AFB/PPRC.14-15/3
4 June 2014

Adaptation Fund Board
Project and Programme Review Committee

PROPOSAL FOR MAURITANIA

Background

1. The Operational Policies and Guidelines (OPG) for Parties to Access Resources from the Adaptation Fund (the Fund), adopted by the Adaptation Fund Board (the Board), state in paragraph 45 that regular adaptation project and programme proposals, i.e. those that request funding exceeding US$ 1 million, would undergo either a one-step, or a two-step approval process. In case of the one-step process, the proponent would directly submit a fully-developed project proposal. In the two-step process, the proponent would first submit a brief project concept, which would be reviewed by the Project and Programme Review Committee (PPRC) and would have to receive the endorsement of the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would ultimately require the Board's approval.

2. The Templates approved by the Board (OPG, Annex 4) do not include a separate template for project and programme concepts but provide that these are to be submitted using the project and programme proposal template. The section on Adaptation Fund Project Review Criteria states:

> *For regular projects using the two-step approval process, only the first four criteria will be applied when reviewing the 1st step for regular project concept. In addition, the information provided in the 1st step approval process with respect to the review criteria for the regular project concept could be less detailed than the information in the request for approval template submitted at the 2nd step approval process. Furthermore, a final project document is required for regular projects for the 2nd step approval, in addition to the approval template.*

3. The first four criteria mentioned above are:
   1. Country Eligibility,
   2. Project Eligibility,
   3. Resource Availability, and
   4. Eligibility of NIE/MIE.

4. The fifth criterion, applied when reviewing a fully-developed project document, is:
   5. Implementation Arrangements.

5. In its seventeenth meeting, the Board decided (Decision B.17/7) to approve "Instructions for preparing a request for project or programme funding from the Adaptation Fund", contained in the Annex to document AFB/PPRC.8/4, which further outlines applicable review criteria for both concepts and fully-developed proposals.

6. Based on the Board Decision B.9/2, the first call for project and programme proposals was issued and an invitation letter to eligible Parties to submit project and programme proposals to the Fund was sent out on 8 April 2010.

7. In its twenty-third meeting, the Adaptation Fund Board (the Board) discussed a recommendation made by the Project and Programme Review Committee (PPRC) of the Board, on arranging intersessional review of project and programme proposals. Having considered the comments and recommendation of the PPRC, the Board decided to:

(a) Arrange one intersessional project/programme review cycle annually, during an intersessional period of 24 weeks or more between two consecutive Board meetings, as outlined in document AFB/PPRC.14/13;

(b) While recognizing that any proposal can be submitted to regular meetings of the Board, require that all first submissions of concepts and fully-developed project/programme documents continue to be considered in regular meetings of the PPRC;

(c) Request the secretariat to review, during such intersessional review cycles, resubmissions of project/programme concepts and fully-developed project/programme documents submitted on time by proponents for consideration during such intersessional review cycles;

(d) Request the PPRC to consider intersessionally the technical review of such proposals as prepared by the secretariat and to make intersessional recommendations to the Board;

(e) Consider such intersessionally reviewed proposals for intersessional approval in accordance with the Rules of Procedure;

(f) Inform implementing entities and other stakeholders about the new arrangement by sending a letter to this effect, and make the calendar of upcoming regular and intersessional review cycles available on the Adaptation Fund website and arrange the first such cycle between the twenty-third and twenty-fourth meetings of the Board;

(g) Request the PPRC to defer to the next Board meeting any matters related to the competencies of the Ethics and Finance Committee that may come up during the intersessional review of projects/programmes and to refrain from making a recommendation on such proposals until the relevant matters are addressed; and

(h) Request the secretariat to present, in the fifteenth meeting of the PPRC, and annually following each intersessional review cycle, an analysis of the intersessional review cycle.

***(Decision B.23/15**)*

8. The Board also decided:

(b) That the deadline for submissions for the intersessional project/programme proposal review cycle between the twenty-third and twenty-fourth meetings will be 14 April 2014.

(Decision B.23/28 (b))

9. The following fully developed project titled “Reducing Mauritanian fishermen’s risk at sea while enhancing the resilience of Mauritanian coastal communities to adapt to climate change and cope with severe weather events” was submitted by the World Meteorological Organization (WMO), which is a Multilateral Implementing Entity of the Adaptation Fund, on behalf of the government of Mauritania. This is the fourth submission of the proposal. It was first submitted to the Board’s 15th meeting but was not considered. It was resubmitted as a full proposal to the eighteenth Board meeting and was not approved. It was then resubmitted at the nineteenth meeting of the Board and the Board decided to:

(a) Not approve the project document, as supplemented by the clarification response provided by the World Meteorological Organization (WMO) to the request made by the technical review;

(b) Suggest that WMO reformulates the proposal taking into account the observations in the review sheet annexed to the notification of the Board's decision, as well as the following:

(i) The revised proposal must clearly demonstrate the observed or projected climate impacts which are being addressed by the proposed measures, and how such measures intend to build the adaptive capacity of vulnerable coastal communities to these stated impacts;

(ii) The revised proposal should discuss environmental impacts that are being experienced by the proposed beneficiaries and the extent to which the proposed adaptation interventions are designed to maximise positive environmental benefits;

(iii) The revised proposal should be designed around the priority adaptation needs of community members based on broad consultations including appraisal of alternative options;

(iv) The revised proposal should demonstrate how the introduction of small-scale technical equipment in a harsh marine environment could be a long-term sustainable solution;

(v) The revised proposal should include a disbursement schedule with no discrepancies; and

(c) Request WMO to transmit the observations referred to in paragraph (b) above to the Government of Mauritania.

(Decision B.19/13)

10. The current submission was received by the secretariat in time to be considered for the intersessional project/programme proposal review cycle between the twenty-third and twenty-fourth meetings.

11. The secretariat carried out a technical review of the project proposal, using the diary number MTN/MIE/Coastal/2011/1, and completed a review sheet. In accordance with a request to the secretariat made by the Board in its 10th meeting, the secretariat shared this review sheet with WMO, and offered it the opportunity of providing responses before the review sheet was sent to the PPRC.

12. The secretariat is submitting to the PPRC the summary and, pursuant to decision B.17/15, the final technical review of the project, both prepared by the secretariat, along with the final submission of the proposal in the following section.

Project Summary

Mauritania – Reducing Mauritanian fishermen's risk at sea while enhancing the resilience of Mauritanian coastal communities to adapt to climate change and cope with severe weather events
Implementing Entity: *WMO*

Project/Programme Execution Cost: USD 187,750
Total Project/Programme Cost: USD 1,990,764
Implementing Fee: USD 169,216
Financing Requested: USD 2,160,050

Programme Background and Context:

The objective of the project is to strengthen the resilience of Mauritania's coastal community, through concrete actions to allow local communities to adapt to weather and climate change induced hazards. More specifically it seeks to enhance early warning service delivery to small-scale fishermen and coastal communities in Mauritania in order to build their resilience to meteorological hazards. The proposed project will build the capacity of the National Meteorological Office whilst also enhancing early warning service delivery to small-scale fishermen and coastal communities.

This objective will be addressed through the realization of the following outcomes:

- Reduced exposure and increased adaptive capacity of small-scale fishermen to weather and climate change induced hazards
- Strengthened awareness and ownership of adaptation and climate risk reduction processes at local levels
- Improved capacity of ONM to deliver marine weather and early warning services to help reduce risks associated with climate related losses and contribute to socioeconomic development and poverty alleviation
- Strengthened capacity of national centers and networks to respond rapidly to climate change induced extreme weather events

Component A: Implementation of sensitization measures to reduce the vulnerability of small-scale fishermen (USD 710,812)

The approach of the project is to target small-scale fishermen and coastal communities dependent on the fisheries sector in Mauritania through user sensitization, awareness and consultations (to better understand climate change's threats to their lives and livelihood) and the provision of regular marine weather bulletins via radios and/or mobile phones out to sea. All services provided to the safety and benefit of the marine users in Mauritania will be developed through a consultative and transparent process engaging actors across the governmental sector and coastal community.

Component B: Production and provision of meteorological data and information for real-time coastal observation (USD 810,160)

Preparedness and disaster risk reduction is limited in Mauritania due to the lack of observations and high-resolution forecasts. The collection of observations and production of forecasts and warnings is the responsibility of the national meteorological and hydrological service, ONM, which is struggling to achieve its mandate with its current limited resources. Project component

B will provide focused technical capacity development designed to improve the production and provision of marine weather services. This will at the same time have major benefits to all national development areas, notably agriculture, health and environment that will benefit from improved observations and services.

Component C: Improving the quality and availability of coastal and maritime weather and early warning services (USD 282,362)

The work dedicated to improving the ability of national institutions to deliver services does not result in real development impacts without reaching the communities and individuals making choices based on their best knowledge about the current and future weather and climate. The dialogue between ONM, the Fishing Safety and Control Agency, the Federation of Artisan Fishermen and the fishermen themselves must be continuous and evolving to sustainably serve end user needs. The project will reach users through tested, robust and low-cost dissemination channels and will develop models for scaling up operations into nation-wide multi-user services with small additional funding.

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regular-sized Project

Country/Region: **Mauritania**
Project Title: **Reducing Mauritanian fishermen's risk at sea while enhancing the resilience of Mauritanian coastal communities to adapt to climate change and cope with severe weather events**
AF Project ID: **MTN/MIE/Coastal/2011/1**
NEI/MEI Project ID: **WMO**
Requested Financing from Adaptation Fund (US Dollars): **2,160,050**
Regular Project Concept Approval Date: **n/a**
Anticipated Submission of final RP document (if applicable): **n/a**
Reviewer and contact person: **Daouda Ndiaye**
Co-reviewer(s): **Daniel Gallagher**
NIE/MIE Contact Person: **Al-Hamndou Dorsouma**

Review Criteria	Questions	Comments on 2 May 2014	Comments on 16 May 2014
Country Eligibility	1. Is the country party to the Kyoto Protocol?	Yes	
	2. Is the country a developing country particularly vulnerable to the adverse effects of climate change?	Yes, Mauritania is a coastal country in West Africa that is particularly vulnerable to increased mean annual temperature and sea level, variable rainfall, and increased frequencies of climatic hazards such as floods and droughts.	
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	Yes, letter dated April 2, 2014	

	2. 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?	The proposal provides estimates of climate change projection for Mauritania's coast based on the IPCC Fourth Assessment Report (AR4). In the absence of reliable data at the national level, the proponents are invited to revisit such estimates based on the IPCC Fifth Assessment Report (AR5) which is now available. Regarding the particular sector of fisheries, please see para. 22.3.4.4. of the report (Volume II, Regional Aspects (Africa), Chapter 22). **CR1** Whilst it is not disputed that sea-level rise impacts on coastal regions, the project proponents point to a causal relationship between sea-level rise and storm events at sea which is yet to be scientifically demonstrated: "risks of storms and other weather related events … resulting from sea level rise". Besides, more information is needed on how the fishing sector will be affected by observed and projected impacts of sea level rise. Impacts on people's (coastal) and fish (marine) habitats should be clearly dissociated, explained and the actions proposed to address them through the project should be outlined. Urgent environmental problems affecting coastal communities e.g. relating to flooding and coastal erosion do not appear to be addressed by the proposal. **CR2** Lastly, the distinction between coastal and marine observation in this section is unclear. The scope of the observatory and monitoring systems is not described. The word "coastal" is often used in the title of the components and activities; however reading into the details shows that activities are more related to marine observation. The proposal does not explain how complementary this project will be with existing coastal observation systems, i.e. PCAE – UEMOA or PRCM (relevant information to support that rationale may be found under pages 34-35 of the document). In doing so, and as explained above, the proposal should explain how the threats it is targeting will complement the relevant threats targeted by such systems, i.e. ocean storms inducing loss of lives, rise of ocean temperature or ocean acidification and its impacts on fish species, coastal erosion, flooding and coastal storms and their impacts on coastal fishermen livelihoods. **CR3**	**CR1**: Addressed. **CR2:** Addressed. **CR3:** Partially addressed. The proposal could benefit from a clear and concise explanation on which types of localized weather and climate information and advisory services it will provide through the numerical coastal ocean state model to enhance coastal observation for the major coastal cities and fishing locations of Mauritania, and the relevant threats such services will address.

	3. 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 of the Fund?	Economic and social benefits for vulnerable coastal communities relate primarily to the welfare improvement associated with the safety of fishermen while out at sea. However, the proposal states that "Communities living close to the sea, farmers, fishermen, schools/youth, hospitals/public health authorities, the disabled and the tourist population from the targeted islands will also directly benefit from this project". It is not explained through which activities such coastal communities will benefit from the project (see CR3 above). **CR4**	**CR4:** Partially addressed, as this is related to CR3 above.
	4. Is the project / programme cost effective?	Yes.	
	5. 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?	Yes, the proposal is in alignment with government priorities and plans as described in the proposal. The review finds that the proposal could be better aligned with the adaptation priorities of the Second National Communication, better linking the activities with the vulnerability of coastal and marine areas to flood and storm events and the related impacts to coastal communities.	
	6. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund??	The proposal does not identify any specific national standards to be met, but will be in line with WMO Standards for Observation Systems. However, compliance with the AF's environmental and social principles as outlined in the Environmental and Social Policy is not demonstrated. **CR5**	**CR5:** Addressed.
	7. Is there duplication of project / programme with other funding sources?	There does not appear to be any direct duplication. The project is expected to build from the results of the Marinemet project. **CR6:** Please confirm if, now that Marinemet was closed since the last submission of this proposal, the AF project could still "save over one year and over $250,000 in development resources by collaborating with Marinemet, also managed by the WMO".	**CR6:** Addressed.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes.	

	9. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	Yes, a consultative process has taken place, of which the latest was done in September 2012. It is not clear if community priorities or perception of threats have changed since then. Please confirm if there has been any form of consultation done since the last submission of this proposal, to confirm the relevance of the proposed activities. **CR7**	**CR7:** Addressed. Consultation was undertaken with ONM to ensure that the project is still relevant to ONM and to the fishermen and their federations.
	10. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Unclear. Same comments as CR3 and 4 above.	
	11. Is the project / program aligned with AF's results framework?	Yes.	
	12. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	Yes.	
	13. Does the project / programme provide an overview of environmental and social impacts / risks identified?	No. **CAR1:** Please use the latest template of request of funding from the Adaptation Fund, which includes a section on compliance with the Environment and Social Policy. Relevant documentation can be found here: https://www.adaptation-fund.org/page/proposal-submission-materials	**CAR1:** Partially addressed. Only the checklist providing an overview of the environmental and social impacts and risks was included
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	Yes.	
	2. Is the Implementing Entity Management Fee at or below 8.5 per cent of the total project/programme budget before the fee?	Yes, 8.5%	
	3. Are the Project/Programme Execution Costs at or below 9.5 per cent of the total project/programme	Yes, 9.4%	

	budget (including the fee)?		
Eligibility of IE	4. Is the project/programme submitted through an eligible Implementing Entity that has been accredited by the Board?	Yes, WMO has been accredited by the Board.	
Implementation Arrangements	1. Is there adequate arrangement for project / programme management?	Yes, the proposal has outlined the arrangements for the execution and implementation of the project.	
	2. Are there measures for financial and project/programme risk management?	Yes.	
	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund?	No. **CAR2**	**CAR2:** Not addressed. A specific section is now included in the new template, which has to be completed. Other sections need also to be updated to include some information relevant to the policy.
	4. Is a budget on the Implementing Entity Management Fee use included?	Yes.	
	5. Is an explanation and a breakdown of the execution costs included?	Yes.	
	6. Is a detailed budget including budget notes included?	Yes.	
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	Yes. Please note that in accordance with the Environmental and Social Policy, Monitoring and Evaluation of AF-funded projects/programmes shall address all environmental and social risks identified during project/programme assessment, design, and implementation.	

	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	Yes.	
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	Yes. However, the project's impact indicator will be very difficult to monitor, i.e. "30% reduction in the loss of life and property resulting from extreme weather-related events" across the entire country's coastline. "Statistics by the National Fishing Safety Administration" do not seem to be a sufficient source of verification when the target people are "small-scale fishermen, and Mauritania's coastal community at large". **CR8** In addition, as discussed in CR 3 and 4 above, please clarify in the results framework the scope of the EWS, i.e. coastal and marine areas to address loss of life at sea but also coastal flooding or storm related events threatening coastal communities? Or marine only to address loss of fishermen's life at sea? **CR9**	**CR8:** Not addressed. It is still not clear how loss of property, which goes beyond the fishermen assets, will be assessed using statistics of the different Fisheries departments. As mentioned in the document, "coastal zone of Mauritania concentrates the country's major cities, economic infrastructure (such as harbours, power plants, industries, etc.) ". **CR9:** Addressed.
	10. Is a disbursement schedule with time-bound milestones included?	Please correct the discrepancy of $0.01 between the summated annual values and the total value relating to implementing fee. **CAR3**	**CAR3:** Not addressed.

