

**UNITED NATIONS ENVIRONMENT PROGRAMME  
NAIROBI CONVENTION**

**WIOSAP FULL PROPOSAL FOR DEMONSTRATION PROJECT**

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

**Participating countries:** Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, South Africa, Tanzania [and France (not project beneficiary)]

**Executing organization:** Nairobi Convention Secretariat

**Duration of demo projects:** 2 years

**Stage of the call:** Full proposals

**Submission dateline:** 15<sup>th</sup> July 2019

**(Maximum 20 pages including cover page, budget and annexes)**

**INSTRUCTIONS**

<b>Organisation Name</b>	Centre National de Recherches Oceanographiques (CNRO)
<b>Project Title</b>	Developing Collaborative Strategies for Sustainable Management of Mangroves in the Boeny Region Littorale, Madagascar
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<b>Registration Details</b>	Type of organisation: Public institution of an industrial and commercial nature Country: MADAGASCAR Registration Number: Decree No. 77-081 of 04 April 1977 and is currently governed by Decree No. 2016-613 of 25 May 2016 Year: 1977

## **Executive Summary:**

**Background:** Madagascar accounts for about 2% of the global mangrove extent. About 20% (equivalent to over 60,000 ha) of these mangroves are in the Boeny Region in the north western of the country, supporting a diversity of livelihoods. As such, human pressures are characteristic drivers of degradation and loss. In many cases poverty, traditional dependence on mangrove resources and lack of viable alternative livelihoods are the root causes, coupled with inadequacies in the enforcement of governance mechanisms, exposing mangroves to irresponsible exploitation. Consequently, annual mangrove loss is estimated at 0.06%. Accordingly, the integrity of mangroves to continue offering the ecosystem services in support of livelihoods is compromised, albeit the fact that mangroves in Madagascar are legally within the state domain. There is however a devolution arrangement referred to as GELOSE that provide limited access user rights for domestic and non-commercial use. Despite of this devolution of management rights to local communities, there is still lack of comprehensive and effective management strategies to counteract mangrove degradation and loss observed in almost all mangrove ecosystems in Madagascar. Hence, the relevance of GELOSE legislation to actually favour community-based management is debatable. This is project seeks to demonstrate viable modalities of enhancing community engagement within the existing framework of such local arrangements.

**Objectives, Activities, Outputs and Outcome:** The overall goal of this project is to promote sustainable conservation and utilization of mangroves in the Boeny Region through development of viable collaborative and integrated management approach. Specifically to: (i) develop a sustainable co-management mechanism to strengthen the governance of the mangroves as a renewable natural resource; (ii) promote community-based mangrove restoration to compensate for the degraded and lost resource and secure the future of ecosystem services they provide and (iii) appraise and promote viable alternative livelihood options to enhance local community socio-economic welfare and safeguarding of the environment. Three corresponding outputs are expected (i) sustainable co-management mechanism developed in 3 villages (ii) 10 ha demonstrating sustainable restoration measures (iii) 3 viable alternative livelihood activities identified and accepted by communities. Expected outcome is that appropriate and viable collaborative strategies and tools are applied to sustainably conserve and restore mangrove resources in the Boeny Region. Accordingly, this project complements other ongoing initiatives in the region to safeguard the natural resource base and enhance livelihoods of communities.

**Methods:** The project will demonstrate sustainable community-based management, restoration and livelihood activities in the framework of the locally secured management (GELOSE) and the use of Dina (Charter of customary law) in the governance of natural resources at community level in three villages. The villages will be defined following a rapid assessment across Bombetoka Bay. Project activities will be coordinated by the Ministry in charge of Environment, planned and managed by CNRO project team of 7 expert and demonstrative staff in collaboration with other key stakeholders such as Regional Direction of Environment and Sustainable Development in Boeny region, Fisheries and Agriculture, Centre National de Recherche sur l'Environnement (CNRE) and mapping, Chief of Boemy regional and community leaders as the primary project beneficiaries. This mode of operation will ensure that capacity is build across different levels of stakeholders to secure the sustainability of the project. Project monitoring will focus on measuring project outputs against activities and specified targets through field observations and reporting of the changes against the baseline.

**Budget:** The total project budget is USD 230,400, including USD 118,860 requested from WIOSAP and USD 111.540 as institutional co-financing.

## I. BACKGROUND AND JUSTIFICATION

### (a) The Problem

Madagascar is rich and one of the most diverse in marine and coastal ecosystems. Mangroves form one of these critical ecosystems and habitats, albeit the extent of area cover has been inconsistently reported between 200 to 300K ha (Giri & Mulhausen 2008<sup>1</sup>; Spalding et al. 2010<sup>2</sup>). Mangrove ecosystems in Madagascar are governed by a complex legal framework involving multiple sectors of forestry, land planning, fisheries and environment. The forestry sector laws categorize mangroves within the state domain, although local communities can be granted limited user rights for domestic use. The environmental laws places mangroves in the sensitive area category, in which forbid commercial timber extraction from mangroves. Community access and user rights are accorded through natural resource management transfer regulations (GELOSE<sup>3</sup>). Despite of the promising devolution of management rights, there is still lack of comprehensive and effective management strategies to counteract mangrove degradation and loss observed in almost all mangrove ecosystems in Madagascar (Jones et al. 2016<sup>4</sup>).

