Activity 1.1.5: Facilitate regular multi-stakeholder coordination and learning sessions through the CCAHS to connect communities, producer groups, cooperatives, SMEs, local institutions and technical partners, and to ensure that local adaptation priorities are linked with district, regional and national support systems.

Output 1.2: Digital and community-based decision-support, monitoring and learning tools developed and piloted through CCAHS to support localized adaptation planning and investment decision-making.

Activity 1.2.1: Develop localized climate risk and adaptation-needs assessment toolkits to help communities, producer groups, cooperatives, SMEs and local institutions identify climate risks, vulnerability factors, adaptation priorities and technology needs across priority value chains.

Activity 1.2.2: Pilot digital decision-support tools, including climate risk maps, localized adaptation planning dashboards and value chain digital tools, to support climate-resilient investment decisions in rice and essential-oil value chains.

Activity 1.2.3: Train local institutions, CCAH facilitators, producer organizations, cooperatives, SMEs and community representatives on the use of digital and community-based tools for adaptation planning, technology prioritization, monitoring and decision-making.

Activity 1.2.4: Develop and pilot community-based monitoring and learning tools, such as community scorecards, climate logs, participatory resilience tracking systems and feedback mechanisms, to capture local experience and monitor adaptation outcomes.

Activity 1.2.5: Use the data and lessons generated through the CCAHS to inform local adaptation planning, identify priority investments, refine technology packages, support adaptive management, and strengthen accountability to communities and vulnerable groups.

Output 1.3: Participatory policy recommendations developed to strengthen the enabling environment for locally led adaptation in priority value chains.

Activity 1.3.1: Conduct a participatory review of policy, institutional and regulatory barriers affecting locally led adaptation, climate technology adoption, inclusive finance, enterprise development and service delivery in priority value chains.

Activity 1.3.2: Identify gaps, maladaptation risks and coordination challenges that may limit the scaling of climate-resilient solutions in rice and essential-oil value chains, including barriers faced by women, youth, smallholder producers, cooperatives and SMEs.

Activity 1.3.3: Organize policy dialogues and consultation workshops with national ministries, regional authorities, local institutions, producer organizations, private sector actors, financial institutions, CBOs, women and youth

representatives, and technical partners.

Activity 1.3.4: Develop practical policy recommendations and institutional guidance to strengthen locally led adaptation, improve coordination between local and national actors, and create a more enabling environment for adaptation technologies, services and finance.

Activity 1.3.5: Validate and disseminate the policy recommendations through national and regional consultation processes, and support their integration into relevant adaptation planning, value chain development, climate finance and institutional coordination frameworks.

Component 2: Deploying Locally Relevant Climate-Resilient Solutions for Adaptive Livelihoods

87. **Purpose:** This component aims to support the adoption and scaling of locally relevant climate-resilient practices, technologies, and nature-based solutions across priority value chains, particularly rice and essential oils. It focuses on enabling communities, producer groups, and value chain actors to reduce climate vulnerability in production landscapes while strengthening adaptive livelihoods. By linking locally identified needs with practical solutions and delivery mechanisms, the component seeks to translate adaptation planning into concrete, field-level interventions that improve productivity, reduce climate-related risks, and enhance resilience over time.
88. **Baseline situation:** Research conducted during the ARCHE Scale concept development process indicates that Madagascar's rice value chain remains highly vulnerable to climate variability and requires targeted climate adaptation technologies and services. Rice systems are exposed to erratic rainfall, droughts, flooding, water stress and post-harvest losses, while producers and cooperatives often lack access to climate information, improved water management tools, resilient seed systems, adaptive storage and processing technologies, and locally available technical services. The project will therefore use the rice value chain as a platform to deploy and scale practical climate technologies, including climate-smart production packages, decision-support tools, nature-based water and soil management solutions, improved drying and storage systems, and enterprise-led service delivery models. These interventions will be complemented by essential-oil value chain solutions where relevant, particularly for climate-resilient production, processing, distillation and circular use of by-products.

Contribution to the Adaptation Fund Strategic Results Framework

89. This component contributes to the Adaptation Fund Strategic Results Framework by supporting the adoption of climate-resilient practices and technologies, reducing climate-related losses in productive systems, and strengthening livelihoods. It aligns particularly with results related to reduced vulnerability of livelihoods, increased resilience of agricultural systems, and improved capacity of communities to implement practical adaptation measures.

Alignment with Madagascar's national frameworks

90. Component 2 is aligned with Madagascar's national priorities related to climate-resilient agriculture, food security, ecosystem-based adaptation, and rural economic development. It supports national objectives to improve agricultural productivity, strengthen resilience of key value chains, promote sustainable land management, and enhance the adaptive capacity of rural populations in the face of increasing climate variability.

Output 2.1: Locally appropriate and innovative climate adaptation solutions for resilient climate-smart production practices and technologies identified, co-designed, validated and scaled through local enterprises and cooperative-led delivery mechanisms

Activity 2.1.1: Conduct participatory climate risk, value chain and needs assessments with producers, cooperatives, SMEs, local authorities and technical services to identify priority climate adaptation solutions for rice and essential-oil production systems.

Activity 2.1.2: Co-design and validate locally adapted climate-smart production packages, including the Integrated Resilient Rice Model, improved seed systems, resilient nursery practices, soil and water management practices, and climate-resilient production protocols for essential-oil crops.

Activity 2.1.3: Scale validated solutions through cooperative-led and enterprise-based delivery mechanisms, including demonstration plots, farmer field learning, training of local service providers, technical coaching, and performance-based support for adoption by producers and producer groups.

Output 2.2: Nature-based solutions and adaptive post-harvest storage and processing technologies adopted and piloted across productive landscapes and priority value chains through enterprise, community and producer group partnerships

Activity 2.2.1: Identify and prioritize productive landscapes, community sites and value chain segments where nature-based solutions and adaptive post-harvest or processing technologies can reduce climate risks and strengthen resilience.

Activity 2.2.2: Pilot nature-based solutions, including agroforestry, reforestation, soil conservation, erosion control, watershed restoration and water management measures, in rice and essential-oil production landscapes through community and producer group partnerships.

Activity 2.2.3: Pilot adaptive post-harvest and processing technologies, including improved storage, drying, quality preservation, energy-efficient distillation, circular use of by-products, and low-emission processing systems, with cooperatives, SMEs and local enterprises.

Output 2.3: Applied research and innovation partnerships with national and local institutions, CBOs and producer networks established to co-design, pilot and validate innovative adaptation solutions that reflect local priorities and generate learning for replication

Activity 2.3.1: Establish applied research and innovation partnerships with universities, research institutions, technical agencies, CBOs, cooperatives, producer networks, SMEs and local service providers to support the testing and validation of priority adaptation solutions.

Activity 2.3.2: Co-develop and implement applied research protocols, pilot methodologies and learning frameworks to assess the technical, social, environmental and economic performance of selected adaptation solutions.

Activity 2.3.3: Document lessons learned, develop practical guidance materials, organize learning exchanges, and disseminate evidence to support replication and scaling across comparable rice and essential-oil production systems in Madagascar.

Component 3: Strengthening Local Adaptation Enterprises and Financial Innovation for Inclusive Resilience

91. **Purpose:** Component 3 focuses on strengthening the local enterprise and financial ecosystem needed to make adaptation solutions accessible, viable and scalable for vulnerable communities and value chain actors. While Components 1 and 2 support demand generation and the deployment of practical solutions, this component addresses the enabling conditions required for sustained uptake. It supports local enterprises, market actors and financial institutions to develop, finance and deliver climate-resilient products and services that respond to local needs. The component also recognizes that weak market conditions, limited financial products and insufficient business support often prevent communities, SMEs and producers from adopting relevant adaptation solutions. Particular attention will be given to women- and youth-led enterprises, which face additional barriers but play an important role in local adaptation, livelihood diversification and inclusive resilience.
92. **Baseline situation:** Project preparation has highlighted that local adaptation enterprises in Madagascar face limited access to finance, weak business development support, underdeveloped service ecosystems, and barriers to market participation. Many enterprises that provide climate-resilient products and services remain small, informal, or insufficiently supported, limiting the local availability and sustained uptake of adaptation solutions. Financial inclusion for adaptation is also constrained, as existing products often do not match the needs, risk profiles and cash-flow realities of climate-vulnerable producers, SMEs and rural communities. Women and youth face additional barriers, including limited collateral, weaker business networks, reduced access to information and lower engagement with formal financial institutions and buyers. As a result, technically relevant adaptation solutions often remain financially out of reach for the groups that need them most. Component 3 therefore responds by strengthening local adaptation enterprises, supporting inclusive financial innovation, and improving access to the financing and services needed to adopt climate-resilient practices and technologies.

Contribution to the Adaptation Fund Strategic Results Framework

93. This component contributes to the Adaptation Fund Strategic Results Framework by strengthening the adaptive capacities of vulnerable communities, supporting innovative adaptation finance mechanisms, and enabling greater access to resilience-building goods, services, and investments. It is particularly relevant to outcomes related to improved adaptive capacity, strengthened livelihoods, and the development of innovative financial mechanisms that help reduce vulnerability and support locally relevant adaptation pathways.

Alignment with Madagascar's national frameworks

94. Component 3 aligns with Madagascar's national priorities related to building climate-resilient and inclusive value chains, strengthening rural economic resilience, promoting green and climate-responsive enterprise development, and improving the participation and economic empowerment of women and youth in adaptation-related sectors. It also supports national objectives related to inclusive finance, livelihood diversification, and the development of market systems that can sustain resilience gains in vulnerable areas.

Output 3.1: Local adaptation enterprises, particularly women- and youth-led, receive acceleration, business development and investment facilitation services to innovate, develop, and deliver climate-resilient solutions tailored to local needs

Activity 3.1.1: Identify and select local adaptation enterprises, with priority given to women- and youth-led businesses, providing climate-resilient products and services aligned with local adaptation needs.

Activity 3.1.2: Deliver tailored acceleration and business development support to strengthen enterprise planning, product development, market positioning and operational capacity.

Activity 3.1.3: Support enterprises to co-develop and refine climate-resilient solutions with communities, producer groups and value chain actors to ensure relevance to local needs.

Activity 3.1.4: Facilitate partnerships between local adaptation enterprises, buyers, cooperatives, financial institutions and service providers to improve market access and delivery capacity.

Activity 3.1.5: Provide investment readiness support and facilitate access to finance, grants or partnership opportunities for selected enterprises to scale locally appropriate adaptation solutions.

Output 3.2: Inclusive financial instruments for adaptation solutions co-designed through partnerships with local financial institutions, buyers, and community-based entities, informed by participatory assessments of local needs, barriers, and delivery channels

Activity 3.2.1: Conduct participatory assessments of financial needs, access barriers and delivery channels for adaptation solutions among vulnerable communities and value chain actors.

Activity 3.2.2: Establish partnerships with local financial institutions, buyers, cooperatives and community-based entities to support the co-design of inclusive adaptation finance instruments.

Activity 3.2.3: Co-design financial instruments that reflect local climate risks, seasonal cash flows, affordability constraints and the specific needs of women, youth and vulnerable groups.

Activity 3.2.4: Validate proposed financial instruments with target users and delivery partners to ensure accessibility, operational feasibility and alignment with locally identified adaptation priorities.

Output 3.3: Targeted financial instruments (e.g., microcredit, input financing, insurance, off-take mechanisms) deployed to enable vulnerable communities and value chain actors, particularly women and youth, to adopt adaptation solutions

Activity 3.3.1: Deploy tailored microcredit and input financing mechanisms to support adoption of locally appropriate adaptation solutions by vulnerable producers, SMEs and community groups.

Activity 3.3.2: Pilot climate risk insurance and risk-sharing mechanisms to reduce financial exposure of vulnerable communities and value chain actors to climate shocks.

Activity 3.3.3: Establish off-take, buyer-linked and cooperative-based financing arrangements to improve market access and incentivize investment in climate-resilient production and processing.

Activity 3.3.4: Provide targeted financial literacy, application support and inclusion measures to improve access to financial instruments for women, youth and vulnerable groups

Component 4: Enabling Adaptive Project Management, Learning, and Institutional Sustainability

95. **Purpose:** This component provides the implementation architecture needed to ensure that the project is well governed, inclusive, adaptive and sustainable beyond the project period. It supports effective delivery by establishing governance, participatory monitoring, safeguards, learning and knowledge dissemination systems. Given the dynamic nature of climate, institutional and socio-economic conditions, the project will apply an adaptive management approach that allows implementation to respond to emerging risks, lessons and opportunities. This will help ensure that project delivery remains accountable, evidence-based and responsive to local needs. It will also strengthen institutional capacities for continuity, replication and scale-up.
96. **Baseline situation:** In Madagascar, adaptation initiatives often face challenges related to coordination, monitoring, institutional continuity, and the systematic use of lessons learned. Project experiences are not always captured in ways that support adaptive management, replication, or learning across institutions and territories. Participatory monitoring, safeguards, and feedback systems may also remain underdeveloped, limiting responsiveness to local needs. Component 4 addresses these gaps by embedding governance, learning, safeguards, and institutional strengthening from the outset, ensuring that capacities, tools, and partnerships are anchored in national and local institutions beyond the project period.

Contribution to the Adaptation Fund Strategic Results Framework

97. This component contributes to the Adaptation Fund Strategic Results Framework by strengthening the generation, use and dissemination of climate resilience knowledge. It supports effective and accountable implementation through

monitoring, documentation and learning systems. It also helps ensure that adaptation experience is translated into practical evidence to inform future policy and programming.

Alignment with Madagascar's national frameworks

98. Component 4 aligns with Madagascar's national priorities related to strengthening decentralized governance, improving community resilience, enhancing national adaptation knowledge systems, and reinforcing institutional capacities for climate action. It supports the country's need not only for implementation of adaptation measures, but also for the long-term strengthening of systems that can sustain, coordinate, and scale adaptation efforts across sectors and territories.

Output 4.1: Adaptive project governance and inception operationalized

Activity 4.1.1: Establish inclusive project governance and coordination structures at national and local levels.

Activity 4.1.2: Conduct the project inception process and develop core operational tools.

Activity 4.1.3: Develop adaptive management, transition and sustainability mechanisms embedded in national and local systems.

Output 4.2: Participatory execution, safeguards, and learning systems established

Activity 4.2.1: Establish participatory monitoring, evaluation, learning and feedback systems to support adaptive implementation.

Activity 4.2.2: Implement environmental, social and gender safeguards monitoring and grievance redress mechanisms in line with Adaptation Fund requirements.

Activity 4.2.3: Document, disseminate and integrate lessons learned to inform project adjustments, replication and scaling.

Output 4.3: Knowledge products, communication, and dissemination

Activity 4.3.1: Document lessons, stories, and innovations from communities.

Activity 4.3.2: Organize learning events and dialogues across sectors and levels, to support capacity building of national ministries and local governments through workshops and trainings.