Technical Summary	The proposed project aims to build the capacity of the National Meteorological Office whilst also enhancing early warning service delivery to small-scale fishermen and coastal communities. It also aims to build the adaptive capacity of small-scale fishermen to climate change and strengthen awareness of adaptation at local level. The proposed project has three components: 1. Implementation of sensitization measures to reduce the vulnerability of small-scale fishermen 2. Production and provision of meteorological data and information for real-time coastal observation

	3. Improving the quality and availability of coastal and maritime weather and early warning services The initial technical review concluded that, whilst the proposal addressed a pressing need for improving the monitoring capabilities of the ONM and many of the proposed activities had merit, it remained to be seen how the proposed measures focusing on the marine areas were complementary with existing systems or initiatives aiming at addressing the vulnerability of coastal areas to flood and drought events. It was suggested that the revised proposal clearly demonstrate how the proposed measures intend to build the adaptive capacity of vulnerable coastal communities to climate threats, as stated in the proposal. In line with the new Environmental and Social Policy of the Adaptation Fund, it was also requested that the proponents demonstrate that the proposed measures comply with the principles of such policy. The proponents were invited to use the latest proposal template which provides specific sections related to compliance with the E&S Policy. The review also found that the proposal could have gained from updated climate impacts estimate at both regional (Western Africa) and sectorial (fisheries) levels, which were available in the IPCC Fifth Assessment report (AR5). The proponents had subsequently submitted a revised proposal, which had adequately addressed a number of the nine clarification requests, but none of the three corrective action requests made by the secretariat in its initial review. The outstanding issues include compliance with the new proposal template, the lack of information on the types of "localized weather and climate information and advisory services" the project will provide through the numerical coastal ocean state model to enhance coastal observation for the major coastal cities and fishing locations of Mauritania, and the relevant threats such services will address. The following observations are made: a) The proposal should provide a clear and concise explanation on which types of localized weather and climate information and advisory services it will provide through the numerical coastal ocean state model to enhance coastal observation for the major coastal cities and fishing locations of Mauritania, and specifying: i. The relevant threats such services will address; ii. The relevant category of communities they will benefit. b) The proponents should consider revise or provide adequate means of verification and sources of statistical data for the project's impact indicator "30% reduction in the loss of life and property resulting from extreme weather-related events", which targets communities and assets along the Mauritanian coastline; c) The proposal should be resubmitted using the new Adaptation Fund project proposal template, which contains new and updated sections taking into account the Environmental and Social Policy of the Fund.
Date:	16 May 2014

ADAPTATION FUND

DATE OF RECEIPT:
ADAPTATION FUND
PROJECT/PROGRAMME ID:
(For Adaptation Fund Board Secretariat Use Only)

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY:	REGULAR SIZED PROJECT PROPOSAL
COUNTRY/IES:	MAURITANIA
SECTOR/S:	COASTAL / FISHERIES
TITLE OF PROJECT/PROGRAMME:	REDUCING MAURITANIAN FISHERMEN'S RISK AT SEA WHILE ENHANCING THE RESILIENCE OF MAURITANIAN COASTAL COMMUNITIES TO ADAPT TO CLIMATE CHANGE AND COPE WITH SEVERE WEATHER EVENTS
TYPE OF IMPLEMENTING ENTITY:	MULTI-LATERAL IMPLEMENTING AGENCY
IMPLEMENTING ENTITY:	WORLD METEOROLOGICAL ORGANIZATION
EXECUTING ENTITY/IES:	OFFICE NATIONAL DE LA MÉTÉOROLOGIE, MAURITANIE (ONM)
AMOUNT OF FINANCING REQUESTED:	**$2,160,050.00** (IN U.S DOLLARS EQUIVALENT)

PROJECT BACKGROUND AND CONTEXT:

The Islamic Republic of Mauritania, located in the north-western part of the African continent, is a vast (1,030,700 $km^{2)}$ but sparsely populated country of approximately 3.2 million inhabitants (2011). The highest density is recorded in the coastal city of Nouakchott, where a third of the Mauritanians live, followed by Nouadhibou and cities along the coast and the Senegal River in the southern part of the country. The Atlantic coast of Mauritania is 724 km long.

Mauritania remains among the world's poorest countries, ranked 155^{th} of 187 countries in the United Nations Human Development Index in 2013 (UNDP, 2013). Poverty still affects close to 42%[1] of the Mauritanian population, despite a steady decrease in the level of poverty for more than a decade. Rural poverty is aggravated by the acute lack of basic infrastructure such as water, energy and transport. The rather poor performance of the social sectors indicates the likelihood that the Millennium Development Goals (MDG) will not be achieved by 2015.

Economically, Mauritania has one of the lowest GDP rates in Africa, despite being rich in natural resources. The majority of the population still depends on primary production activities of agriculture, livestock and fisheries for their livelihoods[2]. Mauritania has extensive deposits of iron ore, which account for almost 50% of total exports[3]. The structure of the Mauritanian economy is therefore characterized by the predominance of the secondary and tertiary sectors (with 34.7% and 44.8% of GDP respectively)[4].

The traditional fishery sector, both small scale commercial and artisanal plays an extremely important role in Mauritania's economy. However, each year, life and property are lost due to extreme weather events such as storm surges, wind-induced waves, rough seas and their combined effect with river flooding. In combination, these hazards lead to coastal inundation resulting in catastrophic damage and disruption. Local fishing communities, ferries and commercial shipping as well as major parts of the population are often affected and are without timely warning of these events currently.

Other coastal industries such as oil drilling, transport and tourism are also prone to impacts from severe weather events. In a changing climate, both the frequency and intensity of the storms will likely increase, making the requirement for an effective early warning system even more essential. The Second National Communication (2008, page 86) suggests that the impacts of climate change including sea level rise on Mauritania's coastline and coastal communities will be significant. Coping with this will require a coherent strategy that addresses the multi-dimensional impacts of climate change, through protection of coastal resources, lives and livelihoods of coastal dwellers and marine users.

It is against this background that the proposed project aims to increase the resilience of Mauritania's artisanal fishermen and coastal communities, in providing them with adequate meteorological assistance to reduce their risks at sea and on land. This is in effect a "**no-regrets"** approach where building resilience of coastal communities, some of the poorest of the poor, the artisanal fishers and the families who depend upon them, to current climate and weather shocks will no doubt also increase their resilience to future climate change induced weather and climate patterns and severe events.

[1] Africa Economic Outlook, 2011
[2] Islamic Development Bank, Member Country Partnership Strategy, 2011 – 2015
[3] Islamic Development Bank, Member Country Partnership Strategy, 2011 – 2015
[4] Africa Economic Outlook, 2011

The project applies contemporary capacity development approaches. At broad levels, such approaches are articulated in international agreements on aid effectiveness, including the Paris Declaration and the Accra Agenda for Action. Most recently, the Cairo Communiqué on Capacity Development (March 2011) affirmed donor agencies and partner governments' recognition, "based on strong evidence, that institutional and human resource capacity development (CD) is essential to achieve sustainable development results". The consensus document prepared by participants, marked "a shift to an approach which is demand driven and results focused, owned by the country, and which builds on existing capacity".

Climate variability and Change Scenarios for Mauritania: addressing observed and projected climate impacts

Mauritania is already highly vulnerable to extreme weather and climate events such as severe storms, high temperatures, rising sea-levels and irregular rainfall patterns that are sometimes inadequate leading to droughts, and at other times excessive flooding and inundation. The amount of precipitation is extremely sensitive to the variation in the north-south latitudinal movement of the Inter-tropical Convergence Zone (ITCZ)[5] from one year to another, causing large inter-annual and inter-decadal variations. Vulnerability assessments made under the initial (2002) and second national communications on climate change (2008) and the National Adaptation Programme of Action (NAPA, 2004) suggest that economic sectors in Mauritania are very vulnerable to the adverse impacts of climate change, including, among others, agriculture and livestock, infrastructure, water, health and fishery. The vulnerability of Mauritania to climate change impacts is exacerbated by the fact that most coastal communities live at or below sea level, exposing the country's most concentrated populations and wealth to a range of risks related to sea level rise and severe weather events.

In recent years, extreme climate events comprising heavy thunderstorm and strong winds occurring in the early months of rainy seasons have caused severe material damages and loss of lives, devastated districts, destroying houses, schools and other community infrastructure. As in most parts of the globe, most natural disasters in Mauritania are related to hydro-meteorological phenomena.

The current available information on climate change projection for Africa, particularly Mauritania based on the recent IPCC Fifth Assessment Report (AR5) shows that evidence of warming consistent with anthropogenic climate change, has increased. According to the IPCC Fifth Assessment Report (2014), the observed changes for this region include:

- Near surface air temperature anomalies for this region were significantly higher for the period 1995–2010 compared to the period 1979–1994.
- The region has experienced a faster increase of temperature than the global mean average increase during the 21st Century;
- There was an overall reduction over the course of the 20th Century with a recovery toward the last 20 years of the century

In addition, climate change projections for Mauritania include the following:

[5] The location of the ITCZ varies throughout the year and while it remains near the equator, the ITCZ over land ventures farther north or south than the ITCZ over the oceans due to the variation in land temperatures. The location of the ITCZ can vary as much as 40° to 45° of latitude north or south of the equator based on the pattern of land and ocean. In Africa, the ITCZ is located just south of the Sahel at about 10°, depositing rain on the region to the south of the desert.

- Temperatures are projected to rise faster than the global average increase during the 21st Century, ranging between 3-6°C above the late 20th Century baseline;
- A likely reduction of rainfall by the end of 21st Century, with a lot of uncertainty due to a lack of sufficient observational data; however, a very likely decrease in mean annual precipitation over the Mediterranean region of northern Africa in the mid-and late-21st Century periods is projected;
- Increase challenges from existing stressors, such as overexploitation of resources, habitat degradation, loss of biodiversity, salinization, pollution, and coastal erosion. Coastal systems will experience impacts through sea level rise combined with storm swells;
- Other climate change impacts (such as flooding or an increased migration toward coastal towns due to increased drought induced by climate change) will also affect coastal zones.

It is clear that climatic hazards, such as storms, floods and droughts, have negative impacts on the economic sectors that will affect the overall economic growth and development plans of Mauritania, as well as its ability to meet the Millennium Development Goals. Despite some passive attempts to adapt to these climate hazards, the capacity to address climate change impacts in Mauritania is still limited. The national and local administrations have limited systematic knowledge of climate change risks, adaptation needs and options, and individual, institutional and systemic capacities to act on such risks remain low.

According to the IPCC Special Report (2012), *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, "a changing climate leads to changes in the frequency, intensity, spatial extent, duration and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events." Adaptation measures must consider these changes for the investment to be appropriate. While the actual climate trend in the Mauritanian coast is uncertain, there are measures that can be taken that would increase or improve resilience in this region. This proposal is in line with these measures through the improvement of the monitoring system and information dissemination in the coastal region of Mauritania.

Oceans and Coasts: risks and resources changing with climate

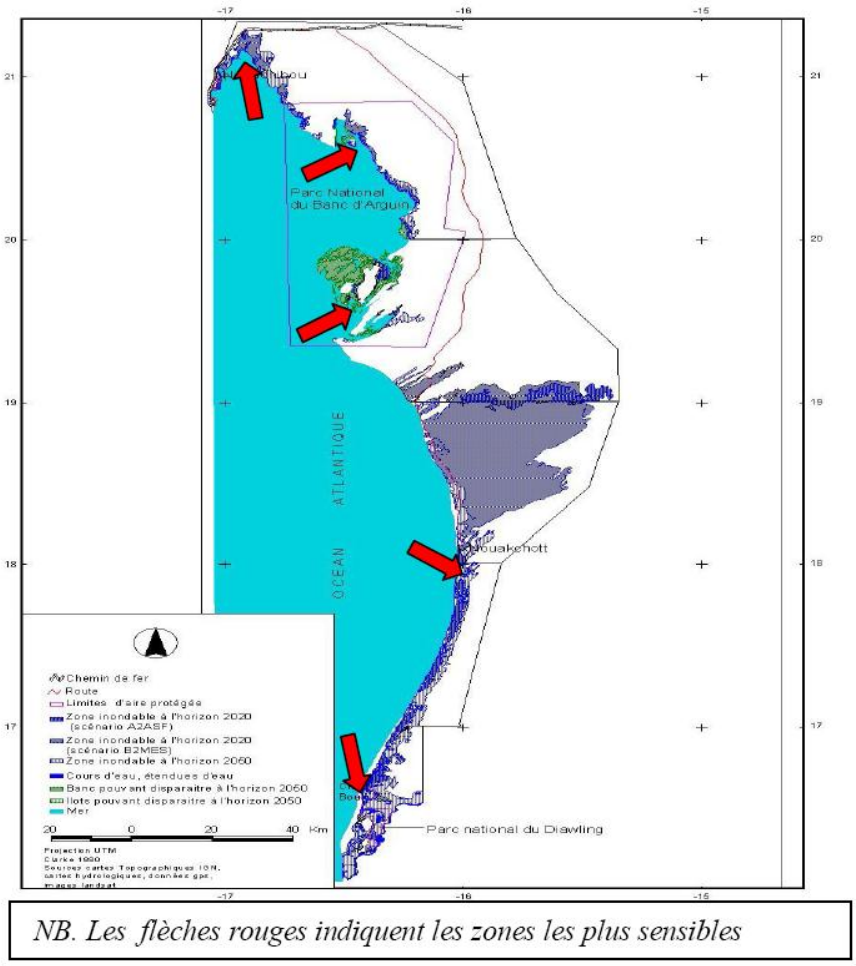
In Mauritania, a large percentage of the population inhabits the coastal regions and often depends on the marine environment and the maritime transportation for their livelihoods, making them especially vulnerable to marine meteorological extreme events.

Impacts on coastal zones

According to the recent IPCC Fifth Assessment Report (2014), about 70% of the coastlines worldwide are projected to experience sea level change within 20% of the global mean sea level change. The coastal zone of Mauritania concentrates the country's major cities, economic infrastructure (such as harbours, power plants, industries, etc.) as well as national parks and protected areas with a rich biological diversity. The impacts of climate change with sea level rise are affecting huge land areas and infrastructure that are at risk of flooding, including coastal erosion especially in the capital Nouakchott and Nouadhibou (major economic city) where modifications of the coast are already being observed. The socioeconomic assessment of climate change impacts on the coastal zone of Mauritania realized in the framework of the Second National Communication on Climate Change (2008) shows that by 2020 coastal erosion will affect 48% of Mauritanian population and more than 37% of land areas of Nouakchott.

The figure 2 below shows the flood-risk areas in the Mauritanian coastal zone, including the important coastal cities of the country namely Nouakchott and Nouadhibou. According to the Second National Communication (2008), flooding resulting from sea level rise will have catastrophic consequences on these areas by 2020. Increased storm activity will exacerbate this situation.

In the particular context of fishing sector, the observed and projected impacts of sea level rise have and will have significant damages to the sector thereby affecting fishermen, their livelihoods and the socioeconomic development of Mauritania.



NB. Les flèches rouges indiquent les zones les plus sensibles

Figure 2: *Flood-prone areas in the Mauritanian coastal zone (Source: Second National Communication, 2008) – Red arrows indicate the more sensible zones*

The extreme vulnerability of the coastal zone of Mauritania will have huge impacts on the country's economic development which highly relies on the coast. Therefore, the proposed project will contribute to addressing this vulnerability through capacitating the ONM to produce and disseminate reliable and relevant weather and climate information useful for decision making and planning for the coastal system. By disseminating weather advisory services to fishing communities and given its national-wide mandate, ONM will also get experience in producing a variety of services to other coastal authorities and communities, thereby contributing to the adaptation priorities set under the NAPA and the SNC to observe and

monitor the evolution of the coastal zone and complementing the existing initiative by the UEMOA in West Africa.

Impacts on the marine systems

The oceans are also under stress due to the pressures of coastal development, industrial pollution and over-fishing. According to the recent IPCC Fifth Assessment Report, sea level rise will not be uniform. By the end of the 21st century, it is very likely that sea level will rise in more than about 95% of the ocean area. Ocean currents and winds can transport and disperse oils slicks and other forms of pollution. Changes in ocean temperatures can also significantly affect the marine ecosystem, from plankton to fisheries.

The Second National Communication underlines in page 72 that the sea level rise in Mauritania based on the SRES Scenario predicts an increase of 5.8 cm to 15.5 cm by 2020 and 2050, resulting in the exposure of important land areas as well as infrastructure to the risks of increased coastal inundation and flooding during storm events.

SCENARII	Horizon	Niveau de la mer
A2ASF	2020	5.8
A2MES	2020	6
A2ASF	2050	15
A2MES	2050	15

SCENARII	Horizon	Niveau de la mer
B2ASF	2020	5.9
B2MES	2020	6.1
B2ASF	2050	15

Figure 3: *Sea level rise (in cm), Scenario SRES A2 and Scenario SRES B2) - (Source: Second National Communication, 2008)*

IPCC Fifth Assessment Report suggests that coastal and ocean systems are important for the economies and livelihoods of African countries, and climate change will increase challenges from existing stressors, such as overexploitation of resources, habitat degradation, loss of biodiversity, salinization, pollution, and coastal erosion, ocean storms inducing loss of lives, with impacts on fish species and on coastal fishermen livelihoods.

For people working at sea, or simply living near the coast, forecasts of maritime weather and ocean conditions are extremely important.

Therefore, understanding, monitoring, mapping and predicting maritime weather and ocean conditions offers the opportunity for adequate planning of the coastal zone and marine activities, and provide a structure for early detection and warning, and mitigating the risks of marine-related hazards. The National Meteorological Services have an increasing role to play in delivering the relevant information, in providing fishermen with relevant and timely weather-related information on the risks at sea, in order to prevent and avoid loss of lives and properties. This project also provides an opportunity to sustain the Early Warning System of Mauritania in ensuring that weather and climate information are considered in the decision-making and development planning of the coastal zones of Mauritania in general.

The Fisheries Sector

IPCC Fifth Assessment Report indicates that the vulnerability of national economies to climate change impacts on fisheries can be linked to exposure to the physical effects of climate change, the sensitivity of the country to impacts on fisheries, and adaptive capacity within the country. In an analysis of fisheries in 132 countries, it is estimated that two-thirds of the most vulnerable countries were in Africa. Among these countries, the most vulnerable were Angola, DR Congo, Mauritania and Senegal, due to the importance of fisheries to the poor and the close link between climate variability and fisheries production. It is also projected that by 2050 (A1B scenario) the annual landed value of fish for coastal countries of West Africa will decline by 21%, resulting in a nearly 50% decline in fisheries-related employment and a total annual loss of US$ 311 million to the region's economy (IPCC, 2014).

With 724 km Atlantic coastline, Mauritania has some of the world's richest fishing areas. The fisheries sector consists of two sub-sectors, namely the traditional and industrial fisheries. According to the Food and Agricultural Organization (FAO), the industrial fisheries export 800,000 metric tons of fish per year, and estimates that the small-scale fisheries export 80,000 metric tons per year.

The European Commission reports that the fisheries sector represents 10% of the Mauritania's GDP and between 35-50% of its exports and contributes 29% to the national budget revenue. In addition, the sector also generates 45,000 jobs, directly and indirectly; and accounts for 36% of the country's total employment, with 31% of these jobs stemming from artisanal fishing and 12% from industrial fishing[6]. According to Mauritania's Poverty Reduction Strategy Paper, 2011-2015 (PRSP), the potential for export development in this sector lies in the expansion of artisanal and coastal fisheries. The paper also indicated that the fisheries sector should be the "driving force in combating food insecurity."

The Second National Communication from Mauritania (page 82) indicates that the fisheries sector overall will face significant climate change impacts, resulting in the decrease of economic growth, important loss of currencies due to decrease of exports, and increase of unemployment. However, the climate vulnerability of artisanal fishery sector is not well documented yet. But it is well known that the increased loss of lives at sea and the socioeconomic damages caused by changes in the weather situation are the manifestation of climate change impacts on the sector.

The traditional fisheries sector has been growing very fast. According to the Federation of Artisanal Fisheries of Mauritania, there are approximately 30,000 fishermen at sea on a daily basis. These include a fleet of 4,000; namely 2,790 national *pirogues* (canoes), 1,114 chartered boats and 249 with free licenses. All these people and their properties and livelihoods are at high risk of climate change impacts, in particular the rising sea levels.