Over 95% of the mangroves of Madagascar occur along the Western coastline, where mangroves in the Boeny Region represents about 20% of the national area of mangroves. Important mangrove areas in this region include those of Mahajamba (27,000 ha), Bombetoka (15,000 ha), Mahavavy (12,000 ha) and Soalala Bay (6,000 ha), making a total of 60,000 ha. This is a decrease from about 60,400 ha which was recorded back in 2005, translating to an annual rate of mangrove loss of about 0.06%. Like in many other mangrove areas in Madagascar and the rest of the world, this rate of mangrove loss is on the higher side given the low proportion of mangrove coverage in areas where they occur (USAID, 2018)<sup>5</sup>. The main pressures on mangroves in the coastal Region of Boeny are: (i) siltation of the estuaries of the rivers Betsiboka and Mahavavy as a result of **catchment forest, watershed** and land degradation in the upstream **(e.g. Maina et al. 2013)**<sup>6</sup>; (ii) overexploitation of the mangrove wood resources to meet the increasing demand of local communities for construction, fuel for domestic use and for commercial use in the production of quicklime; (iii) conversion to other land uses such as settlements, infrastructure, property and industrial development, especially in Aranta (village in Bombetoka Bay), shrimp and crab farming especially in the Antanimasaja mangrove swamp in the Mahajanga I Urban Commune; (iv) urban expansion including settlement, property, industrial and port development activities in coastal cities (v) pollution from industrial and domestic discharges (vi) natural pressures from cyclones of recent years, combined with sea level rise, which erode the coasts. As stated earlier on that while the national law that support transfer of management responsibilities of natural resources to local communities through GELOSE exist, the practice on the ground is masked by inadequate community interest and trust. Accordingly, there is a persistent debate whether this natural resource devolution mechanism actually favours community-based management. Pollini & Lasso

<sup>1</sup> Giri & Mulhausen 2008. Mangrove Forest Distributions and Dynamics in Madagascar (1975-2005). Sensors, 8, 2104-2117. <https://doi.org/10.3390/s8042104>

<sup>2</sup> Spalding et al. (2010). World Atlas of Mangroves.

<sup>3</sup> GELOSE is acronym for the French *Gestion Locale Sécurisée* (Secured Local Management): a law in Madagascar that provide a legal framework for the transfer of natural resources management rights to local communities.

<sup>4</sup> Junes et al 2016. Remote Sensing 2016, 8, 106; doi:10.3390/rs8020106

<sup>5</sup> USAID (2018). Increasing success and effectiveness of mangrove conservation investments. A guide for Project Developers, Donors and Investors, 108p.

<sup>6</sup> Maina et al. (2013). Human deforestation outweighs future climate change impacts of sedimentation on coral reefs. Nature Communications 4:1986. DOI: 10.1038/ncomms2986.

(2011)<sup>7</sup> made a conclusion that the approach has tended to create new institutions instead of strengthening existing ones, consequently favouring resource capture by local elites at the expense to marginalized poor communities in the situation where the traditional rules and customs structured as community by-laws (DINA<sup>8</sup>) are not adequately honoured largely due to the little and deteriorating awareness at the basic level (COBA<sup>9</sup>).

### **(b) Justification**

The importance and value of ecosystem services provided by mangroves cannot be overemphasized. However, in many cases poverty, human dependence on mangrove resources and lack of viable alternative livelihoods are increasingly reported as the root causes of degradation and loss, largely linked to irresponsible and uncontrolled exploitation. Accordingly, mangrove productivity is jeopardized, losing the integrity to support and sustain livelihoods. Sustainable conservation and utilization measures are further complicated by weak governance mechanisms that often gives communities little recognition and opportunities to influence decisions and participation. As such, to adequately support the devolution of mangrove forest resource management in this case, new and flexible strategies that are appropriated by existing institutions are necessary to capacitate mangrove dependent local communities, incentivise for the restriction of access to the resources and promote sense of responsibility through strengthening of the decentralisation mechanism (GELOSE) and the community agreements (DINA), which is currently loose in the governance frameworks and practice by different actors, particularly the low sense of appreciation by local communities (COBA) of the values of ecosystem services provided by mangroves. Although land degradation and consequent coastal and nearshore siltation is implicated in the degradation and loss of mangroves, addressing this integrative issue is beyond the scope of this small, specific and short-termed demonstration project, which would need wider spatial interventions including management of catchment forests and land use planning. This demonstration project will empirically demonstrate how critical the problem is to avail and recommend on practical measures.