Activity 4.3.3: Showcase project impacts and learnings at international and regional platforms and conferences.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

99. The project is expected to generate significant economic, social, and environmental benefits by strengthening locally led adaptation systems, climate-resilient livelihoods, local adaptation enterprises, and inclusive financial mechanisms across priority value chains in Madagascar. These benefits are designed to reach the most climate-vulnerable communities and actors, with particular attention to smallholders, producer groups, SMEs, women, and youth.

B.1 Economic Benefits

100. The project will strengthen the economic resilience of vulnerable communities and value chain actors by improving their access to context-specific, climate-resilient solutions across priority value chains, particularly essential oils and rice. Through Component 2, the project will support producers, cooperatives, SMEs and local enterprises to adopt climate-resilient production practices, nature-based solutions, adaptive post-harvest and processing technologies, and circular economy approaches that reduce climate-related losses, improve productivity, protect product quality and retain value locally. These interventions directly respond to Madagascar's exposure to cyclones, droughts, erratic rainfall, flooding and land degradation, which have already caused significant losses in agricultural production, including food crops, rice fields and cash crops. By reducing vulnerability across production, processing and market stages, the project will contribute to the Adaptation Fund strategic objective of strengthening climate-resilient livelihood strategies and sources of income for vulnerable communities and value chain actors, including AF Outcome 6 and Output 6.1, as reflected in Part III A.
101. Through Component 3, the project will further reinforce economic resilience by strengthening local adaptation enterprises and inclusive financial mechanisms. It will support SMEs, cooperatives, service providers and local enterprises, particularly those led by women and youth, to develop and deliver climate-resilient products and services tailored to locally identified demand. By linking demand for adaptation solutions with local supply capacities, the project will

stimulate local enterprise development, create market opportunities for adaptation goods and services, and support income diversification in climate-sensitive areas. These activities will also contribute to value retention at the community level by enabling local actors to participate more effectively in resilient production, processing, service provision and market access.

102. The project will also improve access to inclusive financial instruments, including locally adapted financing and risk-sharing mechanisms, to enable vulnerable communities, producer groups, cooperatives and SMEs to invest in adaptation solutions that would otherwise remain financially out of reach. This is particularly important in Madagascar, where climate vulnerability is compounded by limited access to finance, weak local service delivery systems and high dependence on climate-sensitive livelihoods. Economic benefits are expected to include reduced climate-related production and post-harvest losses, improved income stability, stronger local markets for adaptation solutions, and increased participation of women and youth in resilient enterprise development. These benefits are expected to translate into sustained adaptive capacity by enabling communities and value chain actors to better absorb, adapt to and recover from climate shocks, in line with the Adaptation Fund's objectives on strengthened livelihoods, adaptive capacity and resilience.

B.2 Social Benefits

103. The project has a strong social inclusion dimension and is explicitly designed to ensure that women, youth, smallholder producers, vulnerable households, cooperatives, SMEs and local enterprises are active participants in the identification, co-design and deployment of adaptation solutions. Through Component 1, local institutions, community networks and value chain actors will be equipped with participatory tools, localized climate information, coordination mechanisms and feedback systems to strengthen their voice and agency in adaptation planning. This will help ensure that adaptation priorities reflect local realities and that women, youth and marginalized groups are not only beneficiaries, but are meaningfully involved in decision-making, learning and implementation processes.
104. Through Components 2 and 3, the project will improve access to locally relevant adaptation solutions, support services, enterprise development and inclusive finance, thereby addressing key barriers that limit the adaptive capacity of vulnerable groups. Women, youth and smallholders often face unequal access to productive assets, finance, technical assistance, markets and decision-making spaces, while local SMEs and cooperatives frequently lack the capacity and resources to deliver adaptation goods and services at scale. By strengthening decentralized service delivery, local adaptation enterprises, financial literacy, tailored financing and community-based learning systems, the project will help reduce exclusion, increase participation in climate-resilient value chains, and strengthen social cohesion and local ownership.
105. The project is expected to reach approximately 50,000 direct beneficiaries across the rice, essential oils and local adaptation enterprise/finance ecosystems. Based on the project's minimum gender inclusion target, at least 50% of direct beneficiaries are expected to be women, corresponding to at least 25,000 women. Youth beneficiaries are estimated at approximately 25% of total direct beneficiaries, or around 12,500 youth, to be tracked within both female and male beneficiary categories. The number of indirect beneficiaries, including wider households, value-chain actors and local institutions expected to benefit from improved climate information, resilient practices and strengthened services, will be further assessed and confirmed during the PFG phase. The proposed scale of intervention is considered realistic given that rice is cultivated by approximately 85-86% of agricultural households in Madagascar and supports the livelihoods of an estimated 10 million people^{58 59}. In addition, the essential oils sector is estimated to provide income opportunities to more than 500,000 families⁶⁰.
106. The beneficiary estimates presented in Table 8 are preliminary and based on the expected scale of interventions across the proposed target regions, lessons learned from the ongoing ARCHE project, consultations with national stakeholders, and indicative participation rates for producer groups, cooperatives, SMEs, local adaptation service providers, and financial institutions. The estimates combine expected beneficiaries reached through climate-resilient production systems, ecosystem-based adaptation interventions, Community Climate Adaptation Hubs (CCAHS), climate information services, enterprise acceleration programmes, and adaptation finance mechanisms. To avoid double counting, the figures represent intervention-level estimates rather than cumulative totals, and beneficiaries reached through multiple

⁵⁸(World Bank Independent Evaluation Group, 2018: Implementation Completion Report Review - MG-BVPI PHRD Rice, available at: <https://documents1.worldbank.org/curated/en/260191541609116796/pdf/Madagascar-MG-BVPI-PHRD-Rice.pdf>

⁵⁹ IFAD, Investing in Rural People in Madagascar, available at: https://www.ifad.org/documents/38714170/40258189/madagascar_e.pdf

⁶⁰ (Observatory of Economic Complexity, Essential Oils Trade Profile: <https://oec.world/en/profile/bilateral-product/essential-oils/reporter/mdg>)

project activities will be counted only once in the final monitoring framework. Final beneficiary numbers, gender-disaggregated targets, and output-level indicators will be confirmed during the PFG phase through baseline assessments, stakeholder consultations, detailed geographic targeting, and development of the full proposal results framework.

Table 8: Indicative Output-Level Stakeholders, Beneficiaries, Gender Targets and Adaptation Benefits

Related Outputs	Potential intervention	Main stakeholders	Indicative menu of solutions	Indicative number of beneficiaries / coverage	Gender target	Expected benefits
Outputs 2.1, 2.3	Rice climate technology packages	Rice producers, producer organizations, cooperatives, extension services	Integrated Resilient Rice Model; resilient seeds; water-saving practices; climate-informed planting	≥3,000 ha; ≥6,000 rice producers supported	≥50% women; ≥25% youth	Reduces drought-, flood- and rainfall-related production losses; strengthens food security resilience
Outputs 2.1, 2.2, 2.3	Essential oil and aromatic crop resilience	EO producers, collectors, distillers, producer groups and cooperatives	Climate-resilient nurseries; agroforestry; crop regeneration; soil and water conservation	≥1,200 ha; ≥10,000 EO beneficiaries supported	≥50% women; ≥25% youth	Improves yield stability, quality and supply continuity in EO value chains
Output 2.2	Nature-based productive landscape restoration	Community organizations, producer groups, local authorities and watershed committees	Agroforestry; reforestation; erosion control; watershed protection	≥2,500 ha restored or protected	≥50% women; ≥25% youth	Reduces erosion, water stress and ecosystem degradation in productive landscapes
Outputs 2.2, 3.1	Post-harvest and processing resilience	Cooperatives, SMEs, distillers, processors and local enterprises	Improved drying and storage; energy-efficient distillation; low-emission processing; by-product reuse	≥40-50 cooperatives, SMEs or processing units supported	≥40% women-led or women-inclusive entities	Reduces post-harvest losses, improves quality and increases local value addition
Outputs 1.1, 1.2	CCAAs and climate information services	Local authorities, producer groups, SMEs, communities and extension services	Community Climate Adaptation Hubs; climate risk maps; digital tools; climate logs	8-10 hubs; ≥4,000-7,000 users reached	≥50% women; ≥25% youth	Strengthens local adaptation planning, service coordination and decision-making
Outputs 3.1, 3.2, 3.3	Local enterprise and adaptation finance	MSMEs, cooperatives, financial institutions, producer groups, women and youth entrepreneurs	MSME support; cooperative-led delivery; financial literacy; tailored finance and risk-sharing	≥60-80 local delivery actors supported; ≥2,400-6,000 users reached	≥50% women beneficiaries; ≥40% women-led enterprises supported; ≥30% youth	Improves last-mile delivery of climate technologies and access to adaptation finance
Outputs 1.3, 4.1, 4.2, 4.3	Institutional strengthening, policy support and knowledge management	National ministries, BNCC-REDD+, local governments, research institutions, producer federations and private-sector actors	Policy dialogues; institutional capacity building; safeguards systems; knowledge management and learning platforms	≥500 institutional stakeholders reached	≥40% women participation	Strengthens enabling environment, adaptive governance and long-term sustainability of adaptation investments

B.3 Environmental Benefits

107. The project will deliver substantial environmental benefits by promoting adaptation measures that strengthen the resilience and sustainability of productive landscapes. Through Component 2, climate-resilient production practices and technologies will be identified, co-designed, validated, and scaled in ways that support more sustainable management of land, water, and other productive resources. The adoption of nature-based solutions, including measures such as erosion control, reforestation, bunding, and improved water resource management, will help restore ecosystem functions, reduce environmental degradation, and improve the resilience of landscapes exposed to climate stress.
108. These interventions are expected to generate multiple environmental co-benefits, including improved soil stability, reduced erosion, better water retention, enhanced vegetative cover, and stronger ecosystem services that underpin local livelihoods and value chains. By promoting adaptation pathways that combine livelihood resilience with environmental restoration, the project will help reduce pressure on degraded natural resources and support more sustainable and climate-resilient rural development.

B.4 Environmental and Social Risk Management

109. In line with the Environmental and Social Policy (ESP) and Gender Policy (GP) of the Adaptation Fund, the project will be implemented under a comprehensive Environmental and Social Management Framework (ESMF). This includes:
- Screening of all activities, including Unidentified Sub-Projects (USPs), against AF safeguard principles;

- Application of gender and vulnerability analysis during design and implementation;
- Deployment of grievance redress mechanisms accessible at the community level;
- Continuous monitoring of environmental and social indicators, disaggregated by gender and other social variables.

These systems will ensure the project avoids, minimizes, or mitigates negative impacts and that any residual risks are managed adaptively throughout implementation.

110. Although the project is expected to generate predominantly positive environmental and social benefits, some activities may result in localized, temporary and reversible negative impacts if not appropriately designed and managed. Potential risks include:

- Unequal access to project benefits or finance;
- Exclusion of women, youth, remote communities and persons with limited digital access;
- Elite capture in the selection of beneficiaries and enterprises;
- Increased workloads for women; land-use or resource-access disputes associated with agroforestry,
- Restoration and water-management activities;
- Waste, emissions and unsustainable biomass use;
- Biodiversity impacts from inappropriate species or technologies;
- Financial risks such as over-indebtedness or unaffordable credit and insurance products.

These potential consequences will be further assessed during full proposal development and avoided or mitigated through the ESMF, transparent eligibility and exclusion criteria, environmental and social screening, gender-responsive stakeholder engagement, site-specific management measures where required, monitoring and accessible grievance mechanisms. Activities presenting significant, irreversible or unmanageable environmental or social risks will not be eligible for project financing.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project.

111. The project's cost-effectiveness is based on a targeted, integrated and locally anchored implementation approach. Resources will be concentrated in selected regions where climate risks, vulnerable livelihoods and priority value chains overlap. This will help reduce duplication, avoid fragmented interventions and increase the likelihood of sustained adaptation benefits.
112. The project scope and implementation approach were selected through a sequential cost-effectiveness rationale. First, rather than dispersing resources nationally, the project will concentrate investments in five priority regions where high climate vulnerability overlaps with significant dependence on rice and essential-oil value chains. Second, rather than establishing parallel delivery structures, the project will anchor 8-10 Community Climate Adaptation Hubs in existing local or regional institutions where feasible and build on partnerships, knowledge and delivery mechanisms established through the ongoing ARCHE project. Third, rather than financing isolated production interventions, the project will address connected climate risks across production, landscapes, post-harvest processing, local service delivery and adaptation finance. This integrated approach is expected to reduce recurrent transaction and coordination costs while generating multiple resilience benefits from the same investments.
113. At the proposed financing level of US\$25 million and an estimated 50,000 unique direct beneficiaries, the overall financing corresponds to approximately US\$500 per direct beneficiary over the seven-year implementation period, or approximately US\$71 per direct beneficiary per year. This investment will support, among other targets, at least 6,000 rice producers across 3,000 hectares, at least 10,000 essential-oil beneficiaries across 1,200 hectares, at least 2,500 hectares of productive landscapes restored or protected, 40-50 cooperatives, SMEs or processing units, 60-80 local adaptation delivery actors, and 8-10 CCAHs. These indicators should not be interpreted as stand-alone unit costs because beneficiaries and intervention areas may overlap and investments in institutions, information services, ecosystems and local markets generate benefits across several outputs.
114. The selected approach was considered more cost-effective than three principal alternatives. A nationally dispersed approach would dilute resources across a large territory and increase implementation, supervision and logistics costs. A stand-alone infrastructure or technology approach could produce localized benefits but would not address the institutional, financial and service-delivery barriers limiting sustained adoption. A grant-only delivery model could facilitate initial uptake but would provide fewer incentives for enterprises, cooperatives and financial institutions to continue supplying adaptation goods and services after project closure. The selected approach therefore combines targeted geographic concentration, use of existing structures, locally validated solutions, enterprise-based delivery and inclusive finance to increase uptake, sustainability and replication while reducing duplication and long-term dependence on project

financing. A more detailed economic and financial analysis, including comparison of selected adaptation alternatives, lifecycle costs, avoided climate-related losses and operation and maintenance requirements, will be undertaken during the PFG phase once locations and technologies have been confirmed.

Table 9: Cost-effectiveness measures embedded in the proposed project design

Cost-effectiveness measure	Analysis
Targeted geographic focus	The project will concentrate resources in five priority regions where climate vulnerability, livelihood dependence and relevance to rice and essential oils/aromatic value chains overlap. This avoids excessive dispersion of activities and improves the concentration of adaptation benefits.
Use of existing structures	Community Climate Adaptation Hubs will be anchored, where feasible, in existing local or regional structures. This reduces the need to create parallel systems, lowers coordination costs and strengthens local ownership.
Building on ARCHE experience	The project will build on existing ARCHE knowledge, stakeholder networks and institutional partnerships in Madagascar's essential oils sector. This reduces start-up costs and avoids duplication of previous efforts.
Locally led solution selection	Adaptation solutions will not be pre-selected. They will be identified and validated through participatory assessments and local consultations, reducing the risk of financing measures that are not relevant, accepted or sustainable.
Integrated value-chain approach	By linking production, post-harvest systems, nature-based solutions, enterprise support and inclusive finance, the project will generate multiple adaptation benefits from the same investment.
Learning and replication	Monitoring, learning and knowledge management will help identify effective approaches and support replication beyond the initial target areas, increasing the long-term usefulness of project resources.

D. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

115. The project is designed in alignment with Madagascar's national development and climate adaptation priorities. It builds on existing frameworks that emphasize climate-resilient development, sustainable management of natural resources, and inclusive economic growth, particularly in rural areas. By strengthening value chains, the project contributes to national objectives related to food security, export development, and resilience of rural livelihoods. It also supports the integration of climate adaptation into sectoral and territorial planning processes, in line with the National Adaptation Plan and related strategies. Through a value-chain-based approach that connects producers, MSMEs, and institutions, the project aims to contribute to locally grounded adaptation outcomes while remaining consistent with broader national development priorities.

Table 10: Alignment of the ARCHE Scale project with national and sub-national sustainable development, climate and Sectoral strategies

Relevant strategy	Main strategic orientation relevant to the project	Consistency with ARCHE Scale project
National Adaptation Plan (NAP) of Madagascar	Madagascar's NAP provides the country's medium- and long-term framework for adaptation and emphasizes strengthening adaptation governance, improving resilience in climate-sensitive sectors, enhancing the adaptive capacity of vulnerable populations, and advancing climate-smart and ecosystem-based approaches.	The project is fully consistent with NAP. Component 1 supports decentralized and locally led adaptation planning, risk assessment, and institutional capacity strengthening. Component 2 promotes climate-resilient practices, technologies, and nature-based solutions in productive landscapes and priority value chains. Component 3 supports climate-resilient agribusinesses and access to adaptation finance, while Component 4 generates evidence, learning and institutional capacities for sustaining and replicating adaptation measures.
Nationally Determined Contribution (NDC)	Madagascar's NDC identifies adaptation as a national priority and calls for stronger resilience of vulnerable communities, mainstreaming of adaptation across planning instruments, and strengthened action in sectors affected by droughts, floods, cyclones, and land degradation. It also links adaptation with sustainable land management and inclusion of vulnerable groups.	The project is consistent with the NDC by reducing climate vulnerability among communities and value chain actors through locally led planning, climate-resilient production systems, nature-based solutions, and inclusive support to women and youth. Component 1 contributes to adaptation mainstreaming and local planning; Component 2 strengthens climate-resilient agriculture and sustainable land management; Component 3 supports inclusive adaptation enterprises and finance; and Component 4 promotes monitoring, learning and institutional sustainability.
National Adaptation Programme of Action (NAPA / PANA)	Madagascar's NAPA identifies urgent and immediate adaptation needs and highlights the need to strengthen national and local capacities to respond to climate variability and climate change, including through practical adaptation action and improved resilience of vulnerable communities and sectors.	The project is consistent with the priorities of the NAPA because it focuses on practical adaptation measures for vulnerable communities and climate-sensitive livelihoods. Component 1 strengthens local planning, climate information and institutional capacities; Component 2 supports resilient agricultural practices, water management, erosion control and landscape restoration; Component 3 improves access to locally delivered adaptation services and finance; and Component 4 supports learning and institutional continuity.
National development planning instruments (including the National	Madagascar's national development planning framework emphasizes inclusive growth, territorial development, resilience to shocks and disasters, poverty reduction, and the conservation of natural capital. World Bank documentation on Madagascar's national planning framework notes	The project is consistent with these national development priorities because it combines resilience-building, local economic development, enterprise support, sustainable landscape management, and institutional strengthening. Component 1 strengthens territorial institutions and participatory planning; Component 2 supports resilient livelihoods and natural-capital management; Component 3 promotes inclusive local economic development and access to

Development Plan / PND and broader national development vision)	that the PND includes axes on inclusive growth, territorial anchoring of development, and strengthening resilience to risks and catastrophes.	finance; and Component 4 supports institutional sustainability, learning and replication.
Programme Sectoriel Agriculture, Élevage et Pêche/Plan National d'Investissement Agriculture, Élevage et Pêche, PSAEP/PNIAEP	The PSAEP/PNIAEP promotes sustainable management of productive resources, increased agricultural productivity, food and nutrition security, reduced vulnerability, improved market access and exports, and stronger institutional capacities. Its operational programmes include sustainable resource use, competitive production systems, risk reduction for vulnerable groups, market access and institutional governance	Component 1 strengthens agricultural coordination, local planning and producer capacities. Component 2 supports climate-resilient rice and essential-oil production, sustainable land and water management, processing and post-harvest solutions. Component 3 supports producer organizations, rural enterprises, market access and finance. Component 4 generates knowledge and evidence that can inform agricultural-sector planning and implementation. The project will also coordinate with the Government's ongoing update of the PSAEP/PNIAEP framework.
National Rice Development Strategy, SNDR	The SNDR supports increased and sustainable rice production through stronger seed systems, irrigation and water management, mechanization, extension services, post-harvest management, market access and improved coordination across the rice value chain.	Component 1 supports climate-informed planning, advisory services and coordination in rice-producing areas. Component 2 directly contributes through resilient seeds, the Integrated Resilient Rice Model, water-saving practices, climate-informed planting, landscape restoration, drying, storage and processing technologies. Component 3 facilitates access to adaptation finance and enterprise-led services for rice producers and cooperatives, while Component 4 documents evidence for replication and policy uptake.
Decentralization framework and local development-planning instruments	Madagascar's decentralization framework promotes territorial planning, local participation, decentralized governance and service delivery through regional and local institutions.	Component 1 anchors CCAHs and participatory adaptation planning in existing decentralized structures where feasible. Component 2 supports locally prioritized and validated adaptation measures. Component 3 connects local enterprises and financial institutions with community adaptation needs. Component 4 strengthens local governance, monitoring, institutional ownership and continuity beyond project completion.

116. These policies and strategies will serve not only as references for project alignment but also as institutional entry points for implementation, coordination and sustainability. During the PFG phase, the project will engage the responsible ministries, technical agencies and decentralized authorities to confirm that the final activities, indicators and institutional arrangements are consistent with the relevant sectoral frameworks. Evidence generated through Components 2 and 3 will be consolidated under Component 4 and communicated through the policy dialogue and coordination mechanisms supported under Component 1, including to inform the implementation and ongoing updating of Madagascar's agricultural-sector strategies.

E. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

117. The project will be implemented in full compliance with Madagascar's national technical standards and regulatory frameworks, as well as the Environmental and Social Policy (ESP) of the Adaptation Fund. It will ensure that all interventions adhere to applicable national regulations governing environmental assessment, land use, construction, occupational health and safety, and biodiversity protection.
118. At the national level, Madagascar has established an environmental and regulatory framework, including the MECIE Decree (Mise en Compatibilité des Investissements avec l'Environnement), which governs environmental impact assessments, as well as sector-specific regulations related to land tenure, water resource management, forestry, and occupational safety. The project will apply these standards systematically, ensuring that all activities are screened, assessed, and implemented in accordance with national requirements.
119. In parallel, the project will comply with the Adaptation Fund's Environmental and Social Policy by integrating environmental and social risk management throughout the project cycle. This includes the application of screening procedures, mitigation measures, stakeholder engagement, gender considerations, and grievance redress mechanisms, in line with AF principles. The project will ensure that interventions do not lead to maladaptation, environmental degradation, or social exclusion, and that benefits are equitably distributed, particularly among vulnerable groups. A summary of key national technical standards and their application within the project is provided in Table 11 below.

Table 11: Relevant National Technical Standards, Scope and Application to ARCHE Scale Outputs and Activities

National standard or regulation	Scope, relevance and rationale for selection	Applicable project outputs and activities	ARCHE Scale compliance approach	Relevant AF ESP principles
MECIE Decree No. 2025-080	Establishes Madagascar's current environmental and social assessment, screening, authorization and monitoring requirements for investments. It is relevant because the project includes Unidentified Sub-Projects, nature-based solutions, productive investments, processing technologies, enterprise support and financial mechanisms whose exact sites and designs will be confirmed during project preparation and implementation. This reference replaces the previous MECIE Decree No. 99-954, as amended by Decree No. 2004-167.	Outputs 2.1, 2.2 and 2.3: climate-resilient production technologies, nature-based solutions, restoration, storage, processing and innovation pilots. Outputs 3.1, 3.2 and 3.3: enterprise selection and financed adaptation investments. Activities 4.2.1 and 4.2.2: monitoring, safeguards and grievance mechanisms.	All applicable activities and USPs will undergo environmental and social screening before approval. Where required, environmental and social assessments, authorizations and site-specific ESMPs will be completed before implementation. Applicable obligations will be reflected in procurement documents, contracts, partnership agreements and financial support arrangements.	Compliance with the law; environmental and social assessment; access and equity; marginalized and vulnerable groups; environmental sustainability
Malagasy Environmental Charter, Law No. 2015-003	Establishes the overarching principles for environmental protection, sustainable development and responsible management of natural resources. It is relevant to all project-supported activities that could affect land, water, biodiversity, productive landscapes, processing operations or community livelihoods. The law is included in the legal basis of the current MECIE framework.	All components, particularly Outputs 2.1, 2.2 and 2.3 covering production, restoration and processing solutions, and Outputs 3.1, 3.2 and 3.3 covering enterprise and financial support.	Environmental sustainability considerations will be integrated into activity design, USP eligibility criteria, enterprise selection, procurement and monitoring. Activities with significant, irreversible or unmanageable environmental or social impacts will be excluded from financing.	Compliance with the law; protection of natural habitats; conservation of biodiversity; pollution prevention and resource efficiency
National Land Policy and applicable land and tenure legislation	Provides the framework for land tenure, land-use rights and recognition of legitimate and customary interests. It is relevant because the project may support CCAHs, demonstration sites, agroforestry, landscape restoration, water-management measures, storage facilities and processing units requiring access to land or productive resources.	Output 1.1: selection and establishment of CCAH locations, particularly Activities 1.1.1 to 1.1.3. Outputs 2.1 and 2.2: demonstration sites, agroforestry, restoration, water-management measures and processing facilities, particularly Activities 2.1.1 to 2.1.3 and 2.2.1 to 2.2.3.	Land status, existing use, legitimate tenure interests and customary rights will be assessed before an activity or site is approved. Participatory site selection and documented agreements will be required. The project will exclude activities causing involuntary resettlement, physical displacement, uncompensated asset loss or unmanageable restrictions on access to land and livelihoods.	Access and equity; human rights; marginalized and vulnerable groups; Indigenous Peoples; involuntary resettlement; lands and soil conservation
Forest Code, Law No. 97	Regulates the protection, management and sustainable use of forest resources. It is relevant to agroforestry, reforestation, watershed restoration, biomass use and essential-oil distillation, particularly where firewood or other forest-derived biomass may be used.	Output 2.2: agroforestry, reforestation, watershed restoration, by-product reuse and energy-efficient distillation, particularly Activities 2.2.1 to 2.2.3. Output 3.1: enterprises providing restoration services, efficient distillation equipment or sustainable biomass solutions.	Proposed activities will be screened for impacts on forests and natural habitats. The project will require sustainable and legally compliant biomass sourcing and promote efficient processing technologies. Conversion of natural forests and financing of illegal or unsustainable harvesting will be prohibited.	Protection of natural habitats; conservation of biological diversity; climate change; pollution prevention and resource efficiency
Water Code, Law No. 98-029, and applicable implementing regulations	Regulates integrated water-resource management, surface water and groundwater protection, water abstraction, pollution prevention, sanitation and wastewater disposal. It is relevant because the project may support water-saving rice systems, watershed restoration, water harvesting, processing and essential-oil distillation.	Output 2.1: water-saving rice and climate-resilient production practices, particularly Activity 2.1.2. Output 2.2: watershed restoration, water management, storage, processing and distillation, particularly Activities 2.2.2 and 2.2.3.	Water needs, abstraction requirements, downstream effects, wastewater and pollution risks will be assessed during screening. Required permits will be obtained, and water-efficiency, drainage, wastewater-management and pollution-control measures will be incorporated into technical designs and ESMPs where applicable.	Compliance with the law; public health; pollution prevention and resource efficiency; lands and soil conservation; climate change
Protected Areas Management Code, Law No. 2015-005	Regulates activities affecting protected areas and associated conservation zones. It is relevant because agroforestry, restoration, aromatic crop production and enterprise activities could be located near protected areas, forests or ecologically sensitive habitats. The law is included in the legal basis of the current MECIE framework.	Outputs 2.1, 2.2 and 2.3: site selection for production, restoration and innovation pilots. Outputs 3.1 and 3.3: screening of enterprises and investments operating near sensitive ecosystems.	Geographic and biodiversity screening will be conducted before sites, enterprises or investments are approved. Activities likely to cause adverse impacts on protected areas, critical habitats or protected species will be excluded or redesigned in consultation with the competent authorities.	Protection of natural habitats; conservation of biological diversity; Indigenous Peoples; physical and cultural heritage
Territorial Planning Law No. 2015-051, Urban Planning and Housing Law No. 2015-052, and applicable local planning requirements	Regulate territorial planning, approved land uses, construction and development authorization. These requirements are relevant to the siting or upgrading of CCAHs, demonstration sites, storage facilities, processing units and water-management infrastructure. These laws are referenced in the current MECIE framework.	Output 1.1: CCAH locations and facilities, particularly Activities 1.1.1 to 1.1.3. Outputs 2.1 and 2.2: demonstration sites, water-management measures, storage and processing facilities, particularly Activities 2.1.1 to 2.1.3 and 2.2.1 to 2.2.3.	Site selection will confirm consistency with authorized land uses and applicable territorial and local development plans. Necessary local approvals and construction authorizations will be obtained before work commences. Technical specifications will incorporate applicable accessibility, safety and climate-resilience requirements.	Compliance with the law; access and equity; public health; involuntary resettlement; physical and cultural heritage
Industrial Pollution Management and Control Law No.	Regulates industrial pollution, emissions, effluents, waste management and environmental control of processing operations. It is relevant to essential-oil distillation, drying, storage, processing, low-emission technologies and reuse of	Output 2.2: storage, drying, processing, distillation and by-product reuse, particularly Activity 2.2.3. Outputs 3.1 and 3.3: support or	Supported facilities will be screened for air emissions, wastewater, solid waste, hazardous materials, noise and resource use. Appropriate pollution-prevention, cleaner-	Pollution prevention and resource efficiency; public health; climate change; core labour rights