Vulnerability of the fishery sector to observed and projected impacts of climate change

As part of its mandate and given the importance of the traditional fishery sector, the National Meteorological Service of Mauritania (*Office National de la Météorologie* - ONM) is already conducting regular seminars with artisanal fishermen to raise their awareness on the use of meteorological services at sea. ONM is now in regular contact with the fishermen federations on the matters related to early warning in coastal areas. However, this effort needs to be sustained

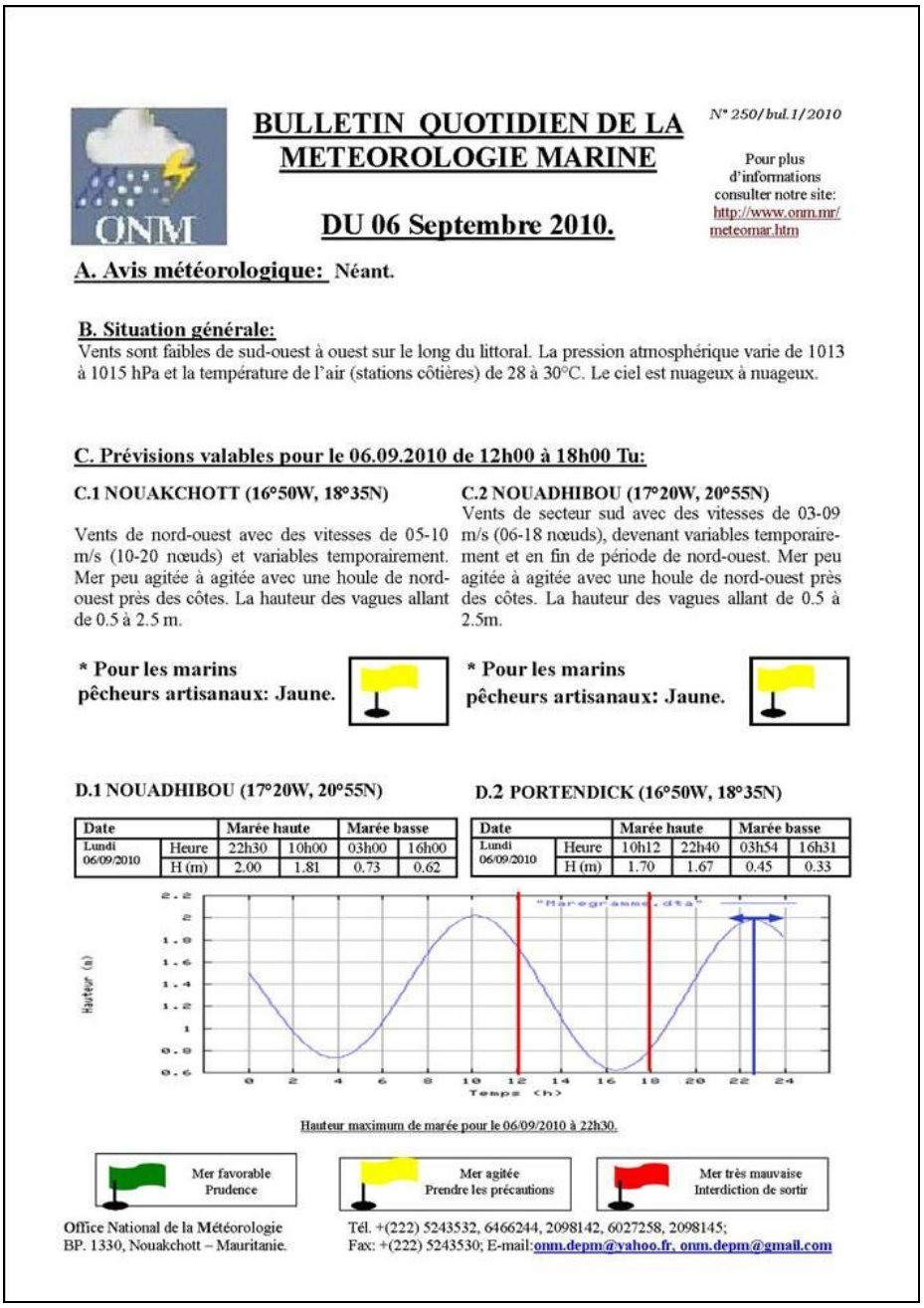
[6] http://www.europarl.europa.eu_sides_getDoc

and strengthened at the bottom level (i.e. the fishermen) in order to establish a proper dialogue with fishermen through permanent contact with their federations and through nomination of dedicated focal points.

During stakeholder previous consultations and project specific consultations in February and September 2012, the representatives of the Federation as well as the Director of Artisanal Fisheries Department highlighted the increase in accidents and fatalities of small-scale fishermen due to lack of accurate weather forecasts, lack of tools to communicate with coastal authorities and lack of training on the vital culture of safety at sea and near shore weather patterns and hazards. This is especially the case for artisanal fishermen at sea for extended periods of 2 to 3 weeks, and who go out as far as 100-120 kilometres from the shore.

This has been confirmed during the last community consultation held from 16-20 September 2012. The two important fishermen federations of the country have expressed their views and expectations from the project, including the need to place emphasis on and address the vulnerability of the traditional fishery sector, the need to better equip, support and train fishermen on the weather-related risks and the means of protection and rescue measures, and the importance of establishing adequate communication between the federations and fishermen while at sea. Annex I presents the key issues that arose from this consultation process and how community's concerns are incorporated into the revised proposal.

In collaboration with the *Délégation à la Surveillance des Pêches et au Contrôle de Mer* (The Fishing Safety and Control Agency, DSPCM), the *Office National de la Météorologie* (the National Meteorological and Hydrological Service of Mauritania, ONM) has developed a marine weather bulletin system (See Figure 4) that advises fishermen of the state of the ocean before going out to sea. The forecast is provided twice a day and the system involves colour-coded flags that are hung from flag posts at fishing ports in Nouakchott, Nouadhibou, PK144 and Mamghar that enable illiterate users to quickly analyze the dangers at sea. However, feedback from the DSPCM indicates that while the information provided is appreciated, it is not localized enough to serve the different fishing domains in Mauritania and hence there is an overly cautious warning practice in place. Subsequently, most fishermen ignore the warnings, risking their lives and livelihoods.



BULLETIN QUOTIDIEN DE LA METEOROLOGIE MARINE

DU 06 Septembre 2010.

N° 250/bul.1/2010

Pour plus d'informations consulter notre site: http://www.onm.mr/meteomar.htm

A. Avis météorologique: Néant.

B. Situation générale:
Vents sont faibles de sud-ouest à ouest sur le long du littoral. La pression atmosphérique varie de 1013 à 1015 hPa et la température de l'air (stations côtières) de 28 à 30°C. Le ciel est nuageux à nuageux.

C. Prévisions valables pour le 06.09.2010 de 12h00 à 18h00 Tu:

C.1 NOUAKCHOTT (16°50W, 18°35N)

Vents de nord-ouest avec des vitesses de 05-10 m/s (10-20 nœuds) et variables temporairement. Mer peu agitée à agitée avec une houle de nord-ouest près des côtes. La hauteur des vagues allant de 0.5 à 2.5 m.

*** Pour les marins pêcheurs artisanaux: Jaune.**

C.2 NOUADHIBOU (17°20W, 20°55N)

Vents de secteur sud avec des vitesses de 03-09 m/s (06-18 nœuds), devenant variables temporairement et en fin de période de nord-ouest. Mer peu agitée à agitée avec une houle de nord-ouest près des côtes. La hauteur des vagues allant de 0.5 à 2.5m.

*** Pour les marins pêcheurs artisanaux: Jaune.**

D.1 NOUADHIBOU (17°20W, 20°55N)

Date		Marée haute		Marée basse	
Lundi 06/09/2010	Heure	22h30	10h00	03h00	16h00
	H (m)	2.00	1.81	0.73	0.62

D.2 PORTENDICK (16°50W, 18°35N)

Date		Marée haute		Marée basse	
Lundi 06/09/2010	Heure	10h12	22h40	03h54	16h31
	H (m)	1.70	1.67	0.45	0.33

Hauteur maximum de marée pour le 06/09/2010 à 22h30.

Mer favorable Prudence

Mer agitée Prendre les précautions

Mer très mauvaise Interdiction de sortir

Office National de la Météorologie
BP. 1330, Nouakchott – Mauritanie.
Tél. +(222) 5243532, 6466244, 2098142, 6027258, 2098145;
Fax: +(222) 5243530; E-mail:onm.depm@yahoo.fr, onm.depm@gmail.com

Figure 4: W*eather bulletin system developed by ONM – same colour flags are hung at the ports to advise fishermen of the state of the ocean before going out to sea*

Over the last 10 years, it is conservatively estimated that at least 177,000[7] people have been affected by coastal hazards. To address this dramatic situation, the fishermen federations are keen to bear an important responsibility in the project to ensure that fishermen follow the instructions and early warnings and raise their awareness on the risks at sea.

Each year, life and property are lost due to climate change induced weather hazards, such as storm surges, wind-induced waves, rough seas and their combined effect with river flooding. In

[7] Source: "EM-DAT: The OFDA/CRED International Disaster Database"

combination, these hazards lead to coastal inundation resulting in catastrophic damage and disruption. Local fishing communities, ferries and commercial shipping as well as major parts of the population are often affected and are without timely warning. Coastal industries such as fisheries, oil drilling, transport and tourism are prone to severe weather impacts. These events contribute greatly to the perpetuation of the poverty these communities continue to face despite technological advances achieved in the science of meteorology, forecasting and related information products and services. In a changing climate, both the frequency and intensity of the storms will change, making the requirement for an effective early warning system increasingly essential.

The socioeconomic evaluation of climate change impacts in the Second National Communication focused on few sectors where data were readily available, namely construction, lands and roads. Due to lack of data, the socioeconomic impacts of climate change on the coastal areas of Mauritania were not assessed (Second National Communication, page 82, 2008). Though, the climate vulnerability of artisanal fishery sector is not well documented yet, it is generally well known that the increased loss of lives at sea and the socioeconomic damages caused by changes in the weather situation are the manifestation of climate change impacts on the fisheries sector and coastal communities generally.[8]

Despite the vulnerability of the coastal waters and land in terms of weather hazards, forecasts and warnings for the marine and coastal area are still at infancy stage. A WMO survey revealed that most West African countries, including Mauritania, lack the expertise in marine meteorology to implement an effective warning system and disaster mitigation strategy. ***The lack of maritime and meteorological information limits the adaptation responses of Mauritania.*** Better observations and forecast for marine related hazards, combined with improved skills of local forecasters and coastal authorities are required to develop an enhanced early warning system for coastal risk management that adequately addresses societal needs (safety and health) for the protection of life and property along coastal areas

This project clearly tackles these impacts in building the adaptive capacity of the fishermen and coastal communities to cope with these conditions through adequate meteorological information on the weather conditions at sea. By so doing, the project will protect lives of fishermen and help them safely preserve their activity on which depend lives and livelihoods of millions of families in Mauritania. The proposal is well aligned with the adaptation priorities of the Second National Communication, in addressing the impacts of sea level rise, especially the consequences of storm events on a particular vulnerable community who depends on the artisanal fishery sector that is particularly at risk.

Importance of weather-related information: priority adaptation measure for small-scale fishermen of Mauritania

It is critical to address the vulnerability of the artisanal fishery sector to the actual and future impacts of climate change generated by the sea level rise, storm surges, strong winds, etc. Given the importance of this sector for the adaptation of fishing communities to climate change, the proposed project seeks to improve their resilience by providing and disseminating reliable and timely weather alerts that will help prevent losses of life, property and livelihood; hence enhancing the socioeconomic development of Mauritania. Socioeconomic assessments of climate change impacts in Mauritania show that billions of dollars are under threat because of

[8] IPCC Special Report (2012), Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation,

adverse impacts of climate change, in particular the sea level rise and other weather events at sea as well as coastal erosion, with significant consequences on the productivity of the fishery sector. This project constitutes a response to the priority adaptation needs of Mauritania, as highlighted in the Second National Communication (SNC) that stipulates that marine and coastal ecosystems are among key components of country's adaptation. The need to establish a meteorological observing and monitoring system is among the adaptation options defined in the NAPA and the SNC. This has even been translated into a priority adaptation project (SNC, page 113), with focus on weather observation, installation of marine observing network, establishment of early warning system for extreme events, monitoring of the fishery sector, and capacity building. The Second National Communication of Mauritania underscored the importance of systematic observation of weather and climate conditions and trends over the sea and the coastal zone of Mauritania in response to the current insufficient and inadequate climate observing networks, lack of equipment and competent personnel.

Prior to the inception of the *Office National de la Météorologie* (the National Meteorological and Hydrological Service of Mauritania, ONM), meteorological functions performed[9] were related only to aeronautical activities; and the maintenance of existing weather stations used for weather predictions for the safety of planes coming in and out of Mauritania. However, in 2005 due to an increase in storm surges and noticeable increase in related accidents, loss of property and deaths, and following a ministerial report on inadequateness of the current services to ensure the security of the lives and livelihoods of Mauritanians, ONM was established in December 2006 under the auspice of the Ministry of Transport and Equipment. Its mandate is ***"the observation and study of weather, climate and atmospheric components of the environment to ensure the safety of persons, goods and contribute to economic and social development of Mauritania by the provision of meteorological information appropriate for all users."*** ONM was also asked to undertake national hydrological activities as part of its mandate.

Over the last five years, ONM, with a limited investment from the government and in partnership with the World Meteorological Organization and other related weather and climate centres was able to begin providing services. See Annex II for complete baseline information on ONM, including budget, human resources, equipment and services currently provided.

While the ONM monitors weather parameters and provides forecasts on a daily basis, albeit not with sufficient detail in most coastal areas, they have not begun to analyze how the information they provide is utilized for decision-making by the end-users. More specifically, there is still a lack of knowledge in two key aspects: a) what are the appropriate formats for dissemination of the information and b) how channels of communication can be improved for effective integration of weather/climate in decision-making. In general, the delivery of services stays at the administrative level, (e.g. warnings are only sent to governmental institutions in charge of disaster management and sea safety through administrative channels). General forecasts, typically valid for 24 hours are issued on a daily basis and delivered to the public through classic media (TV, radio, newspaper) but these forecasts are not specific enough to meet the needs of vulnerable communities, as is the case with the fishermen and the coastal communities. The ONM is not currently well equipped to deliver the essential weather and climate information services required to strengthen resilience of coastal communities, especially in terms of establishing direct links with these communities. Therefore, without enhancing the capabilities of ONM to provide tailored advisory and actionable services to the key economic sectors including

9 Aeronautical activities were performed solely by the Agency for Aerial Navigation Safety in Africa and Madagascar (L'Agence pour la Sécurité de la Navigation aérienne en Afrique et à Madagascar, ASECNA), an air traffic control agency based in Dakar, Senegal.

fisheries, it is challenging to achieve the goal set under the SNC to establish a weather and climate observing and monitoring network that is relevant and useful for the adaptation of marine and coastal areas of Mauritania thereby contributing to building climate resilience of fishing communities.

Recently, discussions with stakeholders in maritime/coastal activities have begun. These include local communities involved or benefiting from marine/coastal resources or those living near the coast. This engagement has begun the process of understanding the user requirements more comprehensively. However, due to the lack of equipment and training, the services provided, (as noted from the feedback of the Marine Rescue Centre), the weather bulletins are not sufficient and sometimes not useful at all. Further investment in ONM, in terms of observation network, training and telecommunications, is still needed to improve communications and service delivery to vulnerable communities in coastal areas. Appropriate formats and distribution channels can be determined with the targeted communities through workshops and consultations. Delivery of forecasts and early warnings, from daily, seasonal and longer timescales, can be preceded by sensitization actions on climate change and variability and their impact on coastal environment and activities and the necessity to adapt to the increased intensity and frequency of weather hazards.

During the recent consultation, fishermen showed a great interest in the use of more accurate meteorological information that is helpful for them to know at due time the weather situation at sea and related risks. Though relevant, the meteorological information seems to be less reliable and less understandable and interpretable by them. It is therefore important for ONM to enhance the quality and reliability of its weather forecast and delivery in order to reach the communities of fishermen who are mostly illiterate.

Project Sustainability

Led by the ONM, the proposed project was formulated following consultations and explicit requests from the Ministries of Equipment and Transport, Environment, Fishing, Interior and Civil Protection as well as representatives from the Federation of Artisanal Fishermen and DRCPM. Each institution has highlighted the need for a coastal early warning system to sustainably build the resilience of coastal communities to climate change and to overcome the barriers to adaptation. See Annex III for details on the stakeholder consultation outcomes.

The proposed project is also in-line with the priorities identified in the National Adaptation Programme of Action (2004), Second National Communication (2008), Islamic Development Bank Partnership Strategy (2011-2005) and the Poverty Reduction Strategic Framework (2011-15). The project is further aligned with the National Action Plan for the Environment (PANE) and the National Strategy for Sustainable Development (SNDD) thereby ensuring support at the national and departmental levels providing a framework whereby lessons learned from ground are incorporated at the broader national strategy for climate change adaptation. The broad scope of the project is also aligned with the government's structural policies and strategies as they relate to poverty reduction and better control of the effects of climate change, specifically the building of national capacity to monitor climate change.

The proposed project is sustainable as it begins with ensuring the ownership is rooted in country. Due to the lack of in-country observation systems and IT capacity, means of providing weather and climate services typically entails relying on international service providers for a service fee. The challenge with an outsourcing scenario (such as ASECNA) is that it does not build the capacity of the local meteorological service to develop its own weather forecasting

services. It also means that the services they provide are limited, as they are not fully tailored to the needs of specific sectors and communities. This project builds on currently deficient systems in place through the:

a. Reinforcement of the coastal observation network ensuring availability of raw data;
b. Development of the necessary tools to allow ONM to develop forecasts and warnings tailored to community needs;
c. Improvement of the telecommunications system to enable ONM to disseminate the information to end-users; and
d. Provision of an improved system of targeted delivery of information and feedback mechanisms.

These improvements will ensure that information is not only accurate but is also in a format that is understandable by both intermediary and end-users, in particular representatives of ministries, local agencies and communities. As ownership is the key for project sustainability, this proposal will ensure that local fishermen who are direct beneficiaries of the project are equipped and trained to continuously use the meteorological services provided to them. Having focal points at important fishing areas of the country will enable that meteorological services can easily reach fishermen and that feedback from the users are received regularly.

The project components are outlined under Project Justification. All project stakeholders consider this proposal as a flagship and demonstration project for a future bigger initiative in Mauritania to enhance the resilience of the country's coast, as being envisaged by the national authorities.