### **(c) Consistence with national development strategies and policies; WIOSAP priorities and global commitments**

At the national level, the implementation of the project will be aligned and contribute to the implementation of the National Strategy for Sustainable Development of Coastal and Marine Resources of Madagascar, which became operational in 2010. The strategy highlights the fact that critical habitats "coral reefs, mangroves, coastal wetlands, and coastal forests are of economic and environmental interest for the future of coastal populations and the country at large, considering that the coastal zone of Madagascar account for over 51% of the country and hosting about 65% of population. The project is also consistent with the Action Plan for the Integrated Management of Coastal Areas (PANGIZC). In addition, the project will be congruent to Legal Framework of implementation, namely Decree No. 2010-137 March 23, 2010 for the regulation of integrated management of coastal and marine areas of Madagascar. Subsequently the Ministry of Environment and the Ministry of Fisheries Resources have jointly established a National Committee for the Integrated Management of Mangroves.

<sup>7</sup> Pollini & Lassoie (2011). Trapping Farmer Communities Within Global Environmental Regimes: The Case of the GELOSE Legislation in Madagascar. *Society & Natural Resources* 24(8): 814-830. DOI: [10.1080/08941921003782218](https://doi.org/10.1080/08941921003782218)

<sup>8</sup> The Dina is a social code that is a community law within Madagascar - are a set of customary rules based on a consensus within the community.

<sup>9</sup> COBA is a Acronym for *Communauté de Base* (Basic Community).

At the local level, project implementation will be founded on the best practices and achievements of locally secured management (GELOSE), the transfer of management of resources to the basic communities (COBA), and the use of Dina (Charter of customary law) which is widely used in the governance of natural resources at community level. By proposed project approach will provide the opportunity to strengthen partnerships among stakeholders in understanding and appreciating the role of community engagement that is necessary to realize sustainable conservation and utilization of the mangroves.

This project is relevant to WIOSAP Component A that focus on the protection, restoration and management of critical coastal habitats and ecosystems recognizing the important value of healthy critical coastal and marine habitats for the future well-being of people in the WIO region. Specifically, the project falls under Outcome A.1 on developing appropriate tools and methodologies for management of critical coastal and marine habitats in order to enhance their resilience and long-term sustainability and it will be addressed in combination for Output A.1.2 and A.1.3 to develop and demonstrate collaborative arrangement for sustainable conservation and utilization of mangroves and restoration of degraded mangroves areas in order to incentivize and enhance community responsibility.

**(d) Other complementing programmes and activities**

This demonstration project will take advantage to complement the mangrove conservation work that are ongoing in the project area including that of the NGO Asity Madagascar in Soalala in the Mahavavy Bay, south of Boeny Region in collaboration with Birdlife International to promote forest conservation including mangroves as critical habitats for birdlife.

In the Bombetoka Bay, the primary focus of the demo project, the German International Development Cooperation Agency (GIZ) is supporting implementation of the Forest and Farm Facility (FFF), which aims at strengthening forest and farm producers’ ability to achieve climate-resilient landscapes and improved livelihoods of local communities.

The demo project will as well take advantage of the lesson from the recently launched community-based mangrove carbon offsetting initiative in the Bay of Assassins in southwest region.

**II. PARTNERSHIPS**

Partner Name	Mandate	Role in the Project	Resources Partner will Provide
The Ministry of Environment and Sustainable Development	Implementing Agency	Coordination	Human resources and Communication
Centre National de Recherches Oceanographiques (CNRO)	Research and knowledge exchange	Lead agency	Researchers, office/lab/field facilities
Regional Direction of Environment and Sustainable Development	Responsible of mangrove zone	Field supervision	Human resource support and field logistic e.g. local transport - motorcycle
Ecole Doctorale of Mahajanga l’University	Scientific Investigation	Technical support Faunistic and floristic	Expert personnel

		monitoring	
Regional Direction of Agriculture, Breeding and Fishing	Technical support	Technical and moving equipment	Human resource and local transport - motorcycle
Chief of Boeny Region, Chiefs of District of Mahajanga I, communes of Mahajanga I et II, Marovoay, Mitsinjo, Soalala,	Administration	Local logistics	Human resource support, 2/Commune
Régional committee GIZC Boeny	Technical partner	Advice	Human Resource support
National Center for Environment Research (CNRE)	Research Laboratory	Laboratory analyse of samples	Human resource and Laboratory facilities
National Center for Mapping (FTM)	Cartography	Surveying and mapping services	Survey and mapping experts and facilities

### III. OBJECTIVES

#### A. Overall objective.

The overall goal is to promote the sustainable conservation, utilization and restoration of mangroves in the Boeny Region through development of viable collaborative and integrated management approach.