99-021 and applicable pollution-control requirements	agricultural or processing by-products. The law is referenced in the current MECIE framework.	financing for enterprises operating processing equipment or facilities.	production, waste-management and monitoring requirements will be included in designs, procurement specifications, contracts and ESMPs.	
Applicable national labour and occupational health and safety requirements, together with relevant ILO core labour principles	Protect workers against unsafe working conditions, exploitation and violations of fundamental labour rights. These requirements are relevant because project-supported farms, cooperatives, SMEs, storage facilities, processing units and distilleries may involve machinery, boilers, smoke, heat, chemicals, manual handling and seasonal or informal labour.	Outputs 2.1 and 2.2: field operations, storage, processing and distillation, particularly Activities 2.1.3 and 2.2.3. Outputs 3.1 and 3.3: supported enterprises and financed investments, particularly Activities 3.1.1 to 3.1.5 and 3.3.1 to 3.3.3.	Enterprise and facility screening will cover working conditions, child labour, forced labour and occupational risks. Contracts and financing agreements will require safe equipment, worker training, appropriate protective equipment, incident reporting and compliance with applicable labour and occupational health and safety requirements.	Core labour rights; human rights; gender equality and women's empowerment; public health
Public Health Code, Law No. 2011-002	Establishes requirements relevant to public health and the prevention of health risks. It is applicable where project activities involve water, waste, emissions, agricultural inputs, storage, processing equipment, worker exposure or community safety. The Code is referenced in the current MECIE framework.	Outputs 2.1 and 2.2: production technologies, water management, storage, processing and distillation. Outputs 3.1 to 3.3: enterprise operations and financed adaptation technologies.	Potential workers and community health risks will be assessed during screening. Applicable hygiene, chemical-management, equipment-safety, waste-management, emergency-response and community-safety measures will be integrated into technical designs and site-specific management plans.	Public health; pollution prevention and resource efficiency; core labour rights; human rights
Applicable national seed, plant-health, phytosanitary and agricultural-input requirements	Regulate the introduction, production, multiplication, certification and distribution of seeds, planting materials and agricultural inputs. They are relevant to resilient rice varieties, nursery systems, crop regeneration, agroforestry species and testing of agricultural innovations.	Output 2.1: resilient seed systems, nurseries and climate-resilient production packages, particularly Activities 2.1.2 and 2.1.3. Output 2.2: agroforestry and reforestation, particularly Activity 2.2.2. Output 2.3: applied research and validation, particularly Activities 2.3.1 and 2.3.2.	Only legally permitted, locally appropriate and technically validated seeds, species and planting materials will be supported. Screening will address invasive species, agrobiodiversity, input dependency, pest and disease risks, and possible maladaptation. Applicable certification and phytosanitary requirements will be confirmed during the PFG phase.	Conservation of biological diversity; protection of natural habitats; pollution prevention and resource efficiency; climate change; lands and soil conservation
Applicable national construction, equipment-safety and fire-safety requirements	Establish technical requirements for safe construction, installation and operation of buildings and equipment. They are relevant to CCAHs, storage facilities, drying equipment, distillation units, boilers and other processing technologies financed or supported by the project.	Output 1.1: establishment or upgrading of CCAH facilities, particularly Activities 1.1.2 and 1.1.3. Output 2.2: storage, drying, processing and distillation technologies, particularly Activity 2.2.3. Outputs 3.1 and 3.3: supported enterprises and financed equipment.	Designs and equipment specifications will be reviewed by qualified professionals and will incorporate applicable structural, accessibility, electrical, fire, machinery and operational safety requirements. Required authorizations and inspections will be obtained before facilities or equipment become operational.	Compliance with the law; public health; core labour rights; access and equity

120. During the PFG and full proposal stages, UNIDO and the national Executing Entity will verify the applicability, current status and specific compliance requirements of each technical standard in consultation with the competent Malagasy authorities. These requirements will be incorporated into the Environmental and Social Management Framework, USP eligibility and exclusion criteria, technical specifications, procurement documents, partnership agreements, enterprise and financial-beneficiary screening, contractual arrangements and project monitoring plans. Where national requirements and the applicable Adaptation Fund or UNIDO environmental and social safeguards differ, the project will apply the more stringent requirement, as appropriate and consistent with the applicable legal and policy framework.

F. Describe if there is duplication of project/programme with other funding sources, if any.

121. The proposed ARCHE Scale project builds upon the experience and institutional foundation developed through the ongoing GEF-7 financed project Building Adaptation and Resilience to Climate Change in the Essential Oil Sector in Madagascar (ARCHE) implemented by UNIDO in partnership with national stakeholders. The ARCHE project focuses on strengthening the climate resilience of Madagascar's essential oils (EO) value chains through locally led adaptation, climate-smart production systems, innovative processing technologies, and inclusive enterprise development.
122. The experience generated through ARCHE has demonstrated the relevance of applying an integrated value chain approach to adaptation, recognizing that climate vulnerabilities affect not only production systems but also processing, storage, governance, market access, and financial inclusion across rural economies. The project has also highlighted the importance of combining locally led adaptation approaches with innovation, enterprise support, and climate-resilient territorial planning to strengthen long-term resilience and livelihood sustainability.
123. ARCHE Scale is designed as a scaling and complementary initiative that builds on the approaches, partnerships, operational experience, and lessons of ARCHE while extending adaptation support to additional strategic value chains, territories, beneficiaries, and financing mechanisms, in line with NDA guidance. No duplication of efforts are expected with the ongoing initiatives, and to avoid potential duplication, the project will systematically review the geographic coverage, beneficiaries, activities, financing sources, and implementation periods of related initiatives before approving activities and USPs. Also, financing will be limited to additional and complementary interventions that expand proven approaches, address uncovered gaps, or connect existing investments with locally led adaptation systems and finance. This analysis will be updated during the PFG phase through consultations with relevant implementing and executing entities and government counterparts.

Table12: Overview of complementary initiatives and avoidance of duplication with ARCHE Scale

Name of the Programme/ Project	Duration Period	Short Description of the Programme / Project	Budget Funding Source	Contribution (lessons learnt) / synergies with the proposed ARCHE Scale Project	No-duplication and distinct scope	Envisioned coordination mechanism
ARCHE (Accelerating Resilience and Climate Adaptation in the Essential Oils Value Chain of Madagascar)	2024–2029 (5 years)	Objective: Reduce vulnerability and increase resilience to climate change in Madagascar's essential oils (EO) value chain by promoting the deployment of innovative climate adaptation technologies and services. The project focuses on major EO-producing regions, including Analanjirofo, Atsinanana, Diana and other key EO production landscapes. Component 1 strengthens the enabling environment through the development of a climate-resilient EO strategy, policy recommendations, and capacity building of public and private stakeholders through the Sustainable EO Coordination Platform (SEOCC). Component 2 promotes and pilots innovative adaptation technologies and services by supporting at least 21 adaptation-focused MSMEs through an EO Adaptation Accelerator Programme, implementing pilot projects, and testing innovative financing mechanisms in collaboration with financial institutions. The project also promotes climate adaptation solutions such as climate information services, resilient production systems, water management technologies, renewable energy solutions, and business support services tailored to EO value chains.	GEF-LDCF Grant: approximately US\$ 6.9 million Co-financing: approximately US\$ 54.9 million	This project provides the direct foundation for the proposed ARCHE Scale Project. ARCHE established the institutional coordination mechanisms, stakeholder networks, and adaptation governance structures that ARCHE Scale will build upon. The EO Adaptation Accelerator, MSME support model, SEOCC platform, and adaptation financing approaches offer proven implementation mechanisms that can be expanded under ARCHE Scale. Lessons learned from identifying, accelerating, and piloting adaptation SMEs will inform the design of a broader ecosystem approach integrating local adaptation enterprises, climate-smart agriculture, nature-based solutions, and inclusive finance. ARCHE Scale will further scale these achievements by expanding geographical coverage, strengthening locally led adaptation approaches, increasing access to finance, and extending support beyond the EO sector to additional climate-vulnerable value chains and rural communities while ensuring continuity and sustainability of investments made under ARCHE.	ARCHE Scale will not refinance enterprises, technologies, pilot sites, beneficiaries or activities already supported by ARCHE. It will build on verified lessons and expand adaptation support to additional locations, beneficiaries and value chains, particularly rice, while introducing broader CCAH, landscape-restoration and adaptation-finance mechanisms.	Coordination will occur through UNIDO, BNCC-REDD+, the ARCHE PMU and relevant national platforms. Geographic coverage, beneficiary lists, technologies and annual workplans will be cross-checked before ARCHE Scale activities are approved.
PROSPERER (Support Programme for Rural Microenterprises and Regional Economies)	2007-2021 (14 years)	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). Component 1 - identifying, mobilizing SMEs, and pairing the producer organizations with exporters. It also aims to provide extension services support. Component 2 - providing professional training in marketing and management. The component also supported over 6,000 youth and their integration into entrepreneurship Component 3 - improving rural finance and risk management. The project worked with partner MFIs (VOLA MAHASOA) 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. To avoid losing the PROSPERER legacy, the knowledge and network was transferred to a Cooperative to continue the efforts of the programme (Cooperative Taratra).	IFAD Financing: US\$ 46.04 M Total Project Cost: US\$ 67.83 M https://www.ifad.org/en/web/operations/-/project/1100001401 and Programme PROSPERER - Home Facebook	This project is well aligned with the proposed Adaptation project since its overall objectives and the objectives of the adaptation project are very similar. For instance, its intent to promote the growth of rural micro-enterprises and its focus on some of the regions that the project has also identified as vulnerable to climate change. This project has also partnered with MFIs (such as VOLA MAHASOA) that the adaptation has also identified as contributing to the adaptation project. 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.	PROSPERER closed in 2021. ARCHE Scale will not retrospectively finance its activities. It will draw on its rural enterprise, cooperative and microfinance lessons while applying them specifically to climate adaptation technologies and services in selected ARCHE Scale regions.	Consultation with IFAD, relevant government counterparts, former implementing partners and successor structures will support exchange of lessons, beneficiary-selection practices and rural finance experience.
Integrated Growth Poles and Corridors Project PIC	PIC1: 2005-2014 PIC2: 2015-2019 / 2019-2023 (Total 18 years)	The Integrated Growth Poles and Corridors Project 2 (PIC2) is one of the actions of the Malagasy Government to implement the General Program of the State and the "Madagascar Emergence Plan" (PEM). The Project aims to support the dynamization of areas and corridors with high growth potential, by stimulating the private sector and developing promising economic sectors such as agribusiness and tourism. 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 Fihariana. 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 was 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 start-ups for integration of more efficient distillation technologies.	World Bank Grant Amount PIC2: US\$ 50 M Projet Pôles Intégrés de Croissance et Corridors (PIC2) and Development Projects : Integrated Growth Poles and Corridor Project 2 - P113971 (worldbank.org)	This project is very much aligned with PC2 of the ARCHE project, namely output 2.1.2 to have Four (4) pilot projects implemented to deploy innovative adaptation technologies and solutions. It would be useful to learn about the distillation technologies solutions adopted through the (PEM) as well as learn from the inventory of distillation technologies created, specifically the alembic technology which reduces the use of wood fuel by 80% as it could be one of the 4 pilot projects.	ARCHE Scale will not finance distillation equipment, enterprises or locations already funded through PIC. Where both initiatives operate in Diana, ARCHE Scale will focus on additional climate-risk screening, locally led adaptation, ecosystem resilience and support to actors not already covered.	Coordination with PIC, the ministry responsible for industry, regional authorities and relevant project teams will include mapping supported enterprises, facilities and technologies and exchanging implementation information.
Madagascar: Promotion and Adaptation of channels of agricultural value to climate change (PrAda)	2017-2022	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	Total Grant BMZ: UR 23.3 M (including EUR 7.5 M from the EU) Adaptation de l'agriculture au changement climatique (giz.de)	This project is also very much aligned with the ARCHE project since it focuses on regions that have been identified in the CRVA as vulnerable to climate change. It has also focused on relevant value chains from which include cloves and vanilla. All of the project aims would be well aligned with the ARCHE project, and it would be useful to understand any potential learnings from this experience and confirm if the crop calendar that can be accessed by a 3-2-1 hotline may be supported by the farmers that the ARCHE project will target.	ARCHE Scale will not duplicate agrometeorological services, insurance products, training or producer-private-sector agreements already established by PrAda. It will assess whether proven tools can be adapted or extended to	Coordination with GIZ and relevant ministries will include technical exchanges on climate services, insurance, Farmer Business Schools and lessons from value-chain adaptation.

		contracts between producers and the private sector, so that 5,000 farmers get better prices for their products and have more income security. GIZ is the executing entity for this project. A second phase of the PrAda project is being discussed in 2022 and is expected to run until 2025.	And Project PrAda - Home Facebook	It would also be useful to learn more about the progress of the Farmer Business School to see if ideas can be taken and adapted to the regional hubs that the project aims to build.	uncovered locations and beneficiaries within its target value chains.	
Adaptation Accelerator Program: Building Climate Resilience through Enterprise Acceleration (AAP)	2021-2023	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. The implementing entity is Conservation International (NGO).	GEF Grant: US\$ 1.02 M Co-financing: US\$ 1.3 M https://www.thegef.org/projects-operations/projects/10435	It would be useful to learn from this project on how it built its base of information to inform investors, linking enterprises to investors and portfolio interests. Especially on how to it provides technical support to strengthen enterprise-level ability to attract investors. It would also be useful to learn from the project what the key binding constraints are for SMEs in developing countries to have access to such credits.	ARCHE Scale will not duplicate enterprise acceleration or investor-readiness support already delivered under AAP. It will apply relevant lessons to adaptation enterprises serving Madagascar's rice, essential-oil and rural resilience ecosystems.	Coordination with Conservation International and relevant enterprise-support partners will focus on market intelligence, investor matching, enterprise diagnostics and investment-readiness methodologies.
Adaptation SME Accelerator Project (ASAP)	2019-2021	The overall purpose of this global 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 did 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.	GEF Grant: US\$ 1.99 M Co-financing: US\$ 0.5 M https://www.thegef.org/projects-operations/projects/10296	The aim of this project is to enlarge the markets for climate resilience and adaptation solutions in countries such as Madagascar. Although the project is still under execution, it would be interesting to learn more about its programs, namely: The program of market mapping Convening and network building And incubation and acceleration. It would be interesting to learn about the strengths and weaknesses found in this project so that lessons can be learnt since the information that this project generates would be very useful in understanding in how to better support adaptation focuses SMEs.	ARCHE Scale will not duplicate the global market mapping, incubation or acceleration activities undertaken by ASAP. It will provide country- and value-chain-specific support to Malagasy enterprises and connect them with local producers, cooperatives and financial institutions. .	Relevant implementing partners will be consulted on SME mapping, network building, incubation models, performance indicators and lessons on adaptation-focused enterprise acceleration.
GCCA+ Madagascar: Building Capacity on Sustainable Climate Change Adaptation	2016-2020	The GCCA+ is the Global Climate Change Alliance Plus Initiative, funded by the European Union, started in 2008 and has become a major climate initiative that has funded over 80 projects of national, regional and worldwide scope in Africa, Asia, the Caribbean and the Pacific. The Madagascar project addressed the vulnerability that Madagascar faces to climate change. Efforts to tackle this issue have been undertaken to address the effects of short-term climate variability, and the focus of this project is to build sustainable adaptation to climate change.	Total budget EU: EUR 9,50 M https://www.gcca.eu/programmes/gcca-madagascar-building-capacity-sustainable-climate-change-adaptation	The overall focus of this project is relevant also since it is aligned with the overall objective of the ARCHE project, to build resilience and adaptation to Climate Change through adaptation. It would be useful to learn more about the interventions that this project has highlighted that could be adapted at the central institutional and decentralised levels of governance since the ARCHE project is also focused on building adaptation at both these two levels, highlighted in PC1 and PC3.	As GCCA+ Madagascar ended in 2020, ARCHE Scale will not duplicate its completed capacity-building activities. It will build on available institutional lessons while focusing on concrete, decentralized adaptation delivery through CCAHs, value-chain interventions and local finance.	Coordination will involve MEDD, BNCC-REDD+ and relevant former programme partners to access technical products, capacity-building materials and lessons on national and decentralized adaptation governance.
Sustainable Landscapes in Eastern Madagascar	2016-2026	Conservation International Foundation is the accredited entity. Addresses smallholder vulnerability to access private sector investment. The project is pioneering Green / Climate Bond with all returns and profits being re-invested to capitalize 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. 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.	GCF Grant: US\$ 18.5 M. Co-financing: US\$ 0.8 M https://www.greecclimate.fund/project/fp026	This project is not only of relevant because it is still under execution, but because it also collaborating with this GCF project that will build on lessons learned, particularly referring to the development of a sustainable financial mechanism to support EO smallholder farmers in Madagascar.	ARCHE Scale will not finance landscape sites, financial beneficiaries, enterprises or activities already supported by FP026. In areas of geographic overlap, it will address clearly identified gaps in rice and essential-oil resilience, localized climate services, CCAH-based planning and enterprise support.	Coordination with Conservation International, relevant government authorities, financial partners and regional stakeholders will include geographic mapping, beneficiary cross-checking and exchanges on landscape restoration and sustainable finance.
Madagascar Agricultural Rural Growth and Land Management Project	2016-2022	The objective of this project for Madagascar is to improve rural land tenure security and access to markets of targeted farming households in selected agricultural value chains in the projected areas, and to provide effective response to an eligible crisis or emergency.	WB committed: US\$ 53.27 M https://projects.worldbank.org/en/projects-operations/project-detail/P151469	It would be useful to synergise with this project since rural land tenure security and access to market are problems that Malagasy women are especially vulnerable to as identified in both the Baseline Report and the Gender Annex. Thus, it would be interesting to find out if this project has also focused on this demographic and to explore what its findings were and find out in a deeper way the barriers that vulnerable targets are faced with	As the project closed in 2022, ARCHE Scale will not duplicate its investments. It will use relevant lessons on land tenure, producer inclusion and market access while applying its own safeguards and	Coordination with the responsible government agencies and World Bank counterparts will support access to land-tenure tools, implementation lessons and

