



Advancing Climate-Resilient Development in Madagascar: Integrating Nature-Based Solutions, Climate Services, Social and Gender Inclusion, and Indigenous Knowledge and Local Knowledge.

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Executive Summary

Madagascar is among the world's most vulnerable countries. It faces diverse and region-specific climate challenges, the arid south experiences recurrent droughts, while the eastern rainforests are increasingly exposed to cyclones and flooding. In the central highlands, unpredictable rainfall, frost, and landslides disrupt agricultural productivity, and coastal ecosystems are threatened by sea-level rise, erosion, and coral reef degradation. These hazards are undermining food security and livelihoods, highlighting the urgency of integrated adaptation measures.

The multi-level policy analysis, conducted as part of the ALBATROSS Horizon Europe Project across five Sub-Saharan African countries (Ghana, Kenya, Madagascar, South Africa, and Tanzania), included a review of 252 national and sub-national policy documents, of which 33 were from Madagascar. Analysis of the 33 policy documents from Madagascar shows that the climate risks most frequently addressed are flooding (58% of policies), drought (52%), and soil erosion (39%), while coastal erosion (24%) and strong winds (33%) are also included.

Nature-based Solutions (NbS) appear in 70% of frameworks, with reforestation (58%) and coastal/marine conservation (39%), while urban NbS (6%) and mountain ecosystems (9%) are underrepresented.

Climate services are integrated in 48% of policies, with notable examples in the National Adaptation Plan



Figure 1: Albatross project- mangrove seedlings with 2 leaves ready for transplanting. Place: Morondava, Madagascar.

Photo By Julio Duchene, UNESCO, Madagascar, 4th November 2025.

(2021) and the Meteorological Policy; cross-sectoral coordination and integration into broader development planning remain limited.

Gender and social inclusion remain fragmented, with few policies mainstreaming these aspects. Indigenous and Local Knowledge (IKLK) is acknowledged in risk assessments and early warning systems but lacks institutionalization and systematic use in policy frameworks.

To strengthen resilience, Madagascar should mainstream NbS across all ecosystems, institutionalize climate services in multi-sectoral frameworks, and mandate gender mainstreaming with measurable indicators. Formalizing IKLK through co-production platforms and community-based monitoring would enhance legitimacy and effectiveness. Dedicated nature financing streams, such as biodiversity credits, payment

for ecosystem services, thematic bonds, etc., are critical to scale implementation and ensure that climate and environmental policies deliver inclusive, sustainable outcomes.



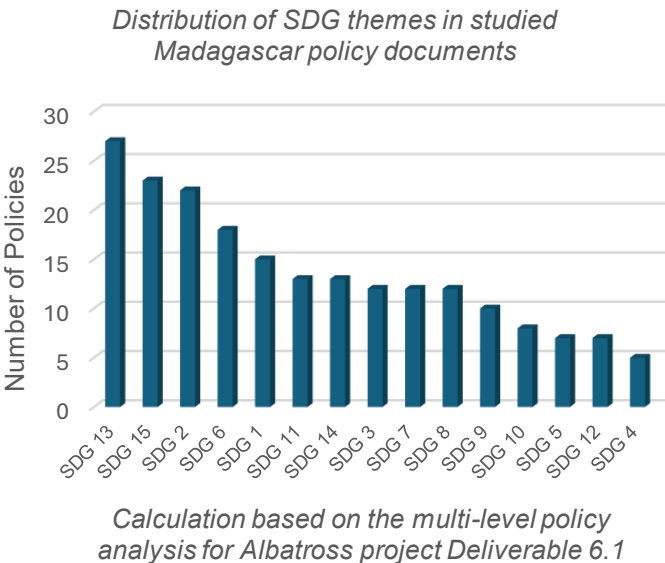
Figure 2: Community training for ALBATROSS Project Mangrove nursery establishment at Belo sur Mer.

Photo by Christian Monja, OXFAM, Madagascar, November 2025

Key Findings

Policy alignment with SDG

A review of 33 national and sub-national policy documents shows strong alignment with climate action (82% address SDG 13), biodiversity conservation (70% address SDG 15), and clean water (SDG 6 at 55%). However, social dimensions remain weak, with only 21% referencing gender equality and 15% education.