#### B. Immediate/specific objectives

- (i) To develop a sustainable co-management mechanism to strengthen the governance of the mangroves as a renewable natural resource.
- (ii) To promote community-based mangrove restoration to compensate for the degraded and lost resource and secure the future of ecosystem services they provide.
- (iii) To appraise and promote viable alternative livelihood options to enhance local community socio-economic welfare and safeguarding of the environment

### IV. PROJECT IMPLEMENTATION AND MANAGEMENT PLAN

#### A. Expected project results and indicators

Result/Output	Indicator
Output 1: Developed sustainable co-management mechanism to strengthen governance of mangroves as a renewable natural resource.	At least 3 demonstration villages planned to be engaged by the project as target communities reached and sensitized on values, roles and threats to mangroves A co-management model developed and demonstrated
Output 2: Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.	At least 10 ha of mangroves restored in each target village through a developed and demonstrated community-based restoration arrangement.
Output 3: Explored, promoted and demonstrated viable alternative livelihood options that are acceptable to communities.	At least 3 different alternative livelihood options identified, demonstrated and accepted by communities.

## B. Project activities and work plan

Task	Responsible	Year 1												Year 2												
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
<b>Overall objective: Promote the sustainable conservation and utilization of mangroves in the Boeny Region through development of collaborative and integrated conservation and restoration approaches.</b>																										
<b>Outcome:</b> Appropriate and viable collaborative strategies and tools are applied to sustainably conserve and restore mangrove resources in the Boeny Region																										
<b>Output 1:</b> Developed integrated sustainable co-management mechanism to strengthen governance of mangroves as a renewable natural resource.																										
Activity 1.1 Verification of project sites and stakeholders, inception workshop and establishment of project operational base in Mahajanga	CNRO and all partners																									
Activity 1.2 Community sensitization and awareness raising on the importance, values, roles and threats to mangroves	CNRO DREDD																									
Activity 1.3 Baseline assessment of the socio-economic status of targeted communities dependent on mangroves of Boeny Region.	CNRO University DRABF DREDD																									
Activity 1.4 Baseline assessment of the ecological status of targeted mangrove forests of Boeny Region.	CNRO University DREDD																									
Activity 1.5 Develop local collaborative mangrove management plan(s),	CNRO, Region authority, NGO																									
Activity 1.6 Development of transfer of mangrove management agreements to local communities, based on the law of GELOSE and DINA (village charters) sanctioned to community structures "Basic Communities (COBA)"	CNRO, District authority DREDD																									
<b>Output 2:</b> Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.																										
Activity 2.1 Identification and assessment of mangrove restoration	CNRO, FTM, DREDD																									



### C. Project Beneficiaries

Beneficiaries of the project are in different categories.

- (i) The first beneficiaries and actors of the project are members and associations of local communities in Boanamary Commune including 3 villages/communities in Bombetoka Bay identified through the procedure described in the methodology part below. These are the fishermen and associations of fishermen, farmers and their associations engaged in the conservation of marine resources.
- (ii) The integration of vulnerable groups among members and associations, particularly women whose financial empowerment is a priority, is a key obligation at all levels of project implementation and milestones like project: initialization, implementation, monitoring, evaluation.
- (iii) The Boeny Region, and districts in terms of capacity building and capitalization of experiences.
- (iv) Scientific community through studies on different project elements and activities.

### D. Implementing agency management of project

The project will be operationalised from CNRO which will form a project team of 7 members of staff and take advantage of its established chain of both administrative and technical personnel to manage and oversee on ground implementation and report to the Ministry of Environment as an institution in charge of the coordination of WIOSAP project. Partners at the project site will form a project management unit with respective local communities designated as executing agencies reporting to the project team and to the Ministry of Environment through the regional Direction of Environment and Sustainable Development in Boeny region.

## V PROJECT METHODOLOGY

### (a) Project area

The project focus area is Bombetoka Bay where a rapid assessment will be conducted so that 3 villages are selected for the demo project. Majority of the population in this area are fisherfolks who directly depend on mangroves. Other livelihood occupations include livestock (cows and goats), lime production (use of mangroves), little agriculture, sell of mangrove wood for cash income.

### (b) Project Activities and Methods

Activity	Method
<b>Output 1:</b> Developed integrated sustainable co-management mechanism to strengthen the governance of mangroves as a renewable natural resource	
Activity 1.1 Verification of project sites and stakeholders, inception workshop and establishment of project operational base in Mahajanga	Site visits Field consultations and key informant interviews Stakeholders' meeting Agreement with local authorities <b>Results from this reconnaissance activity will inform and define the subsequent modalities for the rest of activities, e.g. number of community meetings, sampling design and questionnaires to administered in order to ensure representation.</b>
Activity 1.2 Community sensitization and awareness raising on the importance, values, roles and threats to mangroves	<b>At least two public</b> community meetings - Community meetings will be held to define the critical issues and requiring the intervention. <b>One meeting during inception and another for assessment of progress and feedback</b> <b>For each selected demonstration village, at least 30 peers will be selected to for community technical workshops, one at the beginning, second during progress and final on evaluation of</b>