The project proposes service-focused concrete actions that would form the basis and culture for a strong service oriented institution, ensuring sustainability for the long term, including scaling up to other sectors such as agriculture.

The introduction by the proposed project of small-scale equipments such as marine meteorological automatic weather station, installation of numerical ocean state model, and distribution of hand-cranked and solar-powered radios and mobile phones, among others, will provide a great opportunity to fishermen to access customized services and information. The sustainability of these equipments will be ensured through operationalisation of ONM as a dedicated centre with adequate capacity to provide reliable information to fishermen, with the possibility to cover most development sectors in the future. This project offers a unique opportunity to build national capacities and resilience to respond to the rising impacts of climate change and sea level rise. It paves the way for further investments to come.

Responding to the potential impacts of climate change requires strong institutions that will be able to serve the population and provide assistance and services to the vulnerable communities. The project, in collaboration between ONM, the Fishermen Federations South and North, the Port Authorities and the National Civil Protection Agency, the Artisanal Fishery Department and the Climate Change Coordination Unit, will have a substantive impact on the lives of the fishing communities through significantly enhanced understanding of the consequences of weather, climate and hydrological events. The tangible impacts will be the actions taken as a result of the improved information and knowledge to act upon this information by the fishermen and their communities. Tangible impacts will be decreased fatalities of fishermen, decreased loss of their vessels and decreased loss of livelihood. The improved quality and access to information will form the basis for planning further adaptation measures.

PROJECT OBJECTIVES:

The **overall objective** of the project is to strengthen the resilience of Mauritania's coastal community, through concrete actions to allow local communities to adapt to weather and climate change induced hazards. More specifically in the context of the requested financing, the **project purpose** is to enhance early warning service delivery to small-scale fishermen and coastal communities in Mauritania in order to build their resilience to meteorological hazards.

The project expects the following main outcomes:

1. **Reduced exposure and increased adaptive capacity of small-scale fishermen to weather and climate change induced hazards**. While some 30,000 fishermen in Mauritania are out at sea at any given moment, none of them carry any means of obtaining information about the state of the ocean or atmosphere during their excursion lasting up to 15 days at a time. An Early Warning System (EWS) will be developed and a pilot project dedicated for the fishermen will be implemented to provide continuous and updated marine weather bulletins and warnings. The project will be executed by the Mauritanian National Meteorological and Hydrological Service (l'Office National de la Météorologie de Mauritanie, ONM), in cooperation with the *Délégation à la Surveillance des Pêches et au Contrôle de Mer* (The Fishing Safety and Control Agency, DSPCM), and the Federation of Artisanal Fisheries of Mauritania. The adaptive capacity will be built upon existing structures and institutions using national radio, existing warning mechanisms for fishermen and new services such a marine weather hotline at the ONM. The outcome will reach the majority of the coastal population composed nearly of 1.5 million inhabitants or half the population. The outcome will demonstrate a radio communication system with a pilot of 6000 fishermen and presents good opportunities for scaling up. The continuity of the outcomes will require investment into the ONM and operational resources to be provided to the national institutions. As suggested by fishermen, the project will raise their awareness on weather-related risks, the improvement of meteorological service delivery and provision of reliable and timely meteorological service. This will require a continuous stakeholder training and cooperation to ensure sustainability of achieved outcomes.

2. **Strengthened awareness and ownership of adaptation and climate risk reduction processes at local levels**. The ability to reduce risks associated with natural disasters depends on the effective, timely and reliable communication between a number of national institutions to assess vulnerability and capacity to adapt of the local communities. The safety of the coastal communities depends on their own actions to mitigate risks associated with threats. For effective mitigation, the threats need to be identified and discussed with communities, and relationships built with the national safety organizations to coordinate the response. Climate change will pose a threat in the form of sea level rise, increased frequency and severity of storms leading to e.g. storm surges, sand storms, flooding, high seas and high wind. The conditions leading to dangerous weather and climate events will be addressed with local communities and appropriate protection and adaptation measures discussed jointly with national civil protection, maritime safety and meteorological agencies. The capacity of the national civil protection agencies to engage with local communities to design appropriate disaster risk reduction measures will be developed and trust in government developed at the community level. The awareness and ownership process will directly reach 6000 fishermen from four coastal communities in Mauritania, representing the main fishing hubs in the country. Indirectly, the entire coastal community in Mauritania will be the first to benefit from improved provision of products and services. The National

Programme of Climate Change Coordination Unit will intervene on a regular basis as to assess the adaptation tools and feedback the system for corrective appropriate actions.

3. **Improved capacity of ONM to deliver marine weather and early warning services to help reduce risks associated with climate related losses and contribute to socio-economic development and poverty alleviation**. The ability to reduce risks associated with natural disasters relies, in addition to the national processes being implemented, on the availability of reliable information on the current and future state of the natural environment. Modern technologies in the field of meteorology, hydrology and oceanography form the foundation for any disaster risk reduction effort and guarantee accurate, efficient and cost-effective provision of data on the natural state. Observation forms the basis of a forecast, which is delivered as a tailored service to a user. The capacity to deliver hydro-meteorological services to end-users is a national concern that serves all domains of the public sector, from transport to health to environment and agriculture.

4. **Strengthened capacity of national centres and networks to respond rapidly to climate change induced extreme weather events**. The capacity for quick response requires real-time information about several variables and well-established processes with established lines of communication and responsibility to function. In its current state, the national agencies do not have the means for real-time monitoring of the ocean or the atmosphere and thus are already delayed by a significant margin in their response. Through implementation of robust telecommunication technologies with automated observing systems for weather and ocean, the capacity to react will significantly increase. In parallel, processes with maritime safety and civil protection will be streamlined for all weather and climate related information in rapid response cases. Investment into data management and transmission will ensure fast delivery of information and will be complemented by developing atmospheric and ocean state numerical modelling facilities at the ONM to improve early warning reliability, accuracy and relevance.

PROJECT COMPONENTS AND FINANCING:

Fill in the table presenting the relationships among project components, activities, expected concrete outputs and the corresponding budgets. If necessary, please refer to the attached instructions for a detailed description of each term.

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (USD)

Component A: Implementation of sensitization measures to reduce the vulnerability of small-scale fishermen	1200 boat captains trained on weather, climate and ocean, and associated dangers Design of forecast and early warning services delivered by CCPNCC and ONM, in collaboration with fishermen and local intermediary organizations Mauritanian Fishing Safety and Control Agency and the Federation of Artisanal Fisheries trained on weather, climate and ocean and associated risks Use of adequate communication system to deliver early warning services to fishermen Training of trainers (community leaders and government officials) on early warning services and safety measures	Reduced exposure and increased adaptive capacity of small scale fishermen and coastal communities to climate change induced weather hazards Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Enhanced safety measures for fishermen at sea	710,812

Component B: Production and provision of meteorological data and information for real-time coastal observation	Marine meteorological automatic weather stations installed and operational at the coast of Mauritania, to provide real time marine observations and forecasts for decision making by fishermen and other authorities in charge of maritime transport and navigation Data management solution for real-time observation data developed and operational at ONM Numerical coastal ocean state model adopted and operational at ONM, to provide localized weather and climate information and advisory services for the major coastal cities and fishing locations of Mauritania, while complementing the existing coastal observation system for the West African region Modern data centre established at the ONM for weather, climate and ocean data Specialised training of ONM staff on the application and maintenance of the numerical coastal model and the modern data centre	Improved capacity of ONM to deliver marine weather and early warning services to help reduce risks associated with climate related losses and contribute to socio-economic development and poverty alleviation Enhanced capacity of local communities through better use of early warning products	810,160
Component C: Improving the quality and availability of coastal and maritime weather and early warning services	Weather hotline for fishermen receives at least 50 calls per day 1200 boat captains trained on the operation of hand-cranked and solar-powered radios and the interpretation of weather bulletins At least 6000 fishermen reached daily through the radio weather bulletins	Strengthened capacity of national centres and networks to respond rapidly to climate change induced extreme weather events faced by local communities Early warning services delivered to fishermen are improved and reliable	282,362
4. Project/Programme Execution cost			187,750

5. Total Project/Programme Cost	1,990,764
6. Project Cycle Management Fee charged by the Implementing Entity	169,216
Amount of Financing Requested	**2,160,050**

PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Start of Project Implementation	1 September 2014
Mid-term Review	31 January 2016
Project Closing	31 August 2017
Terminal Evaluation	31 August 2017

Start date assumes AFB approval during intersessional review by June 2014.

PART II: PROJECT JUSTIFICATION

A. Describe the project components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience.

The project responds to urgent and immediate adaptation needs of Mauritania heavily facing climate change impacts, in particular in the marine and coastal areas, as suggested by the Second National Communication (SNC). The proposed project responds to the pressing need for the establishment of an observing and monitoring network, including an early warning system, in particular for the adaptation of the marine and coastal zone of Mauritania, in particular small-scale fishermen. The Project is divided into three functional and complementary components based on the model of early warning services to benefit Mauritanian fishermen. In the project components, activities are focused and concrete actions are outlined to address adaptation through improved continuous access to weather forecasts and warnings. The project emphasizes all aspects of the risk reduction process, from user sensitization and tailoring of services through collaborative methods and provision of meteorological services that help enhance sensitization and engagement of all relevant national agencies and local communities to the early warning system. The project has been designed to be very concrete, focused and streamlined to maximize benefits to the final end users, namely, Mauritanian marine users, in particular small-scale fishermen. Climate resilience is built by developing awareness and risk mitigation measures available to the communities that rely on fishing as their main livelihood as well as improving communication for an efficient delivery of early warning services to local communities.

Component A: Implementation of Sensitization Measures to reduce the vulnerability of small-scale fishermen

The concrete adaptation approach of the project is to target small-scale fishermen and coastal communities dependent on the fisheries sector in Mauritania through user sensitization, awareness and consultations (to better understand climate change's threats to their lives and livelihood) and the provision of regular marine weather bulletins via radios and/or mobile phones out to sea. All services provided to the safety and benefit of the marine users in Mauritania will be developed through a consultative and transparent process engaging actors across the governmental sector and coastal community.

Activity A.1: Project Kick-off Workshop

An initial engagement with all stakeholders of the project will develop guidelines for the project implementation and outline the format and means of dissemination of the pilot phase services to end users. For maritime safety, a multi-stakeholder body addressing the risk reduction and early warning needs of end users from the governmental standpoint does not exist. This engagement will form a national platform for maritime risk reduction that will receive regular reports for this project and take on additional work as it sees appropriate. This platform will be designed at the inception *workshop at early stage.*

Activity A.2: Marine risk sensitization for government actors and officials

Whereas the Coordinating Unit of the National Programme of Climate Change (CCPNCC) is mandated for public awareness on climate change sector vulnerability and appropriate adaptation measures, the main agencies related to marine safety in Mauritania are the National Civil Protection Agency under the Ministry of Interior, the Fishing Safety and Control Agency under the Ministry for Fishing and the National Meteorological and Hydrological Service under the Ministry of Transport and Equipment. All of these agencies will be subject to activities to sensitize their operations to the growing needs by marine users for early warning and forecast information on natural hazards via a series of consultative, result-oriented and non-discriminatory workshops. This series of workshop will also target the two major federations of fishermen, through their focal points that will serve as liaison officers for the transmission of information to and sensitization of fishermen on the marine risks.

Activity A.3: Disaster Risk Sensitization for Fishermen

With 18% of the Mauritanian GDP produced from fishing, a growing offshore oil exploration program and majority of the population living on the coast, there are major threats associated with the changing climate. For fishermen, the traditional livelihood is becoming dangerous if they are not properly sensitized to the risks associated with the weather, climate and ocean. The 6000 fishermen the project aims to sensitize over a series of consultative community-based actions in the main fishing hubs of Mauritania represent over half of the boats out at sea each day, significantly reducing the number of lives at risk. ONM and CCPNCC will conduct this activity in synergy under their respective comparative advantage.

Activity A.4: Training of trainers on the dissemination of early warning services and awareness on safety measures

As requested during the consultation and to improve the dissemination of early warning services and enhance the safety of fishermen at sea, it is important to train community leaders and key government officials on the existing methods and technologies. In so doing, the project will create a critical masse at community and government levels that can help properly relay the information directly to fishermen. This activity will also contribute to improve the communication between fishermen and their federations as well as with the relevant government bodies. The training will be accompanied by field visits in order to demonstrate the use of equipment needed by communities to improve communication and safety at sea. This activity will be executed by the CCPNCC as part of its climate change public awareness mandate in collaboration with ONM for its technical information delivery capacity. The sustainability of these equipments will be ensured through commitments by the Meteorological Office of Mauritania (ONM) to support the resilience of local communities to weather and climate-related hazards, in becoming a centre with capacity to

provide reliable information to fishermen, with the possibility to cover most development sectors in the future and to get visibility at government level. This project is an opportunity to build national capacities to respond to the rising impacts of climate change and sea level, paving the way for further investments in a near future. It will also help ONM to include such an activity in their regular operating budget, as per their mandates. Moreover, the Federations of Fishermen of Mauritania have a long standing experience in assisting fishermen with small-scale fishing equipments. The new equipments that will be provided to them will also be under the responsibility of these two strong Federations that are known to be very well structured and organized.

Component B: Production and provision of meteorological data and information for real-time coastal observation

One of the crucial factors currently limiting preparedness and disaster risk reduction in Mauritania is the lack of observations and high-resolution forecasts. The collection of observations and production of forecasts and warnings is the responsibility of the national meteorological and hydrological service, ONM, which is struggling to achieve its mandate with its current limited resources. Project component B will provide focused technical capacity development designed to improve the production and provision of marine weather services. This will at the same time have major benefits to all national development areas, notably agriculture, health and environment that will benefit from improved observations and services.

The project will also strengthen regional cooperation and exchange of observation data with neighbouring countries by connecting the Mauritanian observation network to the WMO Integrated Global Observing System (WIGOS) through ONM. The exchange of data currently takes place through ASECNA and is thus limited to synoptic observations at airports in the international aeronautical format. This Project component will improve the situation by making data available from other observation stations and by developing the capacity of ONM to receive observation data from the region directly and use it in their service delivery. Currently, Mauritania does not have the capacity to receive and use oceanographic and climate data beyond its borders with the exception of the aeronautical data through ASECNA, a few new marine products through the Marinemet[10] project (finished in 2012) and global products through EUMETCast[11] as there is no data exchange between neighbouring countries. This is mainly due to lack of ICT infrastructure and agreements with other NMHSs. ONM cannot, for example, share marine observation data with Senegal in real time, which would be critical input for its coastal ocean models and would provide information about incoming dangerous weather, which typically arrives from South-West of the country. The implementation of a data management centre will address this issue and allow ONM to fully utilize existing regional and global resources. The national data itself is not sufficient for weather forecasting purposes, as weather does not follow borders. Data from especially those countries where severe weather typically crosses into Mauritania is extremely important to expand the horizon for weather events and increase lead time for warnings. By sharing its data, ONM will contribute positively to the accuracy of global numerical models and thereby also on the accuracy of its own numerical forecasts, further improving reliability and accuracy of services.

10 See page 22 under Relevant Projects and Initiatives for an overview of the Marinemet Project

11 EUMETCast is a multi-service dissemination system based on standard Digital Video Broadcast (DVB) technology. It uses commercial telecommunication geostationary satellites to multicast files (data and products) to a wide user community. See: http://www.eumetsat.int/Home/Main/DataAccess/EUMETCast/index.htm

Baseline for the technical capacity of the ONM and as of April 2014:

The existing national weather observation network is composed of 14 weather observation stations located at regional airports, of which 7 are automatic and 7 are manual; 1 Automatic Marine Weather Station with tide gauge at Nouakchott Port and 2 Atmospheric Sounding Stations operated by ASECNA at Nouakchott and Nouadhibou with two soundings per day. Through the Marinemet project, there will be additional equipment implemented in 2012 comprised of 3 additional Automatic Weather Stations along the Mauritanian coast and 1 Tide gauge to Nouadhibou Port.

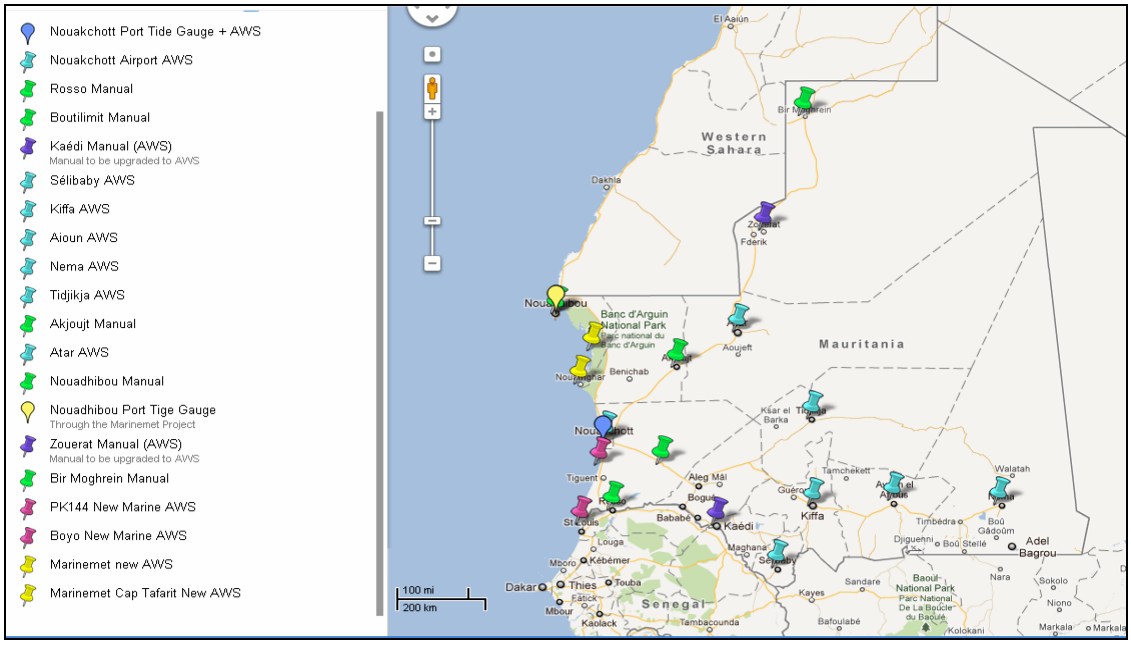


Figure 3: *Current and planned observation network of the ONM*

The IT infrastructure of ONM includes 5 computers at the airport and 18 desktops in Nouakchott headquarters. Currently the facilities have no centralized system for data management, only stand-alone computers without data backup arrangements. There is no dedicated computer room or backup power. There are no high-performance facilities to support numerical models. In addition, ONM has 1 colour printer at the airport and 1 colour and 4 black-and-white printers in Nouakchott. ONM has two data servers, one for real-time data and another for the climate database. The real-time server is non-operational as data connections not implemented to stations. The current Internet connection to the headquarters is: download 1 Mb/s, upload 0.5 Mb/s and to the airport: download 2 Mb/s, upload 0.5 Mb/s. At the Nouakchott airport, there is a Puma[12] workstation (through the EU-funded AMESD Project) with a EUMETCast receiver and access to remote sensing and numerical products.