				when concerning rural land tenure and access to markets.	exclusion criteria to prevent displacement or land-access conflicts	information on previously supported locations and beneficiaries.
Country Strategic Opportunities Programme (COSOP) from IFAD (International Fund for Agricultural Development) /FP026	2022-2026	This Strategy targets rural areas, food systems, and nutrition security for vulnerable rural people, while building their resilience to climate change. It does this by: Improving climate resilient productivity of family farms and rural micro enterprises and strengthens agricultural value chains and improving access to target rural producers and organisations. The COSOP contains a portfolio of 18 projects in different stages of implementation from planned to closed projects. Three are currently ongoing: Inclusive Agricultural Value Chains Development Programme. Cost: US\$250.00 M. Duration: 2017-2028. The programme's investments will help strengthen and secure the production base of family farms in a context of climate change. It will connect them to production and marketing support services to sustainably transform the agriculture sector and the country's rural economy. Project to Support Development in the Menabe and Melaky Regions - Phase II. Cost: US\$56.70 M. Duration: 2015-2023. Through IFAD's Adaptation for Smallholder Agricultural Programme (ASAP), the project will help strengthen and build smallholder farmers resilience to the effects of climate change through the development of irrigated agriculture including spate-irrigation and the natural resource management approaches. Vocational Training and Agricultural Productivity Improvement Programme. Cost: US\$76.93 M. Duration: 2012-2023. The goal of FORMAPROD is to contribute to an increase in the income of smallholder farmers through professional and vocational training, leading to higher productivity and improved marketing of agricultural products.	Project budget (see left column) https://www.ifad.org/en/web/operations/w/country/madagascar/InclusiveAgriculturalValuechainsDevelopmentProgramme(DEFIS)(ifad.org)ProjecttoSupportDevelopmentintheMenabeandMelakyRegions-PhaseII(AD2M-II)(ifad.org) Vocational Training and Agricultural Productivity Improvement Programme (FORMAPROD) (ifad.org)	This project is focused on rural areas, the agricultural sector, and is focused on building resilience to climate change. Thus, it shares the same focus as the ARCHE project. It would be useful to learn more on the projects that are ongoing and share findings on climate resilience productivity, strengthening value chain and on improving access to target rural producers.	ARCHE Scale will not duplicate irrigation, infrastructure, training, producer support or value-chain investments financed through IFAD projects. It will focus on adaptation-specific gaps, climate information, enterprise-based service delivery and finance for areas and beneficiaries not already covered.	Coordination with IFAD, relevant ministries and regional project teams will take place during geographic targeting and through beneficiary cross-checking, technical exchanges and periodic workplan reviews.
Transforming Financial Systems for Climate /FP095	2019-2026	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.	GCF: US\$ 243 M Co-financing: US\$ 419M Accredited entity: AFD FP095: Transforming Financial Systems for Climate Green Climate Fund	This project is very much in line with PC2 in providing finance to MSMEs being coached and in providing finance for adaptation pilot projects. Again, Malagasy women often cannot access financial means as easy so it would be interesting to find out if this project takes this into consideration. It would also be interested in learning more about on its approach to alleviate/risk aversion and liquidity constraints/interests that are too high for the beneficiaries.	ARCHE Scale will not duplicate existing credit lines or finance investment costs already covered under FP095. It will focus on locally tailored adaptation products and last-mile access for vulnerable producers, cooperatives and MSMEs not adequately served by existing facilities.	Coordination with AFD, participating financial institutions and government authorities will include mapping available products, developing referral arrangements and verifying that individual investments are not financed twice.
Adaptation planning support for Madagascar - Readiness and Preparatory Support Proposal, with UNDP	2020- For a duration of 18 months	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 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.	Requested amount: US\$ 1.46 M https://www.greenclimate.fund/document/adaptation-planning-support-madagascar-through-undp	This project is focused on reducing vulnerability to CC by strengthening the integration of adaptation into development planning, mid-term planning, and budgetary frameworks. It would be useful to find out if these objectives have been achieved with the desired outcomes, i.e., it would be interesting to know what institutional skills have been incorporated to increase access to finance and if this has been achieved It would also be interesting if from the lessons learnt, that this project has aligned with can be shared with the proposed ARCHE project.	ARCHE Scale will not duplicate national adaptation-planning, vulnerability-assessment or institutional-readiness activities already financed under the readiness programme. It will operationalize relevant findings through local planning, concrete value-chain interventions and decentralized adaptation finance	Coordination with UNDP, MEDD, BNCC-REDD+ and relevant technical institutions will facilitate access to assessments, planning tools, institutional-capacity products and climate-finance readiness lessons.
“Transforming the financial system to support the development of sustainable energy solutions through technical assistance	2022 - 2026 Duration: 48 months	UNIDO under the lead of UNDP and in collaboration with UNCDF is currently developing a Joint Programme for submission to the SDG Fund to support the Government of Madagascar in creating a financial ecosystem that supports the development of sustainable energy projects by providing technical assistance and investment capital. The objective of this joint proposal is to support the Government of Madagascar in creating a financial ecosystem that supports the development of	SDG Fund: US\$ 1.2 M (inc. support costs) UNIDO: US\$ 0.15 M Source: provided by UNIDO	This project's main aim is to support the GOM in creating a financial ecosystem that supports sustainable energy projects. More could be learned on its creation of a Sustainable Energy Incubator, its de-risking facility and for the Sovereign Fund it has introduced. Thus, synergies could be explored.	ARCHE Scale will not duplicate sustainable-energy investments, incubator services or de-risking support already financed by the joint programme. Any support involving	Coordination with UNDP, UNIDO, UNCDF and participating financial institutions will include exchanges on incubation, de-risking instruments, enterprise

and investment in Madagascar”		sustainable energy projects by providing technical assistance and investment capital. This will be achieved by i) creating a Sustainable Energy Incubator (SEI); ii) introducing a de-risking facility, which will provide a diversified investment capital to private led small/medium-size projects; and iii) to introduce a Sovereign Fund, which will invest in strategic, large-scale infrastructural projects.			renewable energy or efficient processing will have a clear adaptation rationale and cover costs and beneficiaries not supported elsewhere.	screening and potential referral of eligible businesses.
Madagascar – SME Business Linkages Program	2020-2023	The African Development Bank is actively working to promote entrepreneurship and has launched this program which targets 300 MSMEs from the textiles, mining, agro-industry, manufacturing, and service sectors. The focus is to help MSMEs access to skills, the market and finance.	Commitment: U.A 1,000,000 Madagascar - SME Business Linkages Program (afdb.org)	The overall goal of this project is to support MSMEs and promote entrepreneurship which will target 300 MSMEs. It would be interesting to learn more about how the project helps MSMEs, in what skills they have access to, what programmes are run, i.e., Training, coaching, mentoring and business support growth. Would also be interesting to learn about its achievements so far, what has worked, and not worked so well, and if the project supports women and youth participation.	ARCHE Scale will not duplicate general business-development, market-access or finance services already delivered to the programme’s MSMEs. It will provide adaptation-specific support to enterprises delivering resilience technologies and services in targeted rural value chains.	Coordination with the African Development Bank and national SME-support institutions will focus on beneficiary mapping, training methods, market linkages and lessons concerning women- and youth-led enterprises.
Using systemic approaches and simulation to scale nature- based infrastructure for climate adaptation	2021-2026	This project being implemented by UNIDO, aims to enhance adaptation to climate change by establishing the business case, building capacities, and enabling increased investment in Nature Based Infrastructure. For that, the project will: · Support technologies and solutions that support biologically diverse forests, mangroves, wetlands, grasslands and agricultural lands to provide valuable ecosystem services and adaptation · Ensure that adaptation focused MSMEs support topics such as carbon sequestration, nutrient removal, water storage, harvesting	GEF Grant: US\$ 2.0 M Co-financing: US\$ 3.8 M Source : https://www.thegef.org/projects-operations/projects/10632	The ARCHE project will build synergies with the project through the activities in PC2.	ARCHE Scale will not duplicate nature-based infrastructure pilots, MSME support or investment activities already financed by this programme. It will apply relevant evidence and tools to selected productive landscapes and value chains in Madagascar.	As both initiatives involve UNIDO, coordination will occur through internal technical teams, shared methodologies, knowledge exchange and cross-checking of supported enterprises, technologies and investment sites.
Upscaling Ecosystem-based Adaptation for Madagascar’s Coastal Zones	2024-2028	This project aims to enhance the resilience of local communities, livelihoods and ecosystems in four coastal regions of Madagascar to the adverse impacts of climate change, and it will be implemented by the MEDD.	GEF Grant: US\$ 7.1 M Co-financing: US\$ 21.1 M Source : https://www.thegef.org/projects-operations/projects/10939	The ARCHE project will seek to build synergies with this project through the MEDD.	ARCHE Scale will not duplicate coastal restoration sites, livelihood activities, community investments or beneficiaries supported by this project. Where target regions overlap, ARCHE Scale will focus on additional productive value-chain resilience measures and locations not already financed.	Coordination through MEDD, BNCC-REDD+, regional authorities and the respective PMUs will support geographic mapping, beneficiary cross-checking, technical exchanges and review of potentially overlapping activities.

124. Coordination will be institutionalized through the ARCHE Scale Project Steering Committee and relevant national and regional technical platforms. Before approval of site-specific activities and USPs, the Project Management Unit will maintain and update a project-mapping and no-duplication register covering geographic locations, beneficiaries, enterprises, technologies, financing instruments and implementation schedules of related initiatives. Potential overlaps will be reviewed with the relevant implementing partners and government authorities. Where complementarities are identified, coordination may include referrals, technical exchanges, use of compatible tools, sequencing of investments and joint learning activities. ARCHE Scale will not finance any activity, asset, beneficiary cost or investment already financed by another project.

G. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

125. The project will integrate a structured Learning and Knowledge Management (LKM) component to systematically capture, validate, and disseminate lessons learned throughout implementation. This function is embedded across all project components and will support adaptive management, policy uptake, and replication of climate-resilient solutions in the rice and essential oils value chains.

G.1 Knowledge Generation

126. **Under Component 1 (Strengthening Locally led Adaptation Systems and Institutional Capacities)**, learning processes will be anchored in the Community Climate Adaptation Hubs (CCAHS) (Output 1.1), which will serve as decentralized platforms for knowledge exchange and co-learning. Through Outputs 1.2 and 1.4, participatory tools such as climate risk assessments, community scorecards, climate logs, and resilience tracking systems will enable communities, producer groups, and SMEs to document adaptation practices and assess their effectiveness. These mechanisms will ensure that knowledge generated at the local level is continuously fed back into planning and decision-making processes. In addition, Output 1.3 will contribute to knowledge generation through digital tools (e.g., climate risk maps and value chain analytics), strengthening the evidence base for localized adaptation planning.
127. **Under Component 2 (Deploying Locally Relevant Climate-Resilient Solutions for Adaptive Livelihoods)**, the project will generate operational knowledge on climate-resilient technologies, practices, and nature-based solutions applied within the rice and essential oils value chains. Outputs 2.1 to 2.4 will support the documentation of lessons related to the adoption of resilient production systems (e.g., integrated rice models), agroforestry approaches, post-harvest technologies, and locally adapted innovations. Applied research and innovation partnerships (Output 2.4) will play a key role in validating solutions and generating evidence on their effectiveness, scalability, and relevance to local contexts.
128. **Under Component 3 (Strengthening Local Adaptation Enterprises and Financial Innovation)**, learning will focus on business models, financial mechanisms, and market-based approaches for scaling adaptation solutions. Outputs 3.1 to 3.3 will generate insights on enterprise development, access to finance, and the uptake of financial instruments (e.g., microcredit, insurance, and off-take arrangements). Particular attention will be given to lessons related to inclusion, especially for women- and youth-led enterprises, and to identifying barriers and enabling conditions for scaling climate-resilient solutions through market systems.