<p>Activity 1.3 Baseline assessment of the socio-economic status of targeted communities dependent on mangroves of Boeny Region.</p>	<p>project completion.</p> <p>Household surveys - semi-structured interview will be used to administer household questionnaires to at least 10% of the households in each selected demonstrated village</p> <p>Focus group discussions: checklists will be developed to use in each selected demonstrated village, where four focus group discussions with different social groups will be conducted – men, women, youths and mixed, each group with at least 10 people</p> <p>Key-informant interviews will be conducted to at least 10 individuals comprising of community leaders, elders and influential people</p> <p>While the tools will be prepared in official French language, administration will involve local dialects to enable adequate comprehension</p> <p>Gathering of secondary data to have a general overview of the situation.</p> <p>Acquire information from other organisations/government departments in the area, e.g. agriculture, fisheries and environment.</p>
<p>Activity 1.4 Baseline assessment of the ecological status of targeted mangrove forests of Boeny Region.</p>	<p>In addition to provision of topographic maps by FTM as project partner, free access to remote sensing data from French based satellite image providers e.g. Sentinel 2 will allow mapping of the mangrove and land cover to depict spacio-temporal distribution, health status and rates of degradation and loss. The maps will provide guidance for subsequent ground truthing inventory and selection of restoration and associated nursery sites.</p> <p>Mangrove forest inventory will be done using a combination of: The rapid assessment technique by moving through the forest, stopping at representative spots for quasi-quantitative observations of structural attributes of density, height, health, presence of seedlings, presence of stumps (as an indication of cutting pressure) with data recorded on ordinal scale to warrant detailed plot assessment.</p> <p>Standard Quantitative Assessment procedures to assess mangrove vegetation and benthic macro-fauna.</p> <p>Physicochemical parameters like tidal range and surface and pore water salinity will be recorded in the field and water samples collected for nutrient analysis.</p>
<p>Activity 1.5 Develop local collaborative mangrove management plan(s),</p>	<p>Expert guidance to local communities and authorities in drafting the management plans</p> <p>Community meeting to validate draft local mangrove management plans.</p> <p>Validation and approval of management plans at the level of Boeny Region</p>
<p>Activity 1.6 Development of transfer of mangrove management agreements to local</p>	<p>Expert guidance to communities and local authorities in drafting mangrove management agreements with the respect to the GELOSE laws</p>

<p>communities, based on the law of GELOSE and DINA (village charters) sanctioned to community structures "Basic Communities (COBA)"</p>	<p>Develop and validate DINA (village charter) in collaboration with local communities and competent authorities, including ratification in the court of law Apply the DINA approved after transfer to community structures (Basis communities: COBA); Monitor and evaluate the effectiveness of application of approved DINAs Through this methodological procedure, the demo project will also act and serve to activate the functions of these instruments - the GELOSE and DINA.</p>
<p><b>Output 2:</b> Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.</p>	
<p>Activity 2.1 Identification and assessment of mangrove restoration sites.</p>	<p>A detailed Step-by-Step Mangrove Restoration Guidelines for the WIO developed by WIOSAP will be applied throughout, with particular focus on the Dos and Don'ts; deciding when, where and whether to plant or not to plant.</p>
<p>Activity 2.2 Development of community agreements to facilitate and secure mangrove planting initiatives</p>	<p>CNRO will get a copy of the guidelines. <b>Demonstration nurseries, one in each of the three selected communities will be established to raise seedlings of different common mangroves species, to plant on at least 3 ha in each of the demonstration villages. Considering plant spacing of 1 m, at least 12500 seedlings will be raised in the course of project duration for each of the 15 target ha of mangrove planting demonstration, of which will go beyond project the 2 years of project.</b></p>
<p>Activity 2.3 Establishment and management of mangrove nurseries.</p>	<p><b>Direct planting of propagules will be done targeting at least 7 ha in parallel to nursery establishment. Nursery raised seedlings are aimed to serve as seedlings stock reserve for complementing direct planting of propagules which are seasonal in order to be able to reach a 10 ha target indicated in the schedule of expected results above.</b></p>
<p>Activity 2.4 Field mangrove planting</p>	<p><b>Direct planting of propagules will be done targeting at least 7 ha in parallel to nursery establishment. Nursery raised seedlings are aimed to serve as seedlings stock reserve for complementing direct planting of propagules which are seasonal in order to be able to reach a 10 ha target indicated in the schedule of expected results above.</b></p>
<p>Activity 2.5 Monitoring of planted mangrove areas</p>	<p><b>Direct planting of propagules will be done targeting at least 7 ha in parallel to nursery establishment. Nursery raised seedlings are aimed to serve as seedlings stock reserve for complementing direct planting of propagules which are seasonal in order to be able to reach a 10 ha target indicated in the schedule of expected results above.</b></p>
<p><b>Output 3:</b> Explored, promoted and demonstrated viable alternative livelihood options that are acceptable to communities for poverty reduction</p>	
<p>Activity 3.1 Explore, identify and promote low energy cooking facilities including use of domestic and carpentry waste, biogas, and solar power.</p>	<p>Combined with Activity 1.1 and 1.2 Study visit by selected project technical team and representative community members to Tahiry Honko - Community Based Mangrove Carbon Project in Befandefa Rural Commune, Morombe District, in the Bay of Assassins in Southwest Region of Madagascar supported by Blue Ventures Conservation</p>
<p>Activity 3.2 Explore and promote planting of fast-growing trees to reduce pressure on mangroves and as alternative source of wood and fuel.</p>	<p>Combined with Activities 1.1, 1.2, 2.2, 3.1 <b>Household woodlots, preferably as part of farmlands will be promoted for selected households to demonstrate the alternative supply of wood resources required for domestic consumption. Depending on land availability, at least 10 households will be selected for each village and for each household a 0.5 ha woodlot will be established.</b></p>
<p>Activity 3.3 Identify and promote viable sources of alternative</p>	<p>Conduct feasibility and cost-benefit analysis of potential income generating activities with proposed focus on eco-tourism,</p>