[12] Preparation for Use of Meteosat Second Generation in Africa (PUMA) project is an international collaborative venture which provides the continent's National Meteorological and Hydrological Services with operational access to state-of-the-art satellite technology. PUMA has created a pan-African network of 53 countries and five regional centres and equipped them with the infrastructure, training and support required for receiving the latest space-based meteorological and environmental data, images and products from EUMETSAT via the EUMETCast distribution system.

Activity B.1: Marine meteorology and coastal ocean numerical modelling training program

The lack of capacity for numerical modelling for weather and ocean applications in Mauritania is currently resulting in a lack of spatial and temporal resolution needed to produce early warning services. Through this activity, ONM staff members will specialize in modelling techniques and have the capacity to continuously develop and maintain numerical weather and ocean models running on ONM computers.

Activity B.2: Implementation of a numerical coastal ocean state model at ONM

To develop early warning services, a numerical weather and ocean state model must be adapted, integrated, installed and run locally from within Mauritania. In addition to personnel capable of maintenance and development work, the models will be installed on ONM computers and developed to use observation data from Mauritania and its neighbours. International experts will work with ONM staff to localize the model and define model output relevant to Mauritania.

Activity B.3: Operationalization of a data processing centre at ONM

The key element to rapid response and early warning is the acquisition of real-time information. The observation carried out by an automatic sensor is stored locally at the weather station, but must also be transferred, checked for quality and stored at a database for visualization and product generation. A data centre for collecting, storing and using observational, remote sensing and numerical weather prediction information will be implemented at the ONM. This facility will serve as the heart of the ONM service delivery system and will be duly backed up, maintained and controlled 24/7/365 for continuous operation. The centre will be a room with air conditioning and filtering at ONM headquarters with computer rack(s) that hold the computers, routers, switches, etc. to process the real-time data, archive the data with real-time backup (the system is mirrored) and to process the numerical models and generate necessary products. The number of elements and the final configuration of the system will be specified by experts and subject to a tender process for procurement. Archived data will be regularly stored in physical format.

Activity B.4: Improve marine meteorological and oceanographic observations on the coast of Mauritania

As the baseline indicates, the capacity of ONM to deliver forecast and warning services to its coastal users is limited by the capacity to observe basic parameters such as wave height, swell, sea level, wind speed, wind direction, temperature, sea surface temperature, air pressure, sea current and rainfall. In addition, numerical coastal models that form the backbone of forecast products require at least three observation points along the coast to be able to deliver sufficient resolution of ocean and weather variables. To support early warning, forecasting through numerical models, and climatological data collection, a new automatic marine meteorological station complete with sensors for the ocean and atmospheric conditions and real-time telecommunications, will be installed along the coast of Mauritania. The real-time data feed will be connected to the data processing centre at ONM headquarters (Activity B.3) and will be used for product generation (Activity B.5).

To improve both marine observation and costal monitoring systems, this activity will involve two sub-activities:

i) Improve ONM capabilities to produce and disseminate marine forecasts and warning services for the purpose of navigation and safety at sea: Through the new automatic marine station that will be installed and made operational together with the telecommunication system, ONM will be able to provide real time marine observations and forecasts for decision making by fishermen and the authorities in charge of maritime transport and navigation ;

ii) Enhance coastal observation and monitoring in providing localized weather and climate information and advisory services for the major coastal cities and fishing locations of Mauritania, while complementing the existing coastal observation system for the West African region set up under the Regional Partnership for the Preservation of the Coastal zone and Marine in western Africa (PRCM) established by the UEMOA in the framework of the region's "Common Policy for Environment Improvement (PCAE)".

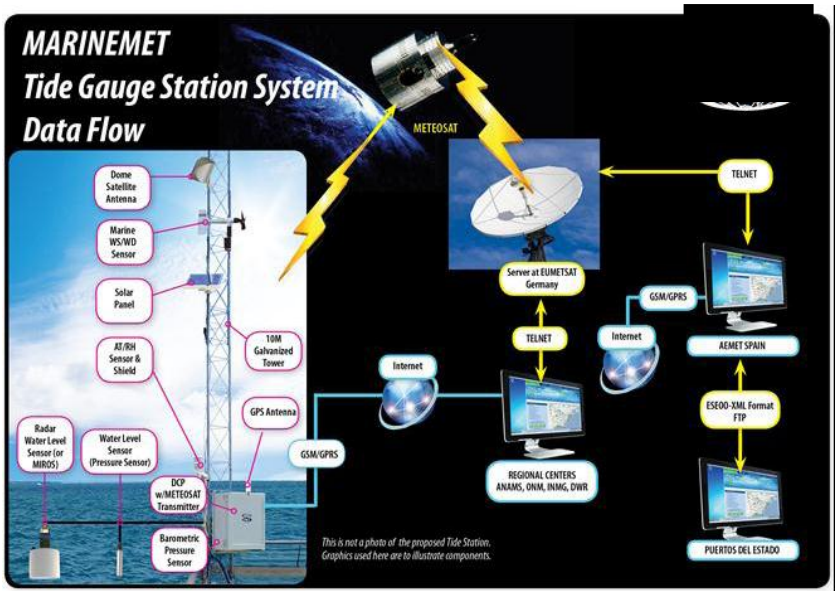


Figure 4: *The Marine Automatic Weather Station System Data Flow in the Marinemet project as proposed by the contracted supplier. This Project will use a similar setup of equipment for a new station and data adapted to the needs of end users and ONM.*

Activity B.5: Develop tools and capacity for weather and marine product generation

As capacity has been developed to use, run, develop and manage the observation data process and numerical prediction; tools must be available for the ONM forecasters to visualize, edit and generate products for end users. The products include, for example, graphic weather charts for web pages, text for radio/internet and weather graphics for newspapers, TV or mobile platforms. Tools will be implemented at ONM and staff trained on operation and development of user-specific tailored products. Specialised training will be delivered to ONM staff on the application and maintenance of the numerical coastal model, the data centre as well as the tools and user products.

Component C: Improving the quality and availability of coastal and maritime weather and early warning services

The work dedicated to improving the ability of national institutions to deliver services does not result in real development impacts without reaching the communities and individuals making choices based on their best knowledge about the current and future weather and climate. The dialogue between ONM, the Fishing Safety and Control Agency, the Federation of Artisan Fishermen and the fishermen themselves must be continuous and evolving to sustainably serve end user needs. The project will reach users through tested, robust and low-cost dissemination channels and will develop models for scaling up operations into nation-wide multi-user services with small additional funding.

Activity C.1: Development of dissemination tools to end users

As early warning information is only useful if it actually reaches the persons making decisions based on that information, a crucial activity in the project is to develop and define the tools and products that will make available the forecasts and warnings to the fishermen. The tools include a hotline for marine weather bulletins, regular marine weather radio transmission and marine section in the daily TV weather forecast, and via mobile phones as appropriate. The services will be set up based on recommendations by the WMO, the national safety agencies and end user groups, taking into account best practices in other developing and developed countries on the provision of marine weather services.

Activity C.2: Provision of safety tools to fishermen

A major security issue for small-scale fishermen operating on small boats with a crew of 5-7 persons up to 10-15 days out at sea and as far as 100km from the nearest coast is access to information on the state of the ocean and weather at sea. Currently there is no mobile telephone coverage to that distance, nor do the boats have any VHF/UHF radio equipment due to the lack of electricity on the boats and their small size. To this end, the project shall equip 1200 boats (roughly 60% of boats at sea every day) with a robust, hand-cranked, battery equipped and solar powered FM/AM radio small enough to carry on the boat but enough reserve energy to last out at sea. The radios will be purchased by the project and donated to the fishermen in cooperation with the Fishing Safety and Control Agency. As requested by fishermen in the recent consultation and depending on the expansion of mobile network on the coast, weather information would also be delivered to fishermen via mobile phones. This would be agreed upon in consultation with them and key national stakeholders. The distribution of small-scale equipment to fishermen will ensure that they regularly receive and feedback relevant, reliable and timely information. This provides local fishermen with an opportunity to master the technologies for practical application. By so doing, they will contribute to socioeconomic development of the country and ensure sustainability of the equipments.

Activity C.3: Coastal safety weather delivery pilot phase

Once the flow of information from observations to final weather services has been established, all concerned parties sensitized and operations documented, a pilot delivery phase will begin and the ONM will broadcast a marine weather bulletin over the national radio channel four times a day and update a marine weather bulletin hotline at the same frequency. The Fishing Safety and Control Agency will update a marine weather billboard at all four fishing ports every day before fishermen go out to sea. National TV stations will include a marine weather section in the

weather forecast. All user experiences will be documented and any issues in service provision recorded.

Activity C.4: Pilot phase evaluation and service improvements

After completion of the pilot phase, all recorded experiences and issues will be examined. A report on the pilot phase delivery will be completed by an evaluation consultant and key recommendations discussed with project stakeholders on the continuous improvement of the marine weather service to fishermen. The key recommendations will be implemented and appropriate changes to the service delivery made.

Activity C.5: Operational service delivery start-up

Following the experiences of the pilot phase, the marine weather bulletin service will become part of ONM regular activities and of annual budgeting. Following start of operational activities, scaling up and branching out to other sectors will be discussed with key stakeholders and required additional funding applied from relevant agencies. The operational model presented here for fishermen can be adapted to e.g. farmers without a significant additional cost as the main investment has been made in the implementation phase. For each new user group, services need to be designed and developed in close cooperation with national institutions, end users and communities and any deficiencies in ONM resources addressed accordingly.

B. Describe how the project provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and groups within communities, including gender considerations.

Direct project beneficiaries are 6000 small-scale fishermen from the coastal communities of Nouakchott, Nouadhibou, PK144 and Mamghar through the provision of solar powered, hand-cranked radio that will allow them to receive marine forecast every four hours as well as training in how to interpret and use the marine forecast in decision making while at sea.

As project main beneficiaries and vulnerable to climate impacts, the coastal communities of Mauritania making their livelihood through fishing activities, will be supported with the necessary information when they make the decision to go out at sea concerning their immediate safety, and in the case of an emergency to assist in their rescue. The communities cannot produce the necessary information themselves, so they will be supported by relevant national institutions, including the national meteorological service. ONM is mandated for this role.

Meteorological Bulletins or Forecast Warnings issued by ONM contain actionable information that protect fishing communities from high-impact weather events so long as they are produced regularly, are of a high quality and formulated in a language that local communities understand.

The users need to fully understand these services and how to interpret the output correctly. This requires a process of sensitizing communities to the exact meaning of the Bulletins to the potential actions to be taken. Communities will also be able to participate in the development of services (providing feedback etc.) and should know what to do when certain information is presented to them; i.e. if high waves or strong winds are forecasted, what measures should be taken to protect themselves and their families. Effective training can assist in being able to extract the maximum value from these services.

Fishermen communities will be subject to activities to sensitize their operations to the growing needs by marine users for early warning and forecast information on natural hazards via a series of consultative, result-oriented and non-discriminatory workshops. The project will promote organization of the fishing community into social groupings and use existing structures, such as the association of artisan fishermen, to discuss maritime safety and the threat by weather and climate events.

The ONM will improve the observation network in the above-mentioned coastal areas as well as provide training with the collaboration of the CCPNCC to help improve the quality of marine forecast provided. The activities will benefit all hydro-meteorological service consumers in coastal areas due to increased reliability and timeliness of forecasts. The benefits include reduced human vulnerability to natural hazards, reduced risk of damage to property and the potential for overall reduction of economic losses resulting from marine related natural disasters.

Estimating the number of indirect beneficiaries is inherently difficult given the public goods nature of the products and services that the project will provide. Given the nation-wide mandate of the ONM in charge of providing and delivering critical weather and climate services to a wide range of stakeholders in Mauritania, it is estimated that a large number of people, including communities living close to the sea, farmers, fishermen, schools/youth, hospitals/public health authorities, the disabled and the tourist population will also benefit from this project. It is therefore expected that based on the experience gained by producing and delivering customized meteorological services to fishermen out at sea and to coastal authorities and decision-makers, ONM will be able to expand such services to various other socioeconomic needs. Furthermore, critical facilities such as airports, seaports, hotels, schools and health care facilities will directly benefit from this project through the development of targeted warning messages and dissemination channels that can help them respond more effectively.

As highlighted in the Organization for Economic Cooperation and Development (OECD) (2008) study, the most extensive evidence base on the costs and benefits of adaptation is in the coastal sector. More importantly, cost effectiveness of such efforts in protecting human lives and properties emphasizes the need for immediate action toward a reliable coastal protection system. It also applies to Africa.

As economic activities in the coastal zone are widely varied, it is anticipated that women will benefit equally with men in the project in particular those in fishing communities that are amongst the poor and vulnerable.

Women and men are engaged in complementary activities in small-scale fisheries. The men typically go out to sea to catch the fish and women are mainly responsible for performing the skilled and time-consuming jobs that take place on-shore, such as net making and mending. More importantly, women are actively involved in the processing of fish catch (i.e. sun-drying, salting, smoking and preparing fish and fish-derived foods). They are also often the responsible for subsequently selling the fish products.

Ensuring the safety of the fishermen while out at sea enabling their return to shore with their catch also ensures the overall welfare of women and children.

Furthermore, the implementation of the proposed project will be carried out in alignment with the WMO Policy on Gender Mainstreaming (See Annex III) and with consideration for the following critical principles:

- Active involvement of women and men in designing services for users, to ensure the appropriate consideration of the specific needs of women and men, specifically in the disaster risk management, water and the agriculture sectors

- Attention to gender equality when selecting participants to trainings and workshops.

In addition, weather and climate information can yield multiple indirect benefits for the public and private sectors in the longer term by generating more reliable data that can support economic activities in sectors such as agriculture, energy and transportation. For example, if farmers were interested in insurance products to cover weather risks, insurance firms would need reliable weather information to provide relevant products and services. This project could help provide such information in the medium-term.

In the process of achieving enhanced disaster preparedness, community members and community-based organizations will be enabled to improve their communication and outreach activities, and engage with the coastal and early warning systems in important relay functions. This will contribute to broader economic and social development benefits for local communities in the area. At the policy level, the project will provide an enabling environment for the integration of climate change adaptation and risk management considerations into affected sectors, such as land use planning, agriculture, forestry and disaster management. The interface between institutions in the policy and local levels will be enhanced, ensuring evidence-based policy making based by community needs.

Like all the other countries in the Sahel region, Mauritania experienced severe environmental challenges, including the degradation of natural resources such as lands, forests, water resources. Over exploitation of natural resources, over fishing, extraction of sands from sea, pollutions due to oil production and mining, salinisation, lack of sanitation are among major environmental problems faced in Mauritania, resulting in land degradation, loss of biodiversity and reduction of fish stocks. Among the environmental problems faced by the fishery sector, the biological processes of the marine ecosystems being upset by climate change have a lot of consequences on the ecology of marine species and their habitats as well as fish stocks.

Overview of the environmental and social impacts and risks identified as being relevant to the project / programme

Checklist of environmental and social principles	**No further assessment required for compliance**	**Potential impacts and risks – further assessment and management required for compliance**
Compliance with the Law	X	There is no an issue related to compliance with the Law in Mauritania
Access and Equity	X	No issue related to access and equity

Marginalized and Vulnerable Groups	X	The proposed project will not have impacts on marginalised and vulnerable groups. It rather aims at addressing the vulnerabilities of a part of the population of Mauritania whose livelihoods depend on fisheries. These particularly include artisanal fishermen, and women who sell fishes at markets once captured. Also included are marginalized rural farmers from Mauritania and neighbouring countries who move to the coastal zones to survive.
Human Rights	X	The project has nothing to do with human rights
Gender Equity and Women's Empowerment	X	The project will improve the socioeconomic conditions of fishing communities in general, including women who are responsible for processing and selling fishes on the markets.
Core ~~Labour~~Labor Rights	X	There is no an issue related to core labour rights
Indigenous Peoples	X	There is no an issue on Indigenous Peoples
Involuntary Resettlement	X	The project does not involve involuntary resettlement.
Protection of Natural Habitats	X	The project will indirectly contribute to the protection of natural habitats through application of relevant weather and climate information

		useful for fishing and protection of natural habitats
Conservation of Biological Diversity	X	The proposed project will contribute to the conservation of fish stocks and other biological other resources at sea and on the coast
Climate Change		The proposed project addresses the adverse impacts of climate change on the marine and coastal areas, including sea level rise and other meteorological extreme events
Pollution Prevention and Resource Efficiency	X	The proposed project will not have impacts on air pollution and resource efficiency.
Public Health	X	The project will not have negative impacts on public health
Physical and Cultural Heritage	X	The proposed project will not impact on physical and cultural heritage
Lands and Soil Conservation	X	The project will not affect lands and soil conservation

This project is expected to have major positive environmental and social impacts and benefits, as it will not create negative impacts on the environment and will minimize risks. The measures in place for the management of environmental and social risks are in line with the Environmental and Social Policy of the Fund. The project will have major environmental benefits on the fishermen communities and on the country as a whole, including among others:

- The provision of timely, relevant and reliable meteorological information will create a momentum for an overall environmental protection in Mauritania, with the sensitization of local communities on the use of meteorological information, safety protection measures and communication helpful for protecting their lives;

- The improvement of fishing conditions is a means for environment protection. In sustaining local jobs and preventing fishermen from relying on other natural resources, the project will lead to the conservation of the environment, including biodiversity, lands and water;

- The organization of awareness raising and training sessions will serve as an opportunity to sensitize local communities on the global environmental issues such as the protection of the atmosphere and the earth. It will also provide incentives for local communities and national institutions to share views, experiences and prospects on the existing measures and strategies to protect the environment in Mauritania, including the better management of natural resources;

- The provision of safety equipments and communication systems using innovative energy source will be used as an opportunity to educate people on environment protection and call for further actions by the country and the communities.

Overall, the project will help address some of the environmental problems faced in the marine systems and coastal zones of Mauritania, by establishing a robust observing and monitoring networks for weather and climate conditions in both marine and coastal systems. The project will maximize the environmental benefits and greatly contribute to minimize risks on the natural and human environment while promoting wiser means of fishing and ensuring better conservation of natural resources. The project further provides local communities of fishermen with an opportunity to apply small-scale technologies to receive robust weather information on the state of sea that will enable them to improve their decision-making when going out to sea. This will result in improving socioeconomic conditions of local communities through enhancement of social protection and safety nets as well protection of environment and natural resources.