G.2 Knowledge Dissemination and Exchange

129. **Under Component 4 (Enabling Adaptive Project Management, Learning, and Institutional Sustainability)**, the project will consolidate and disseminate knowledge at national and international levels. Outputs 4.2 and 4.3 will support the establishment of a Monitoring, Evaluation, and Learning (MEL) system, combining participatory feedback mechanisms with digital data platforms to track progress, analyze results, and inform adaptive management. Knowledge products, including technical guidelines, policy briefs, case studies, and communication materials, will be developed and disseminated through national and regional workshops, peer-learning exchanges, and engagement with relevant platforms. The project will also contribute to the Adaptation Fund's knowledge-sharing mechanisms.
130. Overall, the LKM component will ensure strong linkages between local experience and national-level learning, enabling the project to generate actionable knowledge on locally led adaptation, value chain resilience, and enterprise-based solutions. This will support evidence-based decision-making, strengthen institutional capacities, and facilitate the scaling and replication of successful approaches across Madagascar.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

131. Initial consultations were conducted online in October 2025 with the ARCHE project PMU, whose members were gathered in the same consultation session. The insights received have been incorporated into the Concept Note and

will continue to guide the development of the full proposal, particularly with regard to local ownership, institutional capacity, value chain targeting, and economically viable adaptation solutions. These consultations were conducted at a preliminary stage in October 2025 and aimed to ensure early alignment with national priorities, validate the relevance of the proposed approach, and strengthen understanding of the institutional and policy context in Madagascar. Discussions involved representatives from relevant government institutions and technical partners. The consultations highlighted the importance of strengthening climate-resilient livelihoods, supporting value-chain-based adaptation approaches, and enhancing coordination across sectors such as agriculture, forestry, and environment.

Table 12: Summary of Counterpart Consultations and Integration of Inputs into the Concept Note

Persons consulted	Institution	Key points discussed	How inputs were reflected in the Concept Note
Mr Marcellin A. Lalason Ms Harisoa Rondro Herinirina Mr Haja Manampisoa R. Mr Anokinimamy Mendrika	BNCC- REDD+	National priorities for climate resilience, locally led adaptation, sustainable land management, and value chain development; lessons from the ongoing ARCHE project; institutional arrangements; stakeholder engagement; complementarity with ARCHE; local ownership; institutional capacity-building; and practical adaptation solutions that can be sustained beyond the project period.	The Concept Note was adjusted to strengthen alignment with national adaptation priorities, emphasize complementarity with the ongoing ARCHE project, define a distinct adaptation rationale and expanded scope, and reflect the importance of Community Climate Adaptation Hubs, capacity-building, local adaptation enterprises and service delivery mechanisms.

132. In addition, further preliminary stakeholder consultations, including in-person meetings conducted in Antananarivo from 22 to 26 June 2026, helped validate and refine the project's geographic focus, climate rationale, proposed interventions, and institutional delivery arrangements. Summary is provided in Table 14 below. During the PFG phase, more detailed and locally grounded consultations will be conducted in the selected target regions with producer organizations, cooperatives, MSMEs, local authorities, women's and youth groups, water-user associations, and community representatives. These consultations will validate site-specific climate risks and vulnerabilities, beneficiary targets, priority adaptation measures, safeguards risks, and institutional arrangements, and will support the participatory co-design of interventions tailored to local needs and capacities.

Table 134: Summary of Stakeholder Consultations and Their Influence on the Concept Note

Stakeholder or institution	Stakeholder type	Main findings and recommendations	Influence on the Concept Note
Green Economy Service / Ministry of Environment and Sustainable Development represented by Ms. Volamaiss on behalf of Ms. ANDRIAMIHAMINA Hantanirina Ony, Head of the Green Economy Service	Government and national climate authority	Recommended decentralized adaptation delivery and the use of existing regional or district structures as local relays. Emphasized the importance of aligning the project with national climate, green economy, and sustainable development priorities.	Output 1.1 was refined to prioritize anchoring Community Climate Adaptation Hubs in existing regional institutions and community structures, where feasible. The institutional anchor of the project was also strengthened.
Directorate of Hydrometeorological Research and Development ; represented by Mr. RAKOTOMAVO Zo Andrianina Patrick Herintiana, Director	Public institution / climate and meteorological services	Confirmed that rainfall variability, cyclones, strong winds, droughts, and localized water stress are major climate risks, with significant regional differences. Highlighted the need for localized climate information to support decision-making by producers, processors, and local institutions.	The climate rationale and regional targeting criteria were strengthened, and Output 1.2 was refined to emphasize localized climate information and decision-support services.
Sustainable Agriculture Service represented by Ms. RAKOTONDRA SOA Voloina Stelly, Head of Service	Public institution / agriculture	Recommended selecting regions based on climate vulnerability, value-chain importance, the number of affected actors, and adaptation potential, rather than overlap between rice and essential oils alone.	The geographic selection approach was revised to allow the inclusion of major climate-vulnerable rice-producing areas, even where the two priority value chains do not strongly overlap.
CNRT – Centre National de Recherches Industrielle et Technologique represented by Dr. RAHARITSIADANA Herimalala Marie, Researcher, PhD in Chemistry	Research institution	Highlighted the importance of applied research, locally adapted technologies, quality improvement, and stronger linkages between research institutions, producers, processors, and market actors.	Outputs 2.2 and 2.3 were strengthened to include locally appropriate processing technologies, demonstration activities, applied research, and local validation of adaptation solutions.
SEDACO ; represented by Mr. RATO VONJANAHARY Oniarisetra, Manager	Private-sector and green raw-material producer	Recommended considering SAVA because of its exposure to cyclones, dependence on vanilla, declining vanilla revenues, and diversification into ginger, patchouli, vetiver, and rice.	SAVA was strengthened as a potential target region, and the project rationale now gives greater attention to livelihood diversification, aromatic crops, agroforestry, and resilience to cyclone-related disruptions.
GEHEM – Groupement des Exportateurs d'Huiles Essentielles, Extraits et Oléorésines de Madagascar represented by Ms. Judith RICCATI, Executive Director and essential oils expert	Processor / exporter / essential oils expert	Highlighted climate-related challenges affecting the essential oils value chain, including raw-material availability, quality preservation, processing constraints, and the need for stronger sector coordination.	Output 2.2 was refined to include adaptive processing, energy-efficient distillation, by-product use, product-quality preservation, and stronger support to essential-oil value-chain actors.
Jacarandas Madagascar ; represented by Ms. Mihanta Malala Chateaneuf, Manager	Processor / exporter	Identified post-harvest and processing challenges affecting essential-oil raw materials, including storage, drying,	Output 2.2 was strengthened to include adaptive storage, drying, processing, energy-efficient distillation, and product-quality preservation.

		distillation, quality control, and market requirements.	
AIKA Alliance / Unis-Vers Vintsy Tana network represented by Ms. Larissa ANDRIATSEHENO, Member of the AIKA Strategic Council and President of the Unis-Vers Vintsy Tana network	Civil society and youth	Emphasized youth entrepreneurship, climate information, agroecology, agroforestry, biodiversity, and the use of existing youth and community networks.	Components 1 and 3 were strengthened to promote meaningful participation by youth, support youth-led enterprises, provide business-development assistance, and facilitate inclusive adaptation finance.
Jeunes Actifs pour le Développement represented by Ms. Hasina Rakotondraina, Executive Director	Civil society, youth and women	Emphasized youth and women's participation, financial literacy, processing, market access, climate information, and the importance of building existing community networks.	Components 1 and 3 were strengthened to promote women- and youth-led enterprises, inclusive business support, financial literacy, and access to adaptation finance.

I. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

133. Rural communities, producers, and enterprises engaged in essential oil (EO) and rice value chains in Madagascar operate in environments increasingly affected by climate variability and climate-related hazards, including cyclones, rainfall irregularity, rising temperatures, and localized water stress. These conditions influence production systems, ecosystem stability, and market access, with implications for rural livelihoods and food security. Without targeted adaptation support, value chain actors are likely to continue relying on production practices, technologies, and investment patterns that only partially account for current and projected climate risks. This may limit their capacity to manage climate-related disruptions and maintain stable levels of productivity over time.

134. Baseline scenario (without Adaptation Fund intervention):

- Producers in EO and rice systems are expected to continue relying largely on rainfed and climate-sensitive practices, with uneven access to climate-resilient technologies, inputs, and climate information.
- Value chains remain partially integrated with respect to climate risk management, with limited coordination across production, processing, and market functions.
- MSMEs and cooperatives continue to face constraints in developing and delivering adaptation-oriented products and services, particularly in rural areas.
- Financial systems provide limited access to adaptation-specific financing mechanisms, especially smallholders and informal actors.
- Local and territorial planning processes incorporate climate considerations to varying degrees, depending on institutional capacity, data availability, and resources.

135. Adaptation alternative enabled by Adaptation Fund resources (through ARCHE Scale):

- Output 1.1–1.2: Producers, cooperatives, and value chain actors gain access to localized climate information, early warning systems, and participatory planning tools, supporting more informed decision-making and risk management.
- Output 2.1–2.3: Climate-resilient production and processing practices are introduced and scaled, including agroforestry systems, improved water management, and lower-emission technologies adapted to EO and rice value chains.
- Output 2.4: Locally appropriate adaptation solutions are identified, tested, and progressively scaled, strengthening resilience across value chains.
- Output 3.1–3.2: MSMEs and producer organizations are supported to develop climate-responsive business models and improve access to markets and services, contributing to economic resilience.
- Output 4.1–4.3: Institutional systems and planning processes are strengthened to integrate climate adaptation into local and national frameworks, supporting continuity and scaling of adaptation measures.

136. Incremental cost reasoning: Adaptation Fund resources are requested to cover the incremental costs associated with integrating climate adaptation into value chain development, which would not be fully addressed under a development-only baseline.

In particular:

- Development investments may support agricultural productivity or value chain development but may not cover the additional costs of climate risk assessments, localized climate services, and adaptation-specific technology deployment.
- MSMEs and producer organizations may continue operating under existing models but may have limited capacity to absorb the additional costs associated with developing and scaling climate-resilient business models and services.

- Financial systems may support general enterprise development but are not typically structured to provide tailored financial products addressing climate risks and adaptation needs in EO and rice value chains.
- Planning processes at local and national levels may continue, but without dedicated resources may not systematically integrate climate risk information, adaptation priorities, and resilience indicators.

These additional costs—related to climate risk integration, capacity development, technology adaptation, and ecosystem-based approaches—represent the adaptation cost gap addressed through the proposed intervention.

137. Financing approach and use of Adaptation Fund resources:

The project has been designed as a focused, value-chain-based adaptation intervention, with Adaptation Fund resources financing the core activities required to achieve the proposed outcomes. The approach emphasizes locally led adaptation, capacity development, innovation support, and strengthening institutional systems, rather than large-scale infrastructure investments.

138. Adaptation Fund resources will support:

- Participatory climate risk assessments and value chain diagnostics
- Co-design and deployment of locally appropriate adaptation solutions
- Capacity development for producers, MSMEs, cooperatives, and institutions
- Strengthening of climate information systems and decision-support tools
- Development of inclusive and climate-responsive business and financing approaches
- Monitoring, learning, and adaptive management

139. The project will be implemented through existing institutions and value chain actors, whose contributions are expected to be primarily institutional, technical, and operational, rather than financial. This approach supports efficient implementation while strengthening local ownership. Sustainability is expected to be supported through the integration of adaptation considerations into value chain practices, local planning processes, and enterprise models, enabling continuity beyond the project period. The project is also expected to generate evidence and experience that may inform replication and scaling in similar contexts.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

140. All project components and outcomes have been deliberately designed to strengthen the long-term sustainability of adaptation results beyond the period of Adaptation Fund support. Sustainability is embedded in the project design through a strong focus on locally led governance systems, institutional capacity development, community ownership, local delivery mechanisms, and financially viable adaptation models. The project is designed not as a stand-alone set of externally delivered activities, but as a catalytic intervention that strengthens the systems, capacities, and local actors required to sustain adaptation action over time. Sustainability rests on two interlinked pillars:

J.1 Institutionalization and long-term local ownership:

141. Strengthening local governance processes and institutional capacities: Through Component 1, the project will establish and operationalize Community Climate Adaptation Hubs (CCAHS) as decentralized platforms that support community-led adaptation planning, coordination, service delivery, and learning. These hubs, together with localized assessment tools, digital decision-support tools, and community-based monitoring and feedback systems, are designed to strengthen the long-term capacity of local institutions, community networks, producer groups, SMEs, and other value chain actors to identify risks, prioritize adaptation actions, and manage implementation processes. By embedding these functions in local structures and participatory processes, the project supports the long-term development of local governance systems that can continue to facilitate and manage adaptation initiatives beyond the life of the project.

142. Improving local access to adaptation planning, services, and decision-making tools: The project promotes simpler and more localized access modalities by bringing adaptation planning, information, coordination, and support mechanisms closer to communities through the CCAHS and cooperative- or enterprise-led delivery channels. This reduces dependence on centralized or externally managed systems and helps ensure that communities and local institutions can more easily access the tools, knowledge, and partnerships required to implement adaptation actions. The

emphasis on peer learning, participatory planning, and local feedback mechanisms further strengthens community ownership and builds the confidence and practical capacity needed for longer-term self-management.

J.2 Replication, local delivery systems, and reduced dependence on donor finance:

143. Building community and enterprise capacity to sustain adaptation action: Through Components 2 and 3, the project will strengthen the practical ability of communities, producer groups, cooperatives, SMEs, and local adaptation enterprises to adopt, deliver, and scale climate-resilient solutions. Adaptation measures are selected not only for their technical relevance, but also for their feasibility, local appropriateness, and potential to be sustained through local capacities, business incentives, and market demand. By strengthening local enterprises and producer organizations, the project helps create a lasting supply base for adaptation goods and services that communities can continue to access after project closure.
144. Creating financially viable pathways for continuation and scale-up: Sustainability is further strengthened through the co-design and deployment of inclusive financial instruments and market-based support mechanisms under Component 3. By working with local financial institutions, buyers, community-based entities, and local enterprises, the project aims to develop financing and delivery models that remain operational beyond donor funding. This helps shift adaptation from being dependent solely on project grants toward being supported through local business models, financial services, cooperative systems, and community-based delivery arrangements. In turn, communities and value chain actors are better positioned to continue investing in and managing adaptation solutions over time.
145. Under Component 1, the CCAHs and associated planning, monitoring, and decision-support systems will serve as long-term institutional anchors for localized adaptation governance. These mechanisms are expected to continue generating value after project completion by supporting peer-to-peer learning, strengthening coordination among local actors, linking communities to service providers and financing opportunities, and improving adaptive decision-making at local level. Sustainability is reinforced through alignment with national adaptation and development priorities and through integration with decentralized planning and governance processes, which helps promote institutional uptake and ownership by relevant public authorities.
146. Knowledge generation and dissemination will also be central to sustainability. Through Component 4, the project will document lessons learned, practical adaptation models, and implementation experience in formats that can be used by communities, institutions, enterprises, and other stakeholders. This evidence base will support the continued use, replication, and scale-up of successful approaches within and beyond the target areas, while strengthening institutional memory and learning.
147. The piloting of innovative technical, institutional, and financial solutions under Components 2 and 3 will generate tested models that demonstrate how adaptation can be implemented through local systems rather than through continuous external delivery. This is expected to encourage further uptake and investment by local institutions, enterprises, financial actors, and development partners, thereby increasing the likelihood that successful approaches will continue and expand. At the same time, strengthened capacities among local institutions, producer groups, enterprises, and community networks will improve their ability to mobilize resources, manage partnerships, and carry adaptation initiatives forward independently.
148. Moreover, the project places strong emphasis on inclusion and local agency, with particular attention to women, youth, and vulnerable groups as active participants in governance, enterprise development, and adaptation delivery. By strengthening not only technical capacities but also participation, leadership, and access to services and finance, the project helps build the social and institutional foundations needed for long-term sustainability.
149. Finally, adaptive project management under Component 4, including participatory execution, safeguards, learning systems, and knowledge dissemination, will help ensure that implementation remains responsive and that sustainability considerations are continuously integrated throughout the project lifecycle. Taken together, these elements position the project as a catalytic investment in locally led adaptation systems that can continue to function, evolve, and deliver resilience benefits over the long term without remaining dependent on project-based donor funding.

K. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

150. In accordance with UNIDO's Environmental and Social Safeguards Policies and Procedures (ESSPP), the Environmental and Social screening template has been completed, and this project has been screened and categorized as a Category B project. Given that specific interventions, sites, and beneficiaries will be identified during implementation, an Environmental and Social Management Framework (ESMF) will be developed. The ESMF will guide the identification, assessment, and management of potential environmental and social risks associated with activities under Component 2 and 3. For output 2.1, 2.2, and 2.3, The ESMF will require E&S risk screening of all supported practices and pilot interventions. Where screening identifies moderate risks, site-specific Environmental and Social Management Plans (ESMPs) will be prepared and implemented prior to activity rollout. All activities will be subject to exclusion criteria, stakeholder engagement requirements, and monitoring provisions to ensure compliance with UNIDO ESSPP.
151. For output 3.1, 3.2, and 3.3, the ESMF will also guide the selection and support of beneficiaries. The ESMF will define clear eligibility and exclusion criteria for enterprises and financial beneficiaries. It will require mandatory environmental and social screening of all prospective beneficiaries prior to the provision of business development services, investment facilitation, or financial support. Beneficiaries will be classified according to a proportional risk approach (low or moderate risk), with corresponding mitigation and monitoring measures applied.
152. While Madagascar does not formally recognize Indigenous Peoples under national law, project activities may involve ethnic minority and remote rural communities with distinct social and cultural characteristics. Where activities may affect customary land use, natural resources, or livelihoods, the ESMF will require culturally appropriate consultation and the application of Free, Prior, and Informed Consent (FPIC) principles, in line with UNIDO ESSPP, before such activities are approved.
153. The ESMF will also establish requirements for:
- Continuous stakeholder engagement, disclosure of relevant information in accessible formats, and inclusive participation at local level; and
 - A project-level grievance redress mechanism applicable to communities, workers, enterprises, and other stakeholders, including those participating in or affected by financial support mechanisms.
154. The risk ratings presented below are preliminary and will be reviewed during the PFG and full proposal stages as target locations, technologies, beneficiaries and Unidentified Sub-Projects are further defined. Activities requiring further assessment will be screened through the ESMF, and site-specific environmental and social assessments or management plans will be prepared where necessary. The project will not finance activities presenting significant, irreversible or unmanageable environmental or social risks.

Table15: Environmental and Social Principles: Risk Screening and Potential Impact

Environmental and social principles	No further assessment required	Potential impacts and risk rating – and preliminary mitigation measures
Compliance with the Law		Medium. Unidentified sub-project, enterprise investments, procurement packages and community-level activities may not fully comply with applicable permits, environmental requirements, labour standards or sector regulations. To mitigate this risk, the project will conduct legal-compliance screening before approving activities, verify required permits and authorizations, and include applicable legal obligations in procurement documents, contracts, financing agreements, ESMPs and monitoring tools.
Access and Equity		Medium. Women, youth, remote communities, poorer households, informal enterprises and less-organized producers may face unequal access to project information, technologies, finance and services. To mitigate this risk, the project will apply transparent beneficiary-selection criteria, inclusive outreach, accessible communication channels and disaggregated monitoring of access to project benefits.
Marginalized and Vulnerable Groups		Medium. Smallholders, women, youth, persons with disabilities, remote communities and less-organized producers may be excluded from decision-making or receive fewer project benefits. To mitigate this risk, the project will conduct vulnerability-sensitive beneficiary mapping, facilitate meaningful participation, establish targeted inclusion measures and monitor participation and benefits by sex, age and vulnerability category.
Human Rights		Low. Although project activities are not expected to infringe human rights, risks may arise through discriminatory beneficiary selection, inadequate consultation, poor labour practices or restricted access to resources. To mitigate this risk, the project will apply non-discrimination, participation, transparency and access-to-remedy requirements to all sub-projects, enterprises and delivery partners and operate an accessible grievance mechanism.
Gender Equality and Women's Empowerment		Medium. Women may face barriers to land, finance, technologies, training and decision-making, and some activities could unintentionally increase their unpaid workload. To mitigate this risk, the project will apply gender-responsive consultations and targeting, promote women's meaningful participation in CCAHs and enterprise support, assess potential labour burdens and monitor women's access to finance, technologies and project benefits.
Core Labour Rights		Medium. SMEs, farms, producer groups, distilleries and processing units may use informal or seasonal labour and may have inadequate occupational health and safety practices, including possible child-labour risks. To mitigate this risk, the project will screen labour conditions, prohibit forced and child labour, include labour and occupational health

		and safety requirements in contracts, and require training, protective equipment and incident reporting where applicable..
Indigenous Peoples		Low. Madagascar does not formally recognize Indigenous Peoples under national law, but remote, ethnic, customary or forest-dependent communities may possess distinct cultural characteristics or depend on customary land and natural resources. To mitigate this risk, the project will undertake culturally appropriate consultations, protect customary rights and livelihoods, and apply Free, Prior and Informed Consent where required under applicable safeguards.
Involuntary Resettlement	✓	Low. The project is not expected to cause physical or economic displacement. To mitigate this risk, the project will apply exclusion criteria prohibiting activities that result in involuntary resettlement, uncompensated asset loss or unmanageable restrictions on access to land, resources or livelihoods, and verify land status before approving sites.
Protection of Natural Habitats		Medium. Poorly selected sites or technologies could cause land conversion, deforestation, ecosystem disturbance or unsustainable biomass extraction. To mitigate this risk, the project will undertake site-specific habitat screening, exclude activities affecting critical habitats or natural forests, require sustainable biomass sourcing and prioritize restorative and nature-based practices.
Conservation of Biological Diversity		Medium. Risks may include the introduction of invasive species, reduced agrobiodiversity, unsustainable harvesting or inappropriate restoration and production practices. To mitigate this risk, the project will use locally appropriate and legally permitted species and planting materials, screen for invasive-species risks, protect native biodiversity and monitor restoration and production activities.
Climate Change		Medium. Technologies, crops, infrastructure or financial investments that are not suited to future climate conditions could result in maladaptation, increased resource pressure or avoidable greenhouse-gas emissions. To mitigate this risk, the project will subject proposed solutions to localized climate-risk and maladaptation screening, prioritize low-emission and climate-resilient options, pilot solutions before scaling and monitor their adaptation performance.
Pollution Prevention and Resource Efficiency		Medium. Storage, processing, distillation and enterprise activities may generate smoke, emissions, wastewater, solid waste or inefficient use of water, energy and biomass. To mitigate this risk, the project will promote cleaner and resource-efficient technologies, sustainable biomass sourcing, circular use of by-products and appropriate waste, wastewater and emissions-management measures.
Public Health	✓	Low. Significant adverse public health impacts are not anticipated, although processing equipment, smoke, waste, water use or agricultural inputs could create localized health and safety risks. To mitigate this risk, the project will screen proposed activities for community health and safety risks and incorporate hygiene, equipment-safety, waste-management and emergency-response measures where necessary.
Physical and Cultural Heritage	✓	Low. Project activities are not expected to affect known physical, archaeological, cultural or natural heritage sites. To mitigate this risk, the project will screen sites before approval, avoid known heritage areas and apply chance-find procedures if previously unidentified cultural material is discovered during implementation.
Lands and Soil Conservation		Medium. Poorly designed production, restoration, water-management or infrastructure activities could increase erosion, soil degradation, waterlogging or pressure on land resources. To mitigate this risk, the project will conduct site-specific land and soil assessments, promote erosion control, agroforestry and sustainable land management, and include appropriate soil-conservation measures in technical designs and ESMPs.

PART III: IMPLEMENTATION ARRANGEMENTS

155. The project will be implemented by the United Nations Industrial Development Organization (UNIDO) as the accredited Multilateral Implementing Entity of the Adaptation Fund. UNIDO will retain overall responsibility and accountability to the Adaptation Fund for the implementation of the ARCHE Scale project, including project cycle management, financial oversight, monitoring of delivery, compliance with Adaptation Fund requirements, consolidated reporting, and the commissioning of mid-term and terminal evaluations. During the full proposal stage, UNIDO will pre-identify eligible national Executing Entities, including BNCC-REDD+, relevant local institutions, producer organizations, financial actors, and NGOs with demonstrated expertise in locally led adaptation, climate-resilient livelihoods, inclusive enterprise support, and adaptation finance. The final executing arrangements, including the distribution of roles and responsibilities among national and local partners, will be confirmed during full proposal development in consultation with the Government of Madagascar and in accordance with UNIDO's rules and procedures.
156. The selected national and local executing partners will play a central role in the implementation of Components 1, 2 and 3, which focus on strengthening local governance systems, deploying climate-resilient solutions, and enabling local adaptation enterprises and financial innovation. Their involvement will include supporting the establishment and operationalization of Community Climate Adaptation Hubs, facilitating localized climate risk and adaptation-needs assessments, piloting and scaling climate-resilient practices and technologies, fostering applied research and innovation partnerships, and facilitating the development and deployment of inclusive financial instruments and enterprise support mechanisms. Procurement and partnership processes will follow UNIDO's transparent and competitive procedures to ensure the engagement of the most qualified national and international partners. UNIDO may also launch open tenders to attract SMEs, financial service providers, technical providers, and innovation partners with proven experience relevant to locally led adaptation, climate-resilient value chains, and community-responsive delivery systems.
157. UNIDO will also lead the coordination of Component 4, which focuses on project management, knowledge sharing, learning, adaptive management and institutional sustainability. Leveraging its technical expertise, operational

experience, and global networks in climate adaptation, innovation, inclusive enterprise development and sustainable industrial value chains, UNIDO will support national and local partners in establishing an effective project management structure and a learning system that ensures continuous feedback during implementation. A Project Management Unit will be established to manage day-to-day implementation, coordinate partners, monitor delivery, and ensure that project activities remain aligned with national priorities, local adaptation needs, and the Adaptation Fund's Environmental and Social Policy and Gender Policy.

158. A Project Steering Committee (PSC) will be established to provide strategic guidance, ensure alignment with national and local priorities, and support coordination among key stakeholders. The Committee will include representatives from UNIDO, the relevant national authorities, BNCC-REDD+, other concerned ministries and public institutions, regional and local authorities in target areas, and representatives of beneficiary communities, producer organizations, SMEs, women and youth groups, and other relevant value chain actors. The final composition and operating modalities of the Project Steering Committee will be confirmed during full proposal development in consultation with national stakeholders.

159. The present project is governed by the provisions of the Cooperation Agreement between the Government of Madagascar and UNIDO, signed on 20 May 2025.

A. Demonstrate how the project/programme aligns with the Results Framework of the Adaptation Fund

Table 16: Alignment of Project Objectives, Outcomes, and Grant Allocation with the Adaptation Fund Results Framework

Project Objective(s) ¹	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Objective 1: Strengthening Locally Led Adaptation Systems and Institutional Capacities	Number of local institutions, community networks, producer groups, and value chain actors using participatory processes, localized tools, and climate risk-informed planning mechanisms	Outcome 1: Reduced exposure at national, sub-national and community level to climate-related hazards and threats	Indicator 2: Number of institutions and communities with strengthened capacity to identify and respond to climate risks	2,500,000
Objective 2: Deploying Locally Relevant Climate-Resilient Solutions for Adaptive Livelihoods	Number of communities and value chain actors adopting climate-resilient practices, technologies, and nature-based solutions	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	Indicator 5: Area of ecosystems with increased resilience to climate change and variability-induced stress; Indicator 6: People with diversified or strengthened climate-resilient livelihoods and sources of income, disaggregated by sex, vulnerable group and sector	11,000,000
Objective 3: Strengthening Local Adaptation Enterprises and Financial Innovation for Inclusive Resilience	Number of local adaptation enterprises delivering climate-resilient products and services; number of vulnerable groups accessing inclusive financial mechanisms	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Indicator 6: People with diversified or strengthened climate-resilient livelihoods and sources of income; and Indicator 8: Innovative adaptation solutions developed, tested, adopted or scaled	5,000,000
Objective 4: Enabling Adaptive Project Management, Learning, and Institutional Sustainability	Project governance, learning, safeguards, and institutional sustainability systems established and functioning	Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors	Indicator 2: Institutions with strengthened capacity to understand and address climate risks and resilience; Indicators 3A/3B: People and organizations with strengthened awareness and ownership of adaptation and climate-risk reduction processes	2,560,495
Total outcome level grant amount				21,060,495
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Outcome 1: Local institutions, community networks, producer groups, and relevant value chain actors are equipped with participatory processes, localized tools, and capacity to co-design and implement inclusive, climate risk-informed adaptation actions	Number of CCAHs established; number of stakeholders trained; number of digital and community-based tools piloted	Output 2.1: Strengthened capacity of institutions to understand and better address climate risks; Output 1.1: Risk and vulnerability assessments conducted and updated; and Output 1.2: Targeted population groups covered by warning and advisory services for climate-related hazards and threats	Indicator 2.1: Number of institutions supported to strengthen their capacity to understand and address climate risks and resilience; Indicator 1.1: Number of risk and vulnerability assessments conducted or updated; and Fund Indicator 1.2B: Number of people covered by new or improved warning and advisory services, disaggregated by sex and Hazard	2,500,000
Outcome 2: Communities and value chain actors adopt climate-resilient practices, technologies, and nature-based solutions that reduce vulnerability in production landscapes and strengthen	Number of producers adopting climate-smart solutions; number of hectares under nature-based solutions; number of post-harvest technologies piloted	Output 5.1: Ecosystem services and natural-resource assets maintained, improved or restored in response to climate stress; Output 8.1: Innovative adaptation solutions developed,	Indicator 5.1: Area of ecosystems maintained, improved or restored to increase climate resilience; Indicator 8.1: Number of innovative adaptation solutions developed, tested, demonstrated, adopted or scaled	11,000,000

adaptive livelihoods		tested, demonstrated or enabled for scaling		
Outcome 3: Local adaptation enterprises are enabled to develop and deliver climate-resilient products and services, supported by inclusive financial innovation and market mechanisms that expand access for communities and value chain actors	Number of enterprises supported; number of financial instruments developed and deployed; number of beneficiaries accessing them	Output 6.1: Targeted individual and community livelihood strategies strengthened in relation to climate-change impacts; Output 8.1: Innovative adaptation solutions developed, tested, demonstrated or enabled for scaling	Indicator 6.1: Number of people supported to diversify or strengthen climate-resilient livelihoods, disaggregated by sex, vulnerable group and sector; Indicator 8.1: Number of innovative adaptation solutions, including financial and delivery mechanisms, developed, tested, adopted or scaled	5,000,000
Outcome 4: Project implementation is inclusive, adaptive, and evidence-based, with strengthened institutional capacities to sustain and scale up climate resilience outcomes	Governance and learning systems operational; number of knowledge products developed and disseminated	Output 2.1: Strengthened capacity of institutions to understand and better address climate risks; Output 3.1: Awareness and ownership of adaptation and climate-risk reduction processes strengthened	Indicator 2.1: Number of institutions supported to strengthen capacity to understand and address climate risks and resilience; and Fund Indicator 3.1: Number of people and organizations reached through awareness, knowledge-sharing and ownership-building processes	2,560,495
Total output level grant amount				21,060,495