household income such as eco-tourism, beekeeping, aquaculture, handcraft etc.	beekeeping, aquaculture and handcraft. Conduct community training on project (business, financial) management skills including marketing and value addition.
Activity 3.4 Establishment of community development revolving funds characteristically practiced by women and youths to ensure sustainability of conservation initiatives and operational support to local project executing committees.	Expert guidance on formulation and registration of village groups/associations Capacity development through community training on establishment, fund raising and management skills on community revolving fund to support community development. Proposal development for fund raising of seed fund

## VI. SUSTAINABILITY AND REPLICABILITY

Identified project activities and implementation methods are designed to develop capacity of target communities and beneficiaries through local governance structures. As such community empowerment on the sustainable conservation, exploitation and restoration of mangroves; appraising diversification of sources of livelihoods will facilitate and guarantee continued operations beyond project demonstration period. To enable this, it is proposed that in preparation for the demo project completion a caretaker committee will be established to take over.

## VII. PROJECT MONITORING AND EVALUATION

Monitoring and evaluation aim at understanding what works and what is not in order to establish lessons for adaptive project management. The monitoring plan will therefore focus on measuring the outcome of the project activities against specified targets. In the course of project implementation, regular assessments will be undertaken. The major method for evaluating project activities will be through observations and reporting of the changes against the baseline. Key reports to be produced will be include:

- An inception report that indicate details of the planned activities, including detailed methodology for implementing the activities, timing and project milestones.
- Progress reports will be produced every six months.
- Specific activity reports as tabulated above in Part B Project activities, workplan, and methodology

## VIII. BUDGET (Total budget for the Output applied for MUST NEVER exceed the ceiling given in the background document)

The total project budget is USD 230,400, including USD 118,860 requested from WIOSAP and USD 111,540 as institutional co-financing. Summary budget distribution is as presented in the following table and detailed budget is presented in Annex 3.

Category	WIOSAP Support	Co-financing	Total
Personnel	26160	24000	50160
Equipment	22200	58340	80540
Operating costs	22900	7500	30400
Contract Services	42600	13700	56300
Travel	5000	8000	13000
<b>Sum</b>	<b>118860</b>	<b>111540</b>	<b>230400</b>

## Annex 1: Project Logical Framework

<b>Project title:</b> Developing Collaborative Strategies for Sustainable Management of Mangroves in the Boeny Region Littorale, Madagascar				
<b>Project overall objective:</b> To promote the sustainable conservation and utilization of mangroves in the Boeny Region through development of viable collaborative and integrated management approach				
<b>Project Results</b>	<b>Outputs</b>	<b>Activities</b>	<b>Costs/Output (US\$)</b>	
			<b>WIOSAP</b>	<b>Co-finance</b>
<b>Outcome:</b> Appropriate collaborative strategies and tools are applied to sustainably conserve and restore mangrove resources in the Boeny Region	<b>Output 1:</b> Developed integrated sustainable co-management mechanism to strengthen the governance of mangroves as a renewable natural resource	1.1 Verification of project sites and stakeholders, inception workshop and establishment of project operational base in Mahajanga 1.2 Community sensitization and awareness raising on the importance, values, roles and threats to mangroves 1.3 Baseline assessment of socio-economic status of targeted communities dependent on mangroves. 1.4 Baseline assessment of ecological status of targeted mangrove forests. 1.5 Develop local collaborative mangrove management plan(s), 1.6 Development of transfer of mangrove management agreements to local communities, based on the law of GELOSE and DINA (village charters) sanctioned to community structures "Basic Communities (COBA)"	<b>25900</b>	<b>86688</b>
	<b>Output 2:</b> Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.	2.1 Identification and assessment of mangrove restoration sites. 2.2 Development of community agreements to facilitate and secure mangrove planting initiatives 2.3 Establishment and management of mangrove nurseries. 2.4 Field mangrove planting 2.5 Monitoring of planted mangrove areas	<b>29600</b>	<b>5717</b>
	<b>Output 3:</b> Explored, promoted and demonstrated viable alternative livelihood options that are acceptable to communities for	3.1 Explore, identify and promote low energy cooking facilities including use of domestic and carpentry waste, biogas, and solar power. 3.2 Explore and promote planting of fast-growing trees to reduce pressure on mangroves and as alternative source of wood and fuel. 3.3 Identify and promote viable sources of alternative household income such as eco-tourism, beekeeping, aquaculture, handcraft etc.	<b>63360</b>	<b>19135</b>

	poverty reduction	3.4 Establishment of community development revolving funds characteristically practiced by women and youths to ensure sustainability of conservation initiatives and operational support to local project executing committees.		
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## Annex 2: Project Monitoring Plan