Climate hazards addressed

- Climate hazards most frequently addressed include flooding (58% of policies), drought (52%), soil erosion (39%), coastal erosion (24%), strong winds (33%), wildfires (24%), landslides (21%), seawater intrusion (9%), and heat waves (6%).
- These risks highlight the urgency of integrated adaptation measures.

Nature-Based Solutions (NbS)

Current Integration

- 70% of Madagascar's reviewed policies include NbS measures, with 24% showing high and 48% medium integration. Strongest examples are the National Climate Adaptation Plan (2021) (*Plan National d'Adaptation au Changement Climatique (2021)*) and Biodiversity Strategy (2015–2025) (*Stratégie et Plans d'Actions Nationaux pour la Biodiversité 2015 – 2025*).
- Priority ecosystems are forests (55%), freshwater (48%), agriculture (48%), and coastal/marine (45%).
- Common actions are reforestation, mangrove restoration, erosion control, sustainable agriculture, and marine protected areas.

Strategic Gaps

- Limited integration in urban planning and freshwater/wetland management.
- Weak legislative anchoring: NbS not explicitly mandated in key laws (e.g., Charte de l'Environnement, Loi sur l'Agriculture Biologique).
- Innovative financing mechanisms and instruments for NbS remain absent or fragmented.

Policy Recommendations

- Mainstream NbS across all high-level strategies, ensuring coverage of urban, freshwater, and mountain ecosystems. For example, the Plan Emergence Madagascar (2019), Stratégie Nationale de la REDD+ (2018-2030), Stratégie Nationale de Restauration des Paysages Forestiers et des infrastructures vertes à Madagascar (2016) and the Politique Générale de l'Etat / IEM (2019-2023) do not cover all ecosystems.
- Update legislation to explicitly require NbS/EbA in land-use, agriculture, and infrastructure planning. With the exception of a few documents, such as the Plan National d'Adaptation au Changement Climatique (2021) and Politique Forestière de Madagascar (2017), the majority of policies currently require further NbS/EbA integration. Key examples include: Politique Nationale de l'Environnement pour le Développement Durable (2015), Politique Nationale de la Lutte contre le Changement Climatique (2008, revised in 2021), Stratégie et Plans d'Actions Nationaux pour la Biodiversité (2015 – 2020), Texte réglementaire (e.g.: Loi no 2015-005: portant refonte du Code des Aires Protégées (COAP)) and the Lettre de Politique Bleue (2015).
- Establish innovative nature financing streams (biodiversity credits, blended finance, thematic bonds) to mobilize public investment and incentivize private investment.
- Develop monitoring frameworks with NbS-specific indicators to track co-benefits and guide adaptive management.



Figure 3. The Tamatave landscape where Bondy (ALBATROSS partner) is implementing codesigned land restoration. Photo by Arthur Bostvironnois, Bondy.

Climate Services

Current Integration

- 48% of policies reference climate services, with strong provisions in the National Adaptation Plan (2021) (*Plan National d'Adaptation au Changement Climatique* (2021), and National Meteorological Policy (PNM) (*Politique Nationale de la Météorologie* (PNM)).
- Sectors addressed by climate services are disaster risk reduction (27%), agriculture and food security (21%) and water (18%), the sectoral focus is less emphasised.
- Key issues are early warning systems, vulnerability databases, climate-health surveillance, and integration of meteorological data into planning.

Strategic Gaps

- Limited integration in multi-sectoral development plans (e.g., Plan Emergence Madagascar, Politique Nationale de l'Environnement pour le Développement Durable (2015)).
- Weak cross-sectoral coordination between agriculture, health and disaster risk management.
- Insufficient investment in data infrastructure and dissemination.

Policy Recommendations

- Integrate climate services in all national and sub-national development frameworks.
- Strengthen cross-sectoral coordination by linking climate services to agriculture, energy, and urban planning.
- Invest in data systems - expand observation networks, improve forecasting, promote multi-hazard early warning systems and ensure public access to climate information and services.
- Promote user-provider engagement to tailor services to community and sectoral decision-making needs.

Gender and Social Inclusion

Current Integration

- Around 25% of policies include specific gender responsive measures, another 25 % acknowledge the need without specifying actions, and the remaining 50% include limited or no gender inclusion.
- The National Gender and Climate Change Strategy (2023) integrate gender consideration in climate change policies and women involvement in climate actions.