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

There has been little work done to date in Africa on cost-effectiveness of investing in modernization of National Meteorological and Hydrological Services (NMHS) and enhancement of service delivery to support economic sectors and community safety. Studies in Kenya[13] and recently in Tanzania[14] are focusing on the agricultural sector only. However, similar assessments recently carried out in the Pacific address a broad spectrum of economic benefits and costs of weather and climate services[15].

For most NMHS, this type of assessment poses a great challenge due to the absence of a generally accepted methodology for assessing the effectiveness of NHMS delivery or modernization programs; lack of basic econometric information needed to assess losses and benefits, and the shortage of expertise in NMHS and weather dependent sectors capable of making this assessment. The process of collection and evaluation of the information is time-consuming and requires substantial funding which is often unavailable.

As an example of the assessed benefits from improved hydro-meteorological services, the WMO, with UNISDR and World Bank, and jointly with a number of NMHSs in Europe and Asia (among them Albania, Armenia, Azerbaijan, Belarus, Croatia, Montenegro, Serbia) has been engaged in developing and piloting new approaches for estimating additional economic benefits from the modernization of National Meteorological and Hydrological

[13] Socio-Economic Benefits of Meteorological Information and Services in Kenya – The Agriculture Sector: Kenya Meteorological Department (KMD) in collaboration with the University of Nairobi, Ministry of Agriculture, Ministry of National Planning, Kenya Agricultural Research Institute (KARI), and IGAD Climate Prediction and Applications Centre (ICPAC)

[14] "Evaluation of Socioeconomic Benefits of Meteorological Information and Services in the Agricultural Sector in Tanzania (final report), October 2013.

[15] "Economic Dimensions of Improved Meteorological Services in the Pacific" – assessment made by SPC SOPAC in March 2014.

Services (NMHS), as well as for assessing the current economic benefits from existing NMHS[16]. These efforts were driven primarily by practical considerations in the process of modernization initiatives and fostering a better dialogue between HMS and national economic and fiscal authorities.

The estimates of economic losses from hazardous weather events varied between 0.32 per cent of GDP for Kazakhstan and 1.25 per cent of GDP for Armenia. For the target countries, the assessment of the prevented losses was undertaken for the first time and while the results should be viewed as tentative, nonetheless, they indicate a high economic value of the hydro-meteorological services and information. Estimates of relative economic efficiency of the existing NMHS, calculated by comparing the estimates of prevented losses and the cost of NMHS funding, show that the efficiency (or benefit-cost ratio) is rather high, ranging from 165 per cent for Azerbaijan to 568 per cent for Albania. ***Overall, for each dollar spent for supporting the existing NMHS, the countries usually gain two or more dollars through the avoided economic losses.***

The study indicated that annual incremental benefits of the proposed modernization (improving the status of NMHS and HMS delivery from 'poor' to 'adequate') would be quite substantial for all the countries concerned. The repayment period of investments in NMHS modernization will be within two to three years. The economic efficiency of the proposed modernization approach (assumed to be accrued evenly over the seven year period), ranges from 210 percent for Armenia to 880 percent for Serbia as assessed by the benchmarking method. Estimates based on sector-specific assessment show even more favourable efficiency ranging from 500 percent for Belarus and Albania to 1,440 percent for Azerbaijan.

It is anticipated that benefit-costs for Mauritania would likely be in these ranges and be strongly positive overall.

The following alternatives were considered during project appraisal.

N°	Alternative name	Brief description	Reasons for rejection
1	Improving fishermen' access to markets	Equipping the existing fishing infrastructure, through provision of fish conservation factory and desalination system to produce ice from sea water.	This rather addresses development as usual rather than adapting to climate change impacts High cost will be needed for sea water desalination This does not prevent fishermen from being exposed to risks out at sea
2	Diversifying fishermen'	Assisting artisanal fishermen to adopt new	Most of fishermen find difficult to adopt another activity than

[16] Strengthening the Hydro-meteorological Services in South Eastern Europe - South Eastern Europe Disaster Risk Mitigation and Adaptation Programme (UNISDR, WB, WMO, FMI 2009).

	socioeconomic livelihoods	socioeconomic activities, including agriculture, trade or working at port industry	fishing that they inherit from their parents. Many of them are already diversifying activities, either in agriculture or trade. But still they find fishing more beneficial and promising, despite the high level of risk.
3	Increasing the productivity of the artisanal fishery sector through upgrading the existing fleet	Provision of new canoes to fishermen in order to increase their productivity	Even without the project, a lot of new fleets are being already put at sea, resulting in over fishing In spite less costly, this option is very fragile and can easily be damaged by frequent floods. This will not contribute to reduce risks at sea.

Therefore, the provision of weather and climate information and Early Warning Services for Hydro-Meteorological events in Mauritania constitutes an efficient way of protecting lives and livelihoods of local communities of fishermen. Lack of significant improvements in these services will continue to result in significant loss of life and damage to property and economic infrastructure in coastal and floodplain areas.

Without AF intervention, the impacts of climate change such as extreme weather conditions will have devastating effects on a population already rendered vulnerable as a result of poverty and environmental degradation. Without such vital support, the Mauritanian government will be unable to provide early warning alerts, and development planning will go on disregarding the potential impacts and opportunities arising from climate change.

All the project's components target a specific level of activity in which adaptation is urgently needed. In addition, interventions done at each level are intended to inform and build upon those of other levels. This multiple stakeholder approach will be undertaken in order to demonstrate how several adaptation options can be implemented simultaneously, along a large continuum of stakeholders varying from communities to government bodies, in order to achieve a common goal.

This project promotes activities that are new and additional compared to those that are currently under implementation in the country and are designed to address baseline issues, more particularly disaster risk and poverty reduction.

The project also seeks to support the adaptation of small-scale fishermen to the potential negative and long-term impacts of climate change, including the occurrence of severe weather events. Efforts must be taken to allow fishermen to continue with their way of live, and preserve the only way they know how to make a living. The biggest risk for a fisherman

going out to sea is the uncertainty of weather conditions. To minimise this risk, the government, specifically ONM, has the responsibility and the mandate to provide fishermen with accurate weather predictions and early warning services. This service which is for public good can be made available through the Components of this project.

All the concrete adaptation measures of the project are actually for the benefit of the communities served, including those led by the national institutions. These activities will provide the necessary sustainable tools to better help vulnerable communities, not just to understand the weather bulletins (forecast warnings) but, through the complementary training components, learn how to use weather bulletins to make informed decisions that will help small-scale fishermen and coastal communities to positively affect their livelihoods thereby reducing poverty and saving their lives.

Given the situation of the small-scale fishery sector in Mauritania and how local fishermen rely on it for their livelihoods, it seems extremely difficult for these communities to envisage other alternatives. Therefore, the government should provide the proposed improved service, in cooperation with relevant bodies, to the vulnerable coastal communities to reduce their risk and protect their lives and livelihoods with the inadequate services they are currently providing. In the absence of safer alternatives, local fishermen of Mauritania will continue with the "business-as-usual" scenario as an alternative, i.e. fishing under the existing risks.

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

The proposed project is consistent with national strategies and development plans, and contributes to meeting the objectives set forth by government policies and programs. Furthermore, the project outcomes serve as a baseline in achieving sustainable growth, increasing resilience to climate change induced hazards and implementing effective climate change adaptation programs.

Second National Communication (2008): The project has direct links with priorities to eradicate poverty and support sustainable development programs undertaken in the country. In this context, the project will work for the preservation and safety of lives and property. All of these policy instruments pursue a common goal of ensuring sustainable development through the rational utilization of a limited natural resource endowment. A goal that is also shared and reflected in the policies of several sectors and services such as: agriculture, fisheries and forestry; health delivery services; and coastal zone management, a particularly vulnerable sector.

More specifically, the project meets the objective identified in the Second National Communication of Mauritania where it calls for the establishment of an observation and monitoring system off its coast. Activities include expanding the spatial coverage of meteorological observation network, installation of tide gauges and capacity building of stakeholders, among others. The expected result is the establishment of an early warning system for extreme weather events. Reference is made to the adaptation option 8 defined in the Second National Communication (2008), page 109.

Strategic Framework for the Fight against Poverty (PRSP III) 2011-2015: Mauritania's strategic framework to fight against poverty draws its legitimacy from the participatory process and is the reference of the government in formulating economic policy and development plans both in the medium and long term. The strategy's significance is that it enshrines poverty eradication as a national imperative and is the priority of all policies of the country.

Specifically, the project contributes to meeting ***risk reduction measures*** related to natural disasters "in particular global warming and its consequences… and their impact on the rural economy." The strategy also states "the government, with the support of its partners, will make efforts to draft and implement the new national strategy to reduce disaster related risks, ***which include an early warning system***."

Furthermore, the project is in line with priority actions under the *Development of growth-supporting infrastructure*, where it explicitly states that actions taken in the field of meteorology will include ***(i) outfitting weather stations; (ii) installing observation instruments across the country; and (iii) building the National Meteorological Office.*** It further states that attention will be given ***to the modernization and development of maritime and river infrastructure.***

Additionally, under *environmental governance*, the PRSP states that *combating global warming and sustainable environmental management are key pillars of governance at the heart of the strategic vision*. The government therefore prioritizes environmental governance by actively seeking to understand the environmental and climatic problems related to the various sectors. Main objectives identified include taking into account climate risk and sustainable resource management in the development of programs and the building of national capacity to monitor climate change.

Islamic Development Bank – Member Country Partnership Strategy (MCPS) for Mauritania (2011-2015). Preparation for the MCPS was based on extensive consultation with the government, development partners and civil society. The MCPS is based on the vision and priorities of the PRSP III (2011-2015). The MCPS strongly recommends, among other items, the establishment of an early warning system for natural hazards in order to successfully implement the activities under the Pillar of Rural Development and Food Security.

African Development Bank – Mauritania's Results-Based Country Strategy Paper 2011-2015: This Strategy considers environment and climate change as key priority areas: *"Environmental protection and action to address global warning are the main concerns of Mauritanian authorities*" that need to be tackled in the coming years. The proposed AF project will also build on the AfDB's Artisanal Fisheries Development Project Phase 2 (2000-2009) which contributed to the increase of the artisanal fisheries production through the creation of a development pole on the PK 144 region comprising a fish landing and processing area; basic social facilities; an administrative centre for community services.

World Food Programme – Mauritania has benefited in 2012 from The Board of Adaptation Fund a project funding "Enhancing Resilience of Communities to the Adverse Effects of Climate Change on Food Security in Mauritania" which will develop a synergy platform at the communities based level.

The National Strategy for Sustainable Development (NSSD): In its objectives, the NSDS places the highest priority needs of the poorest and most marginalized. The NSDS intends to build on a common vision of a long-term sustainable development in the country through a strategic approach that integrates social, economic and environmental considerations. These five priority pillars are: (i) the strengthening institutional and political capabilities as well as effective management of the environment and natural resources, (ii) the provision of sustainable access to basic services as a strategic means to fight against poverty, (iii) the support given to an integrated and participatory management for efficient use of natural resources, (iv) the management of local and global environment in accordance with commitments in international conventions; (v) the development and implementation of a funding mechanism for its National Action Plan for the Environment and Sustainable Development.

The Millennium Development Goals (MDGs): The project will contribute to the achievement of MDGs, in particular of MDG 1 ("eradicate extreme poverty and hunger") and 7 ("ensuring environmental sustainability"), by reducing vulnerability to climate change through a strengthened early warning and information sharing mechanism. This will facilitate informed decision-making by the government, intermediary institutions and the affected population, which in turn is expected to improve the lives and livelihoods of communities in the face of a changing climate.

The National Action Plan for Adaptation (NAPA): The project is highly consistent with Mauritania's national plans and reflects priority activities identified in NAPA (November 2004). National priorities, concerning climate change events and its multiple impacts, are comprehensively taken into account. The project's expected outcome, specifically the provision of an early warning and coastal observation system is in line with the NAPA's identified priority adaptation activities for the coastal region.

The National Fishery Sector Strategy: The proposed project is also consistent with the country's strategy for the fishery sector that puts the artisanal fishery sector among the government priorities and calls for a greater inclusion of the fishery sector into the national economy. The Fishery department has been reorganised in 2009 to take into account the government priority.

E. Describe how the project meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc.

Site selection and installation of observation systems will be done in accordance to established standards. As a Member of the World Meteorological Organization (WMO), Mauritania has adopted the WMO Standards for Observation Systems - according to WMO Guidelines for Automatic Weather Stations (AWS) and Hydrological Observing Stations as determined on a continuing basis by the WMO Commission on Basic Systems (CBS) and Commission on Instruments and Methods of Observation (CIMO Guide) for standard meteorological and hydrological parameters.

The project will also take into account relevant national standards and follow technical standards as identified by the National Implementing Entity. Where necessary, the project will propose potential solutions including the identification of sources of technical assistance and knowledge transfer.

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

There is no duplication with other sources of funding. However, the project will be leveraging on existing projects and will build on the lessons learned from these projects and will apply best practices extracted from them. Furthermore, the proposed project provides an end-to-end solution by focusing on a specific solution to a target community with a view to improving lives and livelihoods within the context of climate change, rather than providing a broad regional solution for climate change adaptation.

The project also builds on the lessons learnt from the FAO-funded project for the capacity development of local fishermen through increasing fishery production. The lessons learnt from this project (projet d'Aménagement de la Pêche Artisane en Mauritanie - APAM), are fully integrated in the design of the proposed project.

The project builds upon the results of the regional Marinemet project and takes the project outcomes into operational use. The Marinemet project aimed to provide numerical model products from the centres of the Spanish national meteorological service AEMet to West African meteorological services and build national institutions and capacity to incorporate model outputs into operational services, thus providing sustainability to project outcomes and services. The outcomes of this project will further ~~operationalise~~operationalize the multi-hazard early warning system of the government of Mauritania and will be funded through the national budget as guaranteed by the ONM host ministry during project development stage. The project will make use of the existing numerical modelling experience developed in the Marinemet project and implement the technologies and results to serve the people of Mauritania. The proposed project will strengthen the results achieved by the recently completed Marinemet project by providing additional resources to ONM to collect marine additional data and make widely available meteorological marine information produced through Marinemet.

Relevant Projects / Initiatives:

A WMO survey revealed that most West African countries lack the expertise in marine meteorology to implement an effective warning system and disaster mitigation strategy. However, an important part of the population in these countries lives in coastal cities and areas, focusing their economic activities there. It is therefore essential to enhance the capacity of the National Meteorological and Hydrological Services (NMHSs) of West African coastal countries and provide them with the relevant tools that will allow them to contribute to the sustainable development of their respective countries and enhance the delivery of products and services to the various socioeconomic sectors.

WMO has initiated the ***Marinemet*** pilot project under the Spanish-funded West Africa Cooperation Programme on Marine Meteorology (Monitoring and Services) for the Northwest African Basin. The project was launched in July 2009 for four years and concerns for its pilot phase four countries: Mauritania, Senegal, Cape Verde and The Gambia. It aims at providing specific tools and technology transfer to West African National Meteorological Services to improve marine meteorology predictions and enhance maritime safety and fisheries management. Tools and technology developed from the West Africa Cooperation Program will be transferred to ONM through the proposed project.

Specific goals of the Marinemet project include:

- Reduction of loss of lives and property;
- Reduction of damage to infrastructure;

- Provision of data for safe Navigation;
- Disaster prevention and preparedness;
- Improved fishing activities;
- Increased scientific and technical capacity;
- Improved knowledge of marine meteorology and ecology in West Africa and their relation with global change.

The Marinemet project ended Q4 of 2012. The Marinemet project has accomplished the following:

- Real-time Chlorophyll-a concentration (mg/m^3) updated once a day available online for Mauritanian coast
- Real-time Sea Surface Temperature (SST) updated once a day available online for Mauritanian coast
- Real-time Thermal Ocean current fronts updated once a day available online for Mauritanian coast
- Numerical prediction of wave significant height 0-72h with a 3h time step updated once a day available online for Mauritanian coast
- Numerical prediction of wind speed and direction at 10m from surface 0-72h with a 3h time step updated once a day available online for Mauritanian coast
- Coastal wave forecast maps, graphs and tables for Nouakchott Port 0-72h with a 1h time step updated once a day available online
- Purchase of AWSs and a schedule of installation missions before July 2012
- Knowledge transfer through a series of workshops and roving seminars

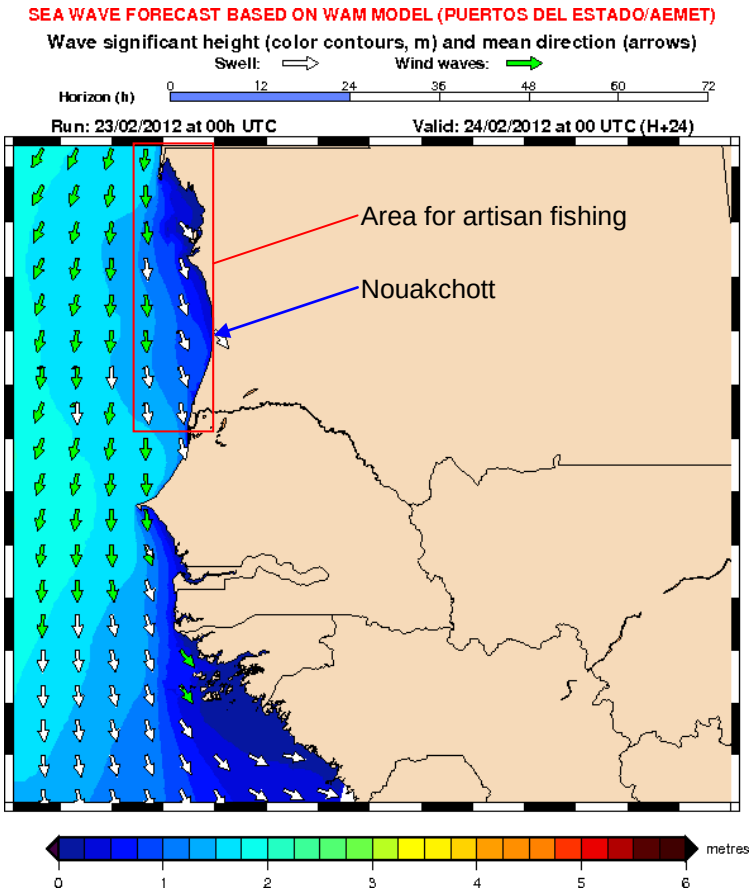


Figure 5: *Marinemet Deep Sea Wave Forecast for West Africa with the area of artisan fishing activities off the coast of Mauritania*

The proposed AF project will continue where the Marinemet project has concluded and ensure that the knowledge acquired will be further developed in Mauritania for marine information users. The current agreement will allow for the transfer and downscaling of developed numerical models for independent operation in Mauritania from its current location in Las Palmas, Canary Islands. This proposed project would provide a very valuable transfer of developed products to ONM. The proposed AF project will also refine the forecast area from the current one (see Figure 4) to a higher resolution for the coastal fishing area of Mauritania (see boxed area in Figure 4). This project can greatly benefit from the work already completed through the Marinemet project also managed by the WMO. Further training and operational tasks will need to be carried out by the proposed AF project to enable ONM to fine-tune the technology and tools acquired through the Marinemet project to suit the specific needs of Mauritania, in particular its coast. As Marinemet is a pilot project that is just completed, there will need for additional resources to make the systems in place operational and scale it up to the whole Mauritania's coast.