<b>Project title:</b> Developing Collaborative Strategies for Sustainable Management of Mangroves in the Boeny Region Littorale, Madagascar				
<b>Project overall objective:</b> To promote the sustainable conservation and utilization of mangroves in the Boeny Region through development of collaborative and integrated management approach				
Project Result	Output	Indicator	Target/Baseline	Method
<b>Outcome:</b> Appropriate collaborative strategies and tools are applied to sustainably conserve and restore mangrove resources in the Boeny Region	<b>Output 1:</b> Developed integrated sustainable co-management mechanism to strengthen the governance of mangroves as a renewable natural resource	Reports on community sensitization an awareness raising conducted Baseline assessment reports on socio-economic an ecological status Collaborative management plans developed and approved by relevant authorities Management transfer instruments (GELOSE, COBA, DINA) new and/or reactivated.	<b>Target:</b> A 30% increase in the number of management transfer instruments registered by 2021 at the end of the project. <b>Baseline:</b> Number of management transfer instruments at the beginning of the project in 2019	Community meeting Key Informant Interviews (Fokontany Chiefs, Existing COBA Presidents, DINA Presidents). Household surveys Mangrove forest inventories
	<b>Output 2:</b> Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.	Mangrove nurseries established and well managed Community agreements developed and approved by relevant authorities Number of ha successfully rehabilitated	<b>Target:</b> A 30% increase in reforested areas in mangroves and watersheds of the Betsiboka, Mahajamba, and Mahavavy Rivers. <b>Baseline:</b> Areas reforested at the beginning of the project in 2019.	A Step-by-Step WIO Mangrove restoration Guide applied throughout rehabilitation.

	<p><b>Output 3:</b> Explored, promoted and demonstrated viable alternative livelihood options that are acceptable to communities for poverty reduction</p>	<p>Newly adopted income-generating activities. Number of community revolving fund established and maintained.  Community revolving funds established and well managed</p>	<p>Target: A 30% increase in income-generating activities in 2021, at the end of the project.  Baseline: Number of income generating activities and community financing facilities at the beginning of the project in 2019.</p>	<p>Feasibility and cost-benefit analysis Community and local leaders consultations.</p>
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**Annex 3: Detailed Budget** (Total budget for the Output applied for MUST NEVER exceed the ceiling given in the background document)

Category	Personnel	Equipment	Operation	Contracts	Travel	TOTAL	WIOSAP	Co-finance
<b>Output 1:</b> Developed integrated sustainable co-management mechanism to strengthen the governance of mangroves as a renewable natural resource								
Activity 1.1 Verification of project sites and stakeholders, inception workshop and establishment of project operational base in Mahajanga	4080	52,400	2533	12000	2000	73,013	10600	62,413
Activity 1.2 Community sensitization and awareness raising on the importance, values, roles and threats to mangroves	6270		3800	500	1000	11,570	4508	7,063
Activity 1.3 Baseline assessment of socio-economic status of targeted communities dependent on mangroves.	2090		1267	1000	666	5,023	2095	2,928
Activity 1.4 Baseline assessment of ecological status of targeted mangrove forests.	2090		1267	1500	666	5,523	2095	3,428
Activity 1.5 Develop local collaborative mangrove management plan(s),	6270		3800	1500	1000	12,570	4508	8,063
Activity 1.6 Development of transfer of mangrove management agreements to local communities, based on the law of GELOSE and DINA (village charters) sanctioned to community structures “Basic Communities (COBA)”	2090		1267	1200	333	4,890	2095	2,795
<b>SUB TOTAL</b>	<b>22890</b>	<b>52400</b>	<b>13933</b>	<b>17700</b>	<b>5665</b>	<b>112588</b>	<b>25900</b>	<b>86688</b>
<b>Output 2:</b> Developed and demonstrated sustainable measures to restore degraded and lost mangroves areas of Boeny Region.								
Activity 2.1 Identification and assessment of mangrove restoration sites.	960	4200	1000	2000	300	8460	7000	1460