Strategic Gaps

- Gender considerations remain fragmented and project-based, not systematically mainstreamed.
- Limited attention to intersectionality (youth, Indigenous groups, vulnerable communities, etc.).
- Absence of gender-responsive nature financing and monitoring frameworks.

Policy Recommendations

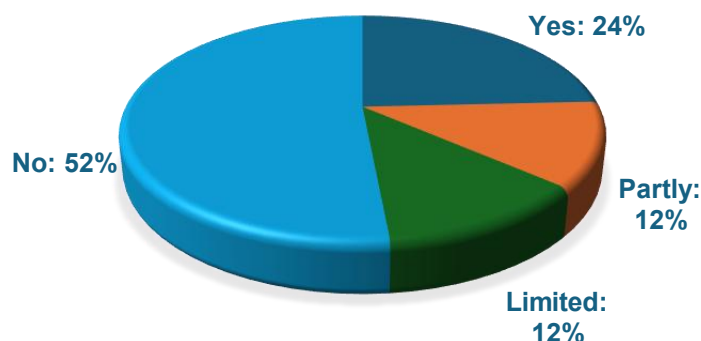
- Mandate gender mainstreaming in all climate and environmental policies, with gender disaggregated indicators.
- Enhance gender inclusion in climate services, NbS implementation, and forest management — for example, within the National Policy for the Fight against Climate Change (2021), the National Meteorological Policy (2022), and the Law No. 2015-031 relating to the National Policy for Risk and Disaster Management.
- Develop gender-responsive nature financing to support women-led NbS enterprises and community initiatives.
- Integrate intersectional approaches to ensure inclusion of youth, Indigenous peoples, and marginalized groups.

Indigenous Knowledge and Local Knowledge (IKLK)

Current Integration

- Several policies reference IKLK, particularly in risk assessments and early warning systems (e.g., Politique Nationale de la Lutte contre le Changement Climatique).
- 36% of reviewed documents contain provisions for IKLK integration.
- Traditional practices in agriculture, forest management, and coastal protection are acknowledged but not systematically integrated.

INDIGENOUS AND LOCAL KNOWLEDGE INTEGRATION



Strategic Gaps

- IKLK remains under-documented and undervalued in formal policy frameworks.
- Weak institutional mechanisms for knowledge co-production between scientists and local communities.
- Limited recognition of IKLK in monitoring and evaluation systems.

Policy Recommendations

- Institutionalize IKLK as a formal input into climate services, environmental and regulatory frameworks, and adaptation strategies.
- Support community-based initiatives that combine scientific and local knowledge.
- Move beyond documentation to practical implementation linking researchers, policymakers, and local communities.
- Safeguard Indigenous people's rights by embedding IKLK into biodiversity and land-use policies.

Conclusion

Madagascar has made significant progress in integrating NbS and climate services into national frameworks, but gaps in gender inclusion and IKLK integration remain critical. Strengthening legislative

frameworks, innovative nature financing mechanisms and instruments, and inclusive monitoring systems will be essential to scale up climate-resilient development.

Key Action Points for Policy Makers

1. Review/ Update laws and strategies to explicitly mandate NbS and climate services.
2. Establish innovative nature financing mechanism for NbS and gender-responsive initiatives.
3. Institutionalize IKLK and community-based initiatives in national frameworks.
4. Ensure systematic capacity building and gender mainstreaming with measurable and disaggregated indicators.

By embedding these four thematic areas into Madagascar's policy architecture, decision-makers can accelerate progress toward the Sustainable Development Goals and build a resilient and inclusive future.

Contact Information

- **Project Coordinator:** Laura Sandra Leo, University of Bologna (Italy), laurasandra.leo@unibo.it
- **Authors:** Mary Nyasimi and Joseph Muhwanga, UNESCO: m.nyasimi@unesco.org and j.muhwanga@unesco.org

Contributors:

1. Arthur Bostvironnois, Bôndy, arthur@bondy.earth
2. Julio Duchene, UNESCO, j.duchene@unesco.org
3. Christian Monja, OXFAM, christian.monja@oxfam.org.za



Website: www.albatross-project.eu

Source: This brief is based on ALBATROSS Horizon Europe Deliverable D6.1: *Multi-level policy analysis* (Nyasimi, Almassy, Muhwanga, et al., 2025). For more detailed information and supporting evidence, readers are referred to the full report and country specific summaries.