¹ The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government²

Ms. Lovakanto AVELOMANANA Coordinator, National Office of Climate Change and REDD+ (BNCCREDD+)	Date: 11 February 2026
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B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, <u>commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund</u> and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Ms. Ganna Onysko Senior GEF, GCF, AF Coordinator Division of Funding Partner Relations Directorate of Global Partnerships and External Relations United Nations Industrial Development Organization - UNIDO Implementing Entity Coordinator	
Date: June xx , 2026	Tel. and email: +43 1 26026 3708 TO: f.haidara@unido.org CC: gef@unido.org ; glo@unido.org ; g.onysko@unido.org
Project Contact Person: Sunyoung Suh , Project Manager	
Email: s.suh@unido.org CC : Ms. Najlae Boumia, Project Associate, TCS/CMP/CTI (n.boumia@unido.org) Ms. Eleonora Gatti, Head, TCS/CMP/CTI (e.gatti@unido.org) Mr. Alois Mhlanga, Director, TCS/CMP (a.mhlanga@unido.org)	

Annex I: Initial Gender Assessment – ARCHE Scale (Madagascar)

Initial Gender Assessment – ARCHE Scale (Madagascar)

1. Purpose and Scope of the Gender Assessment

This initial gender assessment provides an overview of gender-differentiated vulnerabilities, constraints, and opportunities relevant to the ARCHE Scale project in Madagascar. It informs project design at the Concept Note stage by identifying key gender gaps related to climate risk exposure, access to resources, livelihoods, finance, and decision-making, and by outlining how the project's locally led adaptation (LLA) approach can address these gaps.

The assessment is particularly relevant to Madagascar's climate-sensitive rural economy and to the project's focus on priority value chains, notably **rice production** and **essential oils**, which are central to livelihoods, food security, and local economic activity. It draws on national data, sectoral analysis included in the project, and existing evidence on gender and rural livelihoods. A more detailed gender analysis will be undertaken during the full proposal stage.

2. Gender-Differentiated Climate Vulnerability in Madagascar

Madagascar faces recurrent cyclones, droughts, flooding, and rainfall variability, which affect rural populations differently depending on gender and socio-economic status. Women account for a significant share of the agricultural workforce, estimated at **approximately 50% or more**⁶¹, and are heavily engaged in subsistence agriculture and value chains such as rice and essential oils.

However, women often face more limited access to productive resources. According to the World Bank, only **15% of agricultural landholders in Madagascar are women**, reflecting structural constraints in land ownership and control⁶². This affects their ability to invest in climate-resilient practices, including improved rice production systems or diversified crops for essential oil production.

Women are particularly active in labour-intensive segments of value chains. In the **rice sector**, they are involved in transplanting, weeding, harvesting, processing, and local marketing. In the **essential oils sector**, women participate in harvesting, drying, and small-scale processing. However, they are less represented in higher-value segments such as aggregation, processing facilities, and export-oriented activities.

Climate shocks tend to increase existing inequalities. During extreme events, women often experience greater impacts on food security and household welfare, while also assuming increased unpaid care responsibilities. In Madagascar, **chronic malnutrition affects around 40% of children under five**, reflecting broader household vulnerability to food insecurity⁶³.

Female-headed households—estimated at around **20% of households**—often have lower asset ownership and reduced access to labour and finance, increasing their exposure to climate-related risks⁶⁴. Youth, especially young women, face additional barriers related to employment and access to productive resources.

3. Gender Gaps in Access to Livelihoods, Services, and Adaptation

Several structural constraints affect women's adaptive capacity and participation in value chains:

- **Access to land and productive resources:** Women have lower land ownership rates and weaker tenure security, limiting their investment capacity
- **Access to finance:** Financial inclusion remains low; only about **18% of women in Madagascar have access to a formal financial account**, compared to higher levels for men⁶⁵
- **Access to information and extension services:** Women have reduced access to agricultural extension and climate information due to time constraints, mobility, and literacy barriers
- **Entrepreneurship and MSMEs:** Women-led enterprises face barriers including limited capital, weaker networks, and lower access to technical assistance, affecting their participation in rice and essential oils value chains⁶⁶
- **Decision-making and participation:** Women are underrepresented in producer organizations, cooperatives, and local governance structures, which influences adaptation planning and resource allocation⁶⁷
- These gaps directly influence the adoption and scaling of climate adaptation solutions.

⁶¹ FAO (2023) – Gender and Agriculture <https://www.fao.org/3/cb1583en/cb1583en.pdf>

⁶² World Bank (2022) – Madagascar Gender Assessment <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099455003152238778/p1762710f0c1e70a90b0c0c6a4d4b9c9c1>

⁶³ World Bank (2023) - Malnourished but Not Destitute The Spatial Interplay between Nutrition and Poverty in Madagascar <https://documents1.worldbank.org/curated/en/099418112052343853/pdf/IDU0b5db13f709205047ad084e00af5c9c27ff24.pdf>

⁶⁴ INSTAT Madagascar <https://www.instat.mg>

⁶⁵ World Bank Global Findex (2025) <https://globalfindex.worldbank.org>

⁶⁶ UN Women Madagascar <https://data.unwomen.org/country/madagascar>

⁶⁷ IFAD Madagascar country page <https://www.ifad.org/en/w/countries/madagascar>

Table 14: Gender and Social Inclusion Issues and Proposed ARCHE Scale Responses

Key Issues	Proposed Actions under ARCHE Scale
Women, youth, and vulnerable households engaged in climate-sensitive value chains are disproportionately affected by climate risks but face barriers in accessing adaptation solutions and livelihood support.	Ensure inclusion of women, youth, and marginalized groups in participatory demand assessments, value chain diagnostics, and local adaptation planning processes.
Women's participation in rice and essential oils value chains is often concentrated in lower-value segments, with more limited access to assets, inputs, technologies, and market opportunities.	Promote women's access to climate-resilient practices, technologies, enterprise support, and local market opportunities across priority value chains.
Decision-making structures at community and local levels are often male dominated, limiting women's participation in adaptation planning and implementation.	Apply inclusive consultation approaches and promote equitable participation of women and youth in Community Climate Adaptation Hubs and related planning processes.
Women and youth face barriers to enterprise development and access to adaptation-related livelihood opportunities.	Support women- and youth-inclusive MSMEs, cooperatives, and local enterprises involved in the delivery of climate-resilient goods and services.
Climate and technical information may not be easily accessible to women or adapted to their needs and constraints.	Develop communication, training, and outreach tools that are accessible, locally appropriate, and responsive to different audiences.

5. Gender Relevance of ARCHE Scale Project Design

The ARCHE Scale project is inherently gender-relevant due to its focus on rural livelihoods, value chains, local enterprise development, and locally led adaptation. This relevance is particularly strong in relation to **rice production** and **essential oils**, where women play important but often undervalued roles.

- **Component 1: Community-based adaptation systems:** Participatory planning processes, Community Climate Adaptation Hubs, and local adaptation assessments provide opportunities for women and youth engaged in rice and essential oils value chains to articulate priorities and influence local adaptation decisions.
- **Component 2: Climate-resilient solutions and value chain support:** Support for climate-resilient practices, technologies, and nature-based solutions can improve women's access to more resilient production and post-harvest systems. In rice, this may relate to improved production practices, water management, or post-harvest handling. In essential oils, it may relate to resilient production systems, improved drying or storage, and local processing opportunities.
- **Component 3: Local enterprises and inclusive finance:** The project creates opportunities to strengthen women's participation in local adaptation enterprises, cooperatives, and value-added activities linked to priority value chains. This is particularly relevant where women are already active in labor-intensive segments but have less access to enterprise development and finance.
- **Component 4: Learning, monitoring, and institutional sustainability:** The project can document and track differentiated outcomes for women and men across value chains and local adaptation systems, helping ensure that learning and adaptive management are informed by gendered experience.

6. Approach to Gender Equality and Inclusion

At the Concept Note stage, the project adopts a **gender-responsive approach**, with the potential to move toward more transformative outcomes during the full proposal stage. Key principles include:

- **Equitable access:** ensuring that women, youth, and marginalized groups can access adaptation solutions, services, and opportunities across key value chains
 - **Participation and voice:** promoting meaningful inclusion of women in local planning, coordination, and decision-making processes
 - **Economic inclusion:** strengthening women's participation in value chains, local enterprises, and adaptation-related livelihood opportunities
 - **Risk reduction:** avoiding project approaches that may unintentionally increase women's labour burden, reinforce exclusion, or concentrate benefits in already advantaged groups
- Indicative project targets may include:
- **at least 50% participation of women** in community consultations, local planning processes, and selected training activities
 - **40–50% of supported MSMEs, cooperatives, or enterprise beneficiaries** to be women-led or strongly women-inclusive, where feasible and context-appropriate
 - systematic use of **sex-disaggregated data** for participation, access to services, and selected resilience and livelihood indicators

These targets should be refined during full proposal development based on field consultations and more detailed gender analysis.

7. Conclusion and Recommendations for the Full Proposal

This initial gender assessment highlights the relevance of gender to climate adaptation in Madagascar's rural economy and particularly in the project's priority value chains, including rice and essential oils. It shows that women play important roles in these value chains but often face more limited access to land, finance, information, decision-making, and higher-value economic opportunities. These constraints shape their exposure to climate risks and their ability to benefit from adaptation investments.

The full proposal should therefore build on this initial assessment by undertaking a more detailed gender analysis at local level, including for the selected value chains and target regions. It should further refine gender-responsive actions, strengthen the participation of women and youth in project governance and implementation, and ensure that benefits from adaptation support are equitably distributed across different groups of actors engaged in Madagascar's rural livelihoods and value chains.



Letter of Endorsement by Government

11 February 2026

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Adaptation and Resilience through Community Hubs and Local Enterprises: Scaling Locally Led Adaptation and Enterprise-Based Solutions for Resilient Rural Economies in Madagascar (ARCHE Scale)

In my capacity as designated authority for the Adaptation Fund in Madagascar, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Madagascar.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United National Industrial Development Organization (UNIDO) and executed by BNCC-REDD+ and the Ministry of Environment and Sustainable Development of Madagascar and UNIDO.

Sincerely,

Ms. Lovakanto AVELOMANANA

Coordinator, National Office of Climate Change and REDD+ (BNCCREDD+)



Attention:

Mr. Aime Marcellin LALASON, Chief, National Office of Climate Change and REDD+, (BNCCREDD+)
Ms. Sunyoung Suh, Climate Technology-Innovation Unit, UNIDO



Project Formulation Grant (PFG)

Submission Date: 10 July 2026

Adaptation Fund Project ID: N/A

Country: Madagascar

Title of Project: Adaptation and resilience through community hubs and local enterprises

Type of IE (NIE/MIE): MIE

Implementing Entity: United Nations Industrial Development Organisation (UNIDO)

Executing Entity/ies: United Nations Industrial Development Organisation (UNIDO)

A. Project Preparation Timeframe

Start date of PFG	1 November 2026
Completion date of PFG	31 March 2028

B. Proposed Project Preparation Activities (\$)

Describe the PFG activities and justifications:

List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount	Budget note ¹
1a. Local Stakeholder Consultations 1b. National validation workshop	1. Stakeholder validation and consultation reports	43,000	Estimated costs \$14,000 – Costs for engagement of local expert(s) and/or service provider(s) to conduct stakeholder and value chain consultations \$12,000 – Travel costs for local consultations in target regions and districts \$4,000 – Costs for engagement of local expert(s) and/or service provider(s) to support preparation and facilitation of the national validation workshop \$5,000 – Costs for national validation workshop in Antananarivo

¹ The proposal should include a detailed budget with budget notes indicating the break-down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

			\$8,000 – Travel costs for national validation workshop
2a. CRVA for target regions 2b. Value chain diagnostics and baseline assessments for rice and essential oils systems 2c. GIS-based data collection and vulnerability mapping 2d. Environmental and Social Management Framework (ESMF) development 2e. Gender analysis and action plan development 2f. Project budget, disbursement schedule, workplan and institutional arrangements development, including draft TORs for the Executing Entity and PMU 2g. Writing and revision of the main proposal document 2h. Coordination for proposal writing and revisions among all stakeholders during development and review	2. Fully developed proposal document and associated annexes in compliance with UNIDO and AF guidelines and policies	95,249	Estimated costs \$8,243.00 - Costs for engagement of CRVA expert(s) and/or service provider(s) \$15,500.00 - Costs for engagement of ESS expert(s) and/or service provider(s) \$5,500.00 - Costs for engagement of gender expert(s) and/or service provider(s) \$10,000.00 - Costs for engagement of service provider(s) \$5,500.00 - Costs for engagement of expert(s) for preparing project budget, workplan and institutional arrangements \$40,000.00 - Costs for engagement of international expert(s) and/or service providers for writing and finalization of the project document \$5,000.00 - Costs for engagement of local expert(s) and/or service providers for writing and finalization of the project document \$5,506.00 - Costs for engagement of expert(s) for proposal development coordination
Sub-total		138,249	
Implementing Entity Fee Administrative and technical support for project preparation	IE administrative and technical support for project development	11,751	Covers coordination, technical review, and submission support
Total Project Formulation Grant		150,000	

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

Implementing Entity Coordinator, IE Name	Ms. Ganna Onysko Senior GEF, GCF, AF Coordinator Division of Funding Partner Relations Directorate of Global Partnerships and External Relations United Nations Industrial Development Organization - UNIDO Implementing Entity Coordinator	
Signature		Date: 15 July 2026
Project Contact Person	Sunyoung Suh s.suh@unido.org	
Telephone	+43 1 26026 3708	
E-mail	TO: g.onysko@unido.org CC: gef@unido.org / glo@unido.org / f.haidara@unido.org	

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⁶³ World Bank (2023) - Malnourished but Not Destitute The Spatial Interplay between Nutrition and Poverty in Madagascar <https://documents1.worldbank.org/curated/en/099418112052343853/pdf/IDU0b5db13f709205047ad084e00af5c9c27ff24.pdf>

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