Category	Personnel	Equipment	Operation	Contracts	Travel	TOTAL	WIOSAP	Co-finance
Activity 2.2 Development of community agreements to facilitate and secure mangrove planting initiatives	3990	3000	2724	4000	300	14014	13000	1014
Activity 2.3 Establishment and management of mangrove nurseries.	2090		933	2400	368	5791	4000	1791
Activity 2.4 Field mangrove planting	2090	505		1000	367	3962	2600	1362
Activity 2.5 Monitoring of planted mangrove areas	2090		1000			3090	3000	90
<b>SUB TOTAL</b>	<b>11220</b>	<b>7705</b>	<b>5657</b>	<b>9400</b>	<b>1335</b>	<b>35317</b>	<b>29600</b>	<b>5717</b>
<b>Output 3:</b> Explored, promoted and demonstrated viable alternative livelihood options that are acceptable to communities for poverty reduction								
Activity 3.1 Explore, identify and promote low energy cooking facilities including use of domestic and carpentry waste, biogas, and solar power.	6270	1000	4500	8000	1500	21270	20000	1270
Activity 3.2 Explore and promote planting of fast-growing trees to reduce pressure on mangroves and as alternative source of wood and fuel.	5100	7395	2150	5000	1500	21145	15000	6145
Activity 3.3 Identify and promote viable sources of alternative household income such as eco-tourism, beekeeping, aquaculture, handcraft etc.	3260	8000	4160	4200	1500	21120	13400	7720
Activity 3.4 Establishment of community development revolving funds characteristically practiced by women and youths to ensure sustainability of conservation initiatives and operational support to local project executing committees.	3260	2200		12000	1500	18960	14960	4000
<b>SUB TOTAL</b>	<b>17890</b>	<b>18595</b>	<b>10810</b>	<b>29200</b>	<b>6000</b>	<b>82495</b>	<b>63360</b>	<b>19135</b>

Category	Personnel	Equipment	Operation	Contracts	Travel	TOTAL	WIOSAP	Co-finance
<b>TOTAL</b>	<b>52000</b>	<b>78700</b>	<b>30400</b>	<b>56300</b>	<b>13000</b>	<b>230400</b>	<b>118860</b>	<b>111540</b>
							<b>TOTAL REQUESTED FROM WIOSAP</b>	<b>118860</b>
							<b>TOTAL CO_FINANCING</b>	<b>111540</b>
							<b>TOTAL PROJECT BUDGET</b>	<b>230,400</b>

## Annex 4: Budget justification

	Category	Justification
1.	<b>Personnel</b>	As per section IV D, core project team will consist of 7 CNRO experts (marine chemistry, socio-economist, benthic ecologist, fisheries ecologist, agricultural, breeding, monitoring and evaluation), 2 MSc students, 1 supervisor from Regional Direction of Environment and Sustainable Development, 3 technical from Regional Direction of Agricultural, Breeding and Fisheries. This multidisciplinary project core team will adequately ensure that ecological integrity as well as socio-economic and governance dimension of the project operations are objectively kept on track.
2.	<b>Equipment</b>	A number of equipment will be procured. These will include office and secretarial facilities (4 laptops, 3 desktops, 3 hard external disk, 3 printers) and field equipment (4 voice recorders and 4 GPS [1 for each bay], 2 solar panels for local project operation base).
3.	<b>Operating costs</b>	Consumables to be purchased for implementing project activities shall include: printing/photocopying papers (A4); flip charts; marker pens; notebooks; ball pens; printer toners, USB drives, relevant software licences, internet bundles etc.
4.	<b>Contract Services</b>	Cartography Analysis costs, Workshops, IEC and training, Mangrove Committee, Nursery, Reforestation, Drinking water supply, School kits.
5.	<b>Travel</b>	Trips to and within the study area Travel by the researchers will include round trips between Mahajanga, Bombetoka, Mahajamba, Mahavavy and Soalala Bays Selected project experts and community members study tour to Tahiry Honko – Community Mangrove Carbon Project in the Bay of Assassins in SW Madagascar

### CNRO Position to Support indicated Co-Financing

**Legal position:** Created by Decree No. 77-081 of 04 April 1977 and is currently governed by Decree No. 2016-613 of 25 May 2016. It is a Public Establishment Industrial and Commercial Character (EPIC), with legal custody, placed under the technical supervision of the Ministry of Higher Education and Scientific Research and the financial supervision of the Ministry of Finance and Budget. According to the National Development Plan (PND), CNRO is mandated to implement an effective system of training, research, expertise and services in the field of marine biodiversity but also a contributor and partner in the training of human resources both at national and international level.

**Technical position:** CNRO has 17 researchers cum teachers from which 7 will be designated as project team to ensure the smooth running of the project. These include oceanographers and marine biologists, biochemists, geologists, experts in remote sensing, satellite image processing, and GIS, anthropologists and sociologists, economists-planners. CNRO also has GIS software (Arc-view 3.1, IDRISI). It may later acquire newer software (recent versions of Arc.GIS). In collaboration with the FTM, the CNRO can acquire topographic maps, or digitized cartographic data. Cooperation with IRD provides CNRO benefits from facilities that allow it to access French satellite image providers via the Internet. The CNRO has an all-terrain 4x4 vehicle for rural travel.