In 2008, the West African Economic and Monetary Union (UEMOA) established the "***Common Policy for Environment Improvement*** (PCAE)" in the sub-region. Under this framework, a diagnostic study of the littoral in terms of coastal erosion, environmental characteristics, occupation, activities, coastal management and initiatives has been undertaken for the West African littoral, from Mauritania to Benin. At the conclusion of this study coordinated by International Union for Conservation of Nature (IUCN), UEMOA has

identified the creation of the Regional Observatory of the West African littoral as a priority to implement their PCAE. The Observatory is partially funded by UEMOA, coordinated by the Ecological Monitoring Centre (CSE) based in Dakar and will benefit 12 West African countries, including Mauritania. The observatory will initiate the foundation for a unified Information system of the littoral to measure qualitative and quantitative changes affecting coastal and marine ecosystems in the sub -region and to develop synergies with the other large-scale programs on West Africa coastal region. Furthermore, it aims to value strategies against coastal erosion at the level of the various countries in West Africa: national strategies against coastal erosion, initiatives in regard to protection, rule of coastal occupation, among others.

The proposed AF project complements PCAE as it sets up the foundation that enables Mauritania to provide more accurate scientific information to the Observatory regarding its coast. Coastal erosion is greatly aggravated by storm surges, high wind and rising sea levels, all expected results of climate change and all phenomena that fall under the responsibility of ONM to forecast. By improving the institutional capacity at ONM to assess and forecast these parameters, the PCAE project will gain a better understanding and be able to achieve better results through the improvements of observation data and services. The project will benefit from the improved level of understanding on the issues threatening the Mauritanian coast and will be able to better target their services and investments to support efforts to combat coastal erosion.

The ***West African Regional Marine and Coastal Conservation Programme (PRCM)*** is a joint initiative of four international organizations: the International Union for Conservation of Nature (IUCN), World Wildlife Fund (WWF), Wetlands International (WI) and the International Foundation of ”Banc d’Arguin” (FIBA) in partnership with Sub-Regional Fisheries Commission (SRFC) during the second phase of the project (2008-2011) (http://www.prcmarine.org). The project covers 7 countries: Mauritania, Senegal, Gambia, Guinea Bissau, Guinea, Sierra Leone and Cape Verde sharing 3700 km of coast, for a population of more than 35 million inhabitants. The coordination unit is based at Nouakchott. The PRCM is a coalition of more than 90 institutions operating on the coastal zone. These include public administrations, research centres, professional organizations, associations and non-governmental organizations. The PRCM aims to coordinate the efforts of institutions and individuals in favour of preserving the West African coast. It aims, in particular, to strengthen the cooperation in the sub-region by offering development partners optimal working conditions as well as regional and inter-sectoral coordination mechanisms that allow diverse actors to influence policies.

The Marinemet project will install two new automatic weather stations within the Banc d’Arguin National Park, thereby providing the first observations on the climate and weather in the national park. This project will further enhance that investment by improving data management, archiving and processing at ONM to deliver products to the users of the National Park and tailor specific products to users such as the PRCM project. The information provided through this project will affect decision-making and will be considered in conservation efforts. This project will benefit from improved integration of weather and climate services in the international conservation initiative to improve visibility and thereby sustainability of the investments into ONM.

The ***Adaptation to Climate and Coastal Change in West Africa*** (ACCC) was funded by the GEF Strategic Priority on Adaptation at the level of 14 millions USD. The project has been implemented by UNDP/GEF in Mauritania, Senegal, The Gambia, Guinea Bissau and

Cape Verde (http://www.accc-africa.org/). A regional coordination unit, based at UNESCO Regional Office for Education in Dakar, executed the program in collaboration with national teams comprised of target institutions and UNDP national offices. The project focuses on implementing measures to strengthen the resilience of vulnerable communities to the impacts of climate change on coastal resources. The project stressed to meteorological services the need to monitor marine meteorological parameters to confirm if coastal erosion is exacerbated by stronger swell and westerly wind.

There is a great potential for this project and ACCC to complement their activities. Whereas the ACCC is directed towards community-based adaptation measures in a very tangible manner and on the other hand in the strategic planning of the national governments, this project addresses the need for reliable information about the future threats in weather and climate. This project enhances products and services and their dissemination and the ACCC builds physical adaptation measures to combat foreseen climate change consequences (i.e. floodwalls, river routings, tree planting, etc.). Both sides of the adaptation spectrum are needed, there cannot be true adaptation without accurate information about the past, current and future temperatures and without taking the measures to protect against these threats. The project will work together with the best practices information centre to be set up through the ACCC and create the information link for the Mauritanian component. The project will benefit from the grassroots experiences and contacts on the ground to disseminate products and collect end user feedback on weather and climate services.

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

The project will use interactions with pilot communities to show how properly packaged and well-targeted weather and climate information early warning messages could help communities living in vulnerable areas to prepare for and adapt to climate change induced severe weather events. These lessons learned will then be synthesized for replication and scale-up with the ultimate goal of improving Early Warning System performance nationwide.

Building on the participative processes initiated and drawing on the technical experiences in the establishment of an early warning system as related to climate change, the proposed project will introduce targeted activities to enable the analysis, replication and up-scaling of the project approach more widely as part of the routine services of the ONM and the CCPNCC. This will entail a campaign to present the findings from the project to different public entities, notably the Project Board as defined in the Implementation Arrangements, development partners, as well as other district entities with similar degrees of vulnerability.

This systematic documentation of experience in interaction with communities will assist the replication of early warning systems. Other maritime countries in the region will also benefit from the knowledge generated through the project. The proposed initiative will contribute to a mass of experience and enhance systematic regional cooperation on this critical adaptation issue.

Additionally, surveys will be undertaken in target communities to assess perceptions on the benefits and successes of the project and to further refine the services provided by ONM.

A communication strategy for the project will be developed, which will highlight dissemination of project experiences to communities, educational institutions, NGOs, civil society organizations, relevant private sector institutions, and the public at larger. This strategy will entail the use of print and electronic media and other communication channels (roundtables, participative community workshops, posters, brochures, booklets, pamphlets, news articles, radio and TV broadcasts and web-based items).

The project will also generate evidence on the cost effectiveness of building institutional adaptive capacity in order to develop a case for policy and budgetary adjustment to ensure greater sustainability. The project is designed to complement other ongoing and planned projects and programs without duplicating them and to build on the existing systems in place, as previously mentioned on “Relevant Project and Initiatives.”

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations.

This project was developed through the initiative of the Office National de la Météorologie (ONM), with strong commitment and support from the Ministry of Equipment and Transport and the Ministry of Environment. ONM requested the WMO to help prepare a comprehensive proposal to access the Adaptation Fund Board so as to increase the resilience of Mauritania’s coastal communities to the negative impacts of climate change induced weather hazards through the provision of an early warning system that targets small-scale farmers and the coastal community, as the first batch of end-users. This proposal has been extensively shared with the CCPNCC at the Ministry of Environment, focal point of the Adaptation Fund and UNFCCC.

The needs of coastal communities and fishermen have been discussed during the two field visits undertaken during the preparation stages. The Ministers of Environment in one hand, and Equipment and Transport, Interior and Decentralization, as well as the delegates of the Ministry of Fisheries have been briefed on the proposed project and its components, on the other hand. Furthermore, the need for the project and the various activities it entails has been discussed with the Port Authorities of Nouakchott, Civil Protection Authorities, Federation of Artisan Fishermen, DSPCM and the UNDP. All identified stakeholders confirmed that the project is fully aligned with government priorities on climate change adaptation and the cost-effectiveness of such an approach. They further reiterated the necessity of such a project and assured the WMO of the necessary support during its implementation stage as well as follow-up and post-project support to ensure its sustainability.

Consultations and joint site visits were carried out with ONM, the national executing agency for the project. In addition, the second and last recent community consultation held in September 2012 confirmed the great interest of fishermen to be involved in the project through their two main Federations. This consultation was expressly undertaken to further seek community views and expectations from the proposed project, and help address the comments provided by the Adaptation Fund Board on the initial project proposal. Further consultations will be undertaken after the approval of the proposal to fine-tune the proposed approach and make adjustments as needed.

ONM has existing relationship with fishermen at the fishing Ports. When budget allows, ONM provides ad-hoc training to fishermen on the potential risks of weather and climate

when out to sea. As the National Executing Agency, ONM performed extensive consultations with small-scale fishermen in target areas (Ports of Nouakchott, Nouadhibou, PK144 and Mamghar). These consultations highlighted the weakness and minimal usefulness of the existing weather information and bulletins provided by ONM. Fishermen also advised ONM what services or information they would like to receive, how the information should be provided to suit their purposes. Following these discussions, ONM approached WMO to formulate the project proposal.

Consultations with Ministers were carried out to ensure proposed activities are in-line with the priorities of relevant ministries. They were also undertaken to secure governmental support at all stages of the project as well as after the project is completed thereby safeguarding the investment.

The recent extensive community consultation and field visit held from 15-20 September 2012 allowed the fishermen and their federations to express their views and expectations from the proposed project. The following issues came out of this consultation:

- Sustaining the artisanal fishery sector and enhancing community livelihoods, jobs and food security ;
- Enhancing the communication with fishermen through improvement of the telecommunication system by mobile phones or radio system and involvement of their representatives in the project coordination;
- Improving the quality and reliability of meteorological information delivered by the national meteorological service in order to adequately prevent life losses and rescue fishermen at risk at sea;
- Prioritizing the safety of fishermen at sea through appropriate means of protection and rescue facilities, and awareness raising.
- Improving fishermen' access to market through fish conservation system and desalination of sea water in order to better supply fishermen with ice. Though important for the development of fishery sector, this suggestion does not fall under the scope of the project that especially aims at providing weather related services to reduce sea risks of local fishermen.

Most of these issues are taken into account in the revision of the proposed project. Details on the consultation with fishermen and field visit are in Annexes.

Furthermore, consultations with the communities will continue throughout the life of the project, and beyond to establish a mechanism that would allow a feedback process between the service providers and the communities they serve, ensuring high level of service oriented to meet existing and changing needs.

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

Activities were developed and prioritized using a cost-benefit analysis supportive of the additionnality aspect, in order to maximize adaptive capacity benefits in relation to the required investments. Material costs have been kept as low as possible considering that an efficient climate-monitoring infrastructure can help leverage significant benefits in multiple sectors, i.e. infrastructure from the proposed project will complement the existing observation network as well as new equipment ONM will receive from another

complementary project. Indeed, the equipment, tools and training materials that will be developed in the framework of this project can also be further adapted for other vulnerable sectors such as infrastructure, agriculture and health. This offers an opportunity for the project to be up-scaled, thanks to this inter-sectoral dimension. Furthermore, options were selected that will enable the Mauritanian Government to cover its maintenance after project completion and ensure that existing meteorological employees will have the necessary expertise to perform the maintenance of the entire network. The Early Warning System will be tested in the coastal region and will apply lessons learned for its up-scaling and extension, allowing for further cost-effectiveness considerations during the national-level planning.

The project applies contemporary capacity development approaches. At broad levels, such approaches are articulated in international agreements on aid effectiveness, including the Paris Declaration and the Accra Agenda for Action. Most recently, the Cairo Communiqué on Capacity Development (March 2011) affirmed donor agencies and partner governments' recognition, "based on strong evidence, that institutional and human resource capacity development (CD) is essential to achieve sustainable development results". The consensus document prepared by participants, marked "a shift to an approach which is demand driven and results focused, owned by the country, and which builds on existing capacity". The Communiqué noted, inter alia, that:

- Capacity development is not an afterthought... but is at the heart of all significant development efforts. State and non-state actors (parliaments, media, and civil society) and coalitions of local agents should be supported to drive change.
- Capacity development is strategic for the achievement of development results and accountable institutions. It must deliver short, intermediate and long term results, recognizing tangible and less tangible (soft) dimensions.
- Domestic leadership of capacity development is essential. Without effective control of the process, a country will be unable to align resources for CD to its key priorities, and sustainable improvements in capacity will be almost impossible to achieve.
- Existing capacities should be the backbone of any capacity development initiative and must not be undermined.
- The way in which information is communicated is often as important as the content itself, so considerable effort is needed to ensure that culturally appropriate communication/training methods are selected in all cases.

For local level activities, options proposed in this project were selected based on best available knowledge regarding proven or promising adaptation technologies. Concerning policy and awareness enabling activities proposed in this project, the options and activities were selected for their potential to yield high short- and mid-term results in terms of awareness (through training) as well as for developing new partnerships (through inter-sectoral platforms) and policies. They allow for capacity building along a continuum of policy making (from vulnerability analysis to policy making at the highest level).

Component A: Implementation of sensitization measures to reduce the vulnerability of small-scale fishermen.

Baseline: There are few organized efforts to raise awareness of climate change in Mauritania, particularly oriented to coastal areas. Climate change awareness programs have not yet been integrated in district (wilaya) and municipality levels, and the country has not yet been capable of identifying the marine and fishery sub-sectors as climate smart. Despite the GEF enabling activities undertaken since 1997, human and financial resources

have not been sufficient for awareness and outreach activities to reach the intermediary and end-user levels. Furthermore, the country continues to lack the human capacity it needs to adapt to climate change as a society, including scientists, policy-makers and the media.

With AF intervention: This component of the project aims at attaining a critical mass in the general coastal community's awareness of climate change related issues. This will act as a vital support to public policy development and help build a long-term national capacity for addressing climate change. The project will collaborate with and support local and national media outlets to maximize our outreach efforts. It is expected that as a result of this component, Mauritania will be capable of providing local training to fishermen and their federations, to government staff, notably representatives of the Ministry of Fisheries, Interior, Environment as well as Equipment and Transport. End-users will gain an understanding of climate change issues and how they can use information received from ONM and other intermediaries to make informed decisions concerning their lives and livelihoods. The intervention will allow the training of dedicated local focal points that will have the responsibility of facilitating exchange and feedback with the fishermen, in responding to the needs expressed by the fishermen themselves. Through this intervention, early warning services will be delivered to fishermen through an adequate communication system, as suggested by the communities. Moreover, the project will contribute to the training of trainers from relevant bodies including the Fishermen Federations on early warning services and safety measures.

Without AF Intervention: There would be little or no means of experimenting and demonstrating locally acceptable, no-regrets options for coastal development in Mauritania. Coastal communities would remain vulnerable because of climate change, unpredictable weather conditions and unsustainable fishing practices at sea. In addition, without a viable means of demonstrating the benefits of adaptation at the local level, the Mauritanian government would not be able to make realistic policy development decisions. Finally, without testing of the potential opportunities arising from climate change, the country will not be able to invest in them as they arise.

Component B: Production and provision of meteorological data and information for real-time coastal observation

Baseline: The observation network (as shown on Figure 2) has several constraints that hinder efficiency in the collection and dissemination of accurate forecasts and warnings. Major constraints include non-serviceable and un-calibrated equipment as well as poor communication facilities for the transmission of observed data. Most of the equipment installed was donated and are now outdated technology that either poses problems of compatibility or cannot be easily repaired due to lack of spare parts. Other constraints include low human capacity and poor archiving structures. As a result, the country currently runs an operational basic weather forecasting service, issuing short-term forecasts of routine weather and extreme events based mostly on data provided by international centres. This methodology results in coarse levels of spatial and temporal resolution, resulting in uncertainties under extreme weather and climate conditions and not tailored to sector-specific needs.

This system is insufficient for effective understanding of local climate and early warning systems and does not meet the requirements to enable the ONM to fulfil its mandate. The Government of Mauritania through its national budget has allocated some resources to the

Ministry of Equipment and Transport to improve the situation of the stations including for the training of the staff, however this does not meet the required capacity to have an operational Early Warning System in place.

With AF intervention: This project component will strengthen the technical capacity of ONM and its observation network to predict weather and climate events and risk factors, and improve efficiency of climate information dissemination/delivery to end-users. International peers will perform the training of ONM personnel in Mauritania in collaboration with the CCPNCC. This has important implications on the country's institutional capacity and decreases the risk of human capital flight. A robust monitoring system is also crucial to improving weather and climate models and helps in the development of more accurate prediction, necessary for informed decision making at national, regional and global levels. The project will also help undertake specialised training of ONM staff on the application and maintenance of the numerical coastal model and the modern data centre that need to be installed.

The project will also increase the capacity of relevant governmental institutions, and the Fishermen Federations to respond effectively and in a timely manner to warnings and to put in place effective preventive measures.

Without AF intervention: Even without the current climate change induced extreme events, the existing hydro-meteorological services and networks are not enough to meet the needs of the country. With the additional burden of longer-term climate change projections and forecasts to warn the population on extreme events and prepare them for response reactions will not be available exacerbating the already precarious conditions of coastal communities.

The current annual government budgetary allocation to ONM is not sufficient to improve the current observation network and human resource capacity limitations. The costs associated with climate change induced damage in Mauritania without effective adaptation are likely to increase over time.

Component C: Improving the quality and availability of coastal and maritime weather and early warning services

Baseline: The current Early Warning System does not, and cannot provide credible weather and climate data and information required to sensitize, stimulate and encourage community stakeholders to take appropriate adaptation measures and policy makers to respond through appropriate policies. Decision-makers and disaster management planners at all levels do not have sufficient knowledge to assess the impending consequences of severe weather and climate events on their constituencies.

The rudimentary nature of the current forecasts and early warning service of the coast of Mauritania is ineffective. Specifically for fishermen who go out to sea for days at a time without taking into consideration the weather bulletins currently provided by ONM, because they are aware of how inaccurate the forecasts are and are not willing to lose the opportunity to make a living. The Marine Rescue Centre does not have a system in place to communicate with fishermen at sea in the event of a severe weather event resulting in risking their lives and meagre property.

With AF Intervention: Efforts under this component are designed to operationalize and strengthen the existing meteorological services to provide the information local users and sectoral ministries require for proactive climate change adaptation and better natural resources management. Through the strengthening of the existing coastal climate-monitoring network and its extension to local communities, the project will ensure that climate risk management will become an essential part of local development efforts. In anticipation of the likely impacts, the project will contribute towards reducing anticipated costs by strengthening the early warning system and enabling it to function in a sustainable manner. Furthermore, the results of this project could be used to advocate for increased attention and future budgetary allocations.

Without AF Intervention: The Mauritanian government and coastal communities will continually be faced with an uncertainty with regards to climate change. The government will continue to implement ad hoc emergency response measures to climate related disasters rather than take a proactive approach to climate risk management. Similarly, local populations, faced with unpredictable and extreme climate conditions, may no longer be able to live adequately. This preventable situation will inevitably increase the precariousness of already marginalized Mauritanian population.

In the absence of this project, climate change will continue to affect the livelihoods of the communities that rely on climate sensitive systems. Decision makers will continue to be deprived of required information and early warning messages, and hence the mainstreaming and integration of climate change into national development planning and policies will continue to be neglected and when considered the costs associated with such considerations will not be taken into account and secured for their implementation.

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

For Mauritania and other developing regions, sustainable Early Warning Systems are among the ***most cost-efficient and effective concrete interventions to support climate change adaptation***. Establishing tailored weather and climate services, specifically, sustainable Early Warning Services will reduce communities' vulnerability and increase their adaptive capacity to climate variability and change. The proposed project is therefore a "no regrets" intervention, which will reduce mortality rates, as well as minimize the economic and social impacts of today's climate variability and enhance the resilience and adaptive capacity of communities to climate change induced weather hazards.

The proposed activity is not a "one-off" intervention that will initiate a new set of interventions or small-scale pilots that will only last for the life of the project. Rather, this project will leave a lasting legacy as it builds on systems already in place, albeit currently deficient ones. Deficiencies will be addressed through the:

a. Reinforcement of the coastal observation network ensuring availability of raw data;
b. Development of the necessary tools to develop forecasts and warnings tailored to community needs;
c. Improvement of the telecommunications system to disseminate the information to end-users; and
d. Provision of an improved system of targeted delivery of information and feedback mechanisms

These improvements will ensure that information is not only accurate but also in a format that is understandable by intermediary and end-users, more specifically fishermen and their representatives. The project will therefore build on foundations already in place for concrete and durable outcomes.

The ONM struggles to gain increased funding due to the lack of visibility and recognition of benefits to be gained from improved services. By piloting an end-to-end system with community engagement, this project will showcase the potential and concrete uses of improved weather, climate and hydrology services, thus improving both relevance and visibility of ONM while providing an improved financial standing in the national budget. During stakeholder consultations in country, the parent ministry of ONM pledged to sustain any improvements made by the project as this was seen as a very valuable initial investment that would benefit the entire country. The ONM is also following a new strategy since it was established as an independent institution from the civil aviation authority in 2004, and while it has gained significant new funding it has not yet developed to a level to provide crucial services.

The project has been designed to provide critical services. The sustainability is thus based on demonstrating benefits and uses that are in operation in many other countries across the world. The project will demonstrate the socio-economic benefits from improved services through concrete actions and impacts in the communities and will highlight the cost effectiveness of a strong national institution. The national platforms created in the project are designed to require little additional funding to be sustained and made operational by the government.

The radios (or mobile phones) distributed in the project are as durable as possible, but will not withstand the conditions at sea for years. It is expected that the unit price for radios will not exceed $30 and that significantly cheaper options will be available. The project will stock enough radios to last an additional year of service, but beyond that the purchase of radios will be at the responsibility of the fishermen and communities. The project will work with the associations and government institutions and importing companies to ensure that radios will be available at an affordable rate. The radio as a security equipment should be carried in the boats regardless of the coastal safety service and is an aim expressed by Delegation à la Surveillance des Pêches et au Contrôle de Mer (DSPCM) that fully supports the approach taken in the project. The government may also wish to make radios a mandatory safety requirement as in some countries for fishing vessels. Depending on the improvement of mobile network on the coast of Mauritania as being envisaged by the service provider Mauritel and the Government, the project will also distribute mobile phones to fishermen at a cheaper price. This is requested by fishermen during the last consultation, and will be subject to further discussion once the network is in place.

Strengthening the availability and quality of forecasts and warnings available to communities on hazardous weather (and related events) and climate change information will support the development and implementation of appropriate strategies for vulnerable communities, coastal areas and ecosystems and urban areas. Shorter-range warnings will enable disaster responders and individuals to minimize the loss of lives due to extreme weather and related events.

Sustainability lies in improving national observation systems and continuing to assess the means by which scientific knowledge and advanced technological products (e.g., early warning systems, seasonal forecasts). Continuous education and training could be used to enhance the resilience of vulnerable communities in developing regions such as Mauritania in order to improve their capacity to cope with current and future climate variability and change and related hazards.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project implementation.

The project will be coordinated by the WMO and implemented by l'Office National de la Météorologie (ONM) with the following project management structure:

Project Board (PB): will be established and shall be comprised of the Ministry of Transport and Equipment, Ministry of Environment, the Ministry of Fisheries, the Ministry of Interior and Decentralization, the Representatives of the Fishermen Federations (South and North). The Board will be co-chaired by the Ministry of Transport and Equipment, and the Ministry of Environment. The Board will be provided bi-annual work plans, budget and implementation updates. Their involvement, albeit minimal, is critical in ensuring political support and high-level awareness as to the tangible added-value of ONM as well as for the long-term support of the measures that will be put in place throughout this project. More importantly, the Board plays a critical role in the commitment to building their awareness and capacity to take action for longer-term sustainable solutions in face of climate change.

Project Steering Committee (PSC): will be established under the coordination of La Cellule de Coordination du Programme National Changement Climatique (CCNPCC) and l`Office National de Météorologie (ONM) as secretariat. The committee shall be comprised of the

Chargé de Mission of the Ministry of Environment and UNFCCC Focal Point, the Director-General of the National Office of Meteorology as well as representatives from the Fédération Nord et Sud des Pêches Artisanaux (Federation of Artisanal Fishermen), the Délégation à la Surveillance des Pêches et au Contrôle de Mer (DSPCM), National Civil Protection Agency, the Department of Artisanal Fisheries and a representative from WMO. The primary role of PSC is to provide overall oversight, review the overall progress, financial aspects, address any major challenges and risks confronted, and provide guidance pertaining to identification of synergies and leveraging opportunities with relevant regional strategies, and other key development projects and initiatives in the region.

Project Implementation Unit (PIU): will be established at ONM and chaired by the Director-General of ONM. The Project Implementing Unit will be composed of the Managers of the relevant sections at ONM. Primary responsibility of the PIU is to facilitate the development of the project work plan, oversee its implementation, monitor progress and address coordination and cooperation issues at national and regional levels. The PIU will meet monthly and communicate regularly via email and/or teleconference to share information on implementation progress of all partners, to take joint decisions on implementation of activities, and corrective actions as needed.

National Project Coordinator: will be responsible for overall coordination across different segments of the work plan, development of bi-annual Interim Progress Reports of Activities and annual Activities and Financial Progress Reports for the Project Steering Committee, the Project Implementation Unit and the Project Board.

WMO Secretariat: The Project will be supervised by the WMO Project Coordination Unit (PCU) and supported by designated staff from the WMO departments that have significantly contributed to the design and will be supporting the implementation of the project. The WMO departments include:

- Climate and Water Department (CLW)
- Development and Regional Activities Department (DRA)
- Observation and Information Systems Department (OBS)
- Weather and Disaster Risk Reduction Department (WDS)
- Resource Management Department (REM)

The WMO Secretariat, as the Multilateral Implementing Entity, will facilitate, i) execution of the different segments and activities of the project as per project work plan, ii) financial control and reporting over project funds, iii) procurement and contracting as requested by the NIE and iv) addressing technical challenges and risks of the project with their respective network of experts and centres in the region. A project website will be set up and maintained to make available all the reports, materials and concrete developments associated with all components of the project.

B. Describe the measures for financial and project risk management.

With consideration for the anticipated risks of the proposed project and building on the WMO Risk Management Policy, a Preliminary Project Risk Profile is presented in Table 6 below. This table links the overarching risks and the measures taken to minimize them to ensure the successful achievement of the project outcomes. Risk management is an ongoing process that will be continually assessed. The Project Coordinator, Implementation Team and Steering Committee are responsible to monitor and address all risks associated

with the project throughout its lifecycle and keep a risk log. The risk log will be a "living" document and will be updated and revised annually following each Implementation Team meetings. Overall, the anticipated risks can be categorized into four areas, (1) Operational Risks, (2) Financial Risks, (3) Development Risks and (4) Reputation Risks. Among these risks, three areas may be highlighted, including:

(i) *National commitments and institutional risks:* There is a risk that stakeholder commitment may be weaker than initially claimed, especially, government ministries' commitment to cooperation. For example, there is a risk that a Ministry could unilaterally decide to limit or stop sharing information or participating. However, steps have been taken to reduce this risk. Along with ongoing efforts leading up to the design of the project and to develop supportive constituencies, a Memorandum of Understanding will be established with the various government Ministries to support relevant areas of cooperation. WMO will also sign a specific Implementation Agreement with the ONM to deepen the technical and operational cooperation. WMO guidelines and manuals will be practiced throughout this project. This framework has proven, over the past decades, to yield strong buy-in at the technical and operational levels, which has in turn increased cooperation among stakeholders.

(ii) *Performance and project management risks*: among contributing risks are potentially unclear roles and responsibilities of different stakeholders at different levels, weak coordination of project among multi-stakeholders, weak monitoring and reporting on results, limited understanding of Financing Agency policies and procedures and weak communications. WMO has extensive experience in successfully planning, implementing, monitoring and evaluating these types of projects and has performed similar projects in the last 5 years in Africa and other sub-regions. Through a project management framework that engages all the relevant stakeholders at the right level of decision-making and operations, WMO will address various project management and policy issues. Furthermore, extensive consultations with the various Ministries and the directors and experts of WMO Technical Programmes have been conducted to develop the project logic model and its results to ensure a realistic approach. Throughout the project, WMO will work very closely with the Project Steering Committee and the Implementation Team to ensure project activities, progress, successes and lessons learned are communicated regularly to the various project management structures and stakeholders.

(iii) *Risk of recurrent and concurrent disasters and subsequent post-disaster setbacks:* Should a significant disaster or chain of disasters happen with impacts on the beneficiary countries causing one or more activities of this project to be delayed, the project is designed in such a way that activities' timeline can be reviewed and adjusted accordingly.

Table 6: *Project Risk Profiles*

Criteria	Low (1)	Medium (3)	High (5)
Probability of Occurrence	Unlikely	Likely	Very Likely
Potential impact on ability to meet objectives / deliver	Standard procedures should be sufficient to	Likely threat to outcomes: requires action and ongoing	Definite threat to outcomes – requires mitigation actions and

outcomes of the project	address risk	review	ongoing management

Table 7: *Project Risk Analysis*

	Risk Definition	Risk Level	Risk Response
R 1 – National commitment and institutional risks	- Commitment may be weaker than initially claimed, especially, government commitment and cross-ministerial cooperation - Involvement of different Ministries leading to different priorities and outcomes than those identified	Low (2)	- As part of the ongoing due diligence leading up to the design of the project, efforts have been made to develop supportive constituencies within the Government of Mauritania and WMO - Relevant Ministries consulted will be members of Project Board - A Memorandum of Understanding will be established with the government to support relevant areas of cooperation - As part of the preliminary assessments for the project, we have established an understanding of capacities and challenges of the ONM and as part of the design of the project, these issues are already addressed
R 2 - Performance and project management	- Unclear roles and responsibilities of different stakeholders - Weak coordination of project among stakeholders - Weak monitoring and reporting on results - Limited understanding of Financing Agency policies and procedures - Weak communications strategy	Low (2)	- WMO ensures a field support that will be critical for the project implementation - WMO is highly competent in all areas of this project and has performed similar projects in various countries, and has extensive experience in successfully planning, implementing, monitoring and evaluating these types of projects - Project Management Framework involves: (1) Steering Committee, (2) Implementation Team, (3) Project Coordinator, (4) WMO Secretariat to address various project management and policy issues - Extensive consultations with ONM and experts of WMO Technical Programmes have been conducted to develop the project logic model and its results to ensure a realistic approach - The Project management framework will ensure that project activities, progress, successes and lessons learned are communicated regularly to the various project management structures and stakeholders
R 3 – Financial Risks	- Inadequacy of funding - Improper financial control and oversight - Weaknesses in	Low (2)	- A trust fund will be established that will be managed by the WMO Project Coordination Unit with support of the Project Coordinator, under the

	Risk Definition	Risk Level	Risk Response
	procurement and selection - Currency exchange		supervision of WMO Office Resource Mobilisation and Development Partnerships and Resources Management Department - Management of funds will be the responsibility of the WMO following transparent and reliable financing procedures. Only specific and very limited funding for local costs may be channelled through national agencies for local costs of workshops and meetings - WMO has established a strong cooperation with its network of national agencies and regional partners, and is fully aware of the local financial regulations, practices and procedures of its partners - WMO follows UN Procedures for Financial Management, Audit and Reporting
R 4 Socio-political and policy risks	- Differences in socio-political conditions, political conflicts and economic atmosphere - National and Sectoral policies and planning on DRR and Climate Change Adaptation - Gender policy biases that limit women's participation	Medium (3)	- Continued political stability at national levels is a pre-condition for effective implementation of the project and sustainability of its results. Risk of political instability in Mauritania is considered low to moderate by UNDSS. The risk to the project from political instability will be mitigated by a continued, appropriate high-level engagement to ensure benefits of project are understood - WMO and ONM have gender inclusive policy that applies to all programmes and activities, equal opportunities principles and requirements have been considered in designing the project and will be thoroughly considered during its implementation
R 5 - Disasters caused by natural hazards	- Risk of recurrent and concurrent disasters and subsequent post-disaster setbacks	High (4)	- Should a significant disaster or chain of disasters happen with impacts on Mauritania that causes one or more activities of this project to be delayed, the project is designed in a way that activities' timeline can be reviewed and adjusted accordingly
R 6 – MIE Risks	- International standing (multilateral and donors, bilateral partner institutions, and recipients and beneficiaries)	Low (2)	- WMO is globally recognized as the United Nations leader in weather, water and climate services - WMO has strong governance mechanisms supported by 191 Member States and six regional associations

	Risk Definition	Risk Level	Risk Response
	- Inability to produce results.		WMO has ensured a strong engagement of national and regional partners in this project from very early stage of the process

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan. Include break-down of how Implementing Entity's fees will be utilized in the supervision of the monitoring and evaluation function.

Monitoring and evaluation are key elements for the success of this operation. As a cross-cutting issue, Monitoring and Evaluation (M&E) cuts across the 3 project components, aiming to assess how adaptation to climate change has been effective and mainstreamed within the system as a whole. Presentation of budget and activities are now simplified. M&E will be implemented as described on Table 8. The M&E aspect will be placed under the leadership of the CCPNCC.

Transparency, inclusiveness and measures that prevent corruption are the foundation of the Project's reporting activities. Reporting will be based on concrete outcomes and will highlight lessons learned, best practices and key recommendations for future activities. The Project will produce annual progress reports, a mid-project report and a completion report. Reporting shall follow the components and activities described in this document and will be subjected to the approval of the Project Board and Steering Committee. The Project Board will meet to approve implementation plans, work plans reports and will address any challenges on the project implementation. The Steering Committee shall provide a link between the PIU and Project Board and meet twice a year in connection to other project activities where applicable.

The Initial Stakeholder Engagement Activity (Activity A.1) referred to as Project Kick-off Workshop is proposed to allow all stakeholders to refine and agree upon project modalities, including project implementation. The Project Kick-off Workshop will be conducted within four months of project start up with the full project team, relevant government counterparts, national stakeholders, partners and WMO. This Workshop is crucial to building ownership for project results and to plan the first year annual work plan. A fundamental objective of the Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders, and assist the project team to understand and take ownership of the project's goals and objectives. Another key objective of the Inception Workshop is to introduce the project team, which will support the project during its implementation. An Inception Workshop Report will be prepared and shared with participants to formalize various agreements decided during the meeting.

Each installation and completion of activity will be followed by a report on the implementation and associated Site Acceptance Tests. All international experts' missions will have a mission report detailing progress achieved, next steps and key issues for project implementation. As per the country policy and if equivalent profile exists locally, preference will go to national expertise; as international experts may cost a lot to the project.

The Project will have an independent evaluation at three points of implementation, mid-term evaluation, pilot phase evaluation and final evaluation. The project will undergo an

independent Mid-Term Evaluation (MTE) at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes particularly the appropriateness of the adaptive provision, and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions and present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for the final half of the project's term. The execution of this M&E function will be facilitated by the CCPNCC as to address the assessment of its adaptation outcomes.

Table 8: *Monitoring & Evaluation Budget*

M&E Activity	Responsible Parties	Budget (USD)	Timeframe
Inception workshop and report	• Project Coordinator • CCPNCC • WMO	$13 815	Within two months of Project start
Mid-term Evaluation	• Project Coordinator, • CCPNCC • Project Execution Team, • WMO C/PCU, • WMO C/FIN, • External consultants	$15 000	At mid-point of project implementation
Periodic progress reports	• Project coordinator • Project execution team • External consultants	Included in Execution Cost	Quarterly
Pilot project Evaluation and Report	• Project coordinator • Project execution team • External consultants	$17 095	Within two years from project start
Final Evaluation	• Project Coordinator, • CCPNCC • Project Execution Team, • WMO C/PCU, • WMO C/FIN, • External consultants	$15 884	Three months ahead of ending of project implementation
Project Final Report	• Project coordinator • Project Execution team	Included in Execution Cost	Three months ahead of project closing
Total indicative cost		**$61 794**	

D. Include a results framework for the project proposal, including milestones, targets and indicators and sex-disaggregate targets and indicators, as appropriate. The project or programme results framework should align with the goal and impact of the

Adaptation Fund and should include at least one of the core outcome indicators from the AF's results framework that are applicable[17].

Table 9: *Logical framework matrix*

		Measurable indicators	Sources of verification	Risks and Assumptions
Overall Objective	Strengthen ability of small-scale fishermen, and Mauritania's coastal community at large, to undertake concrete actions to adapt to climate change induced hazards	30% reduction in the loss of life and property resulting from extreme weather-related events	Statistics by the National Fishing Safety Administration Statistics from the Civil Protection Department on accidents at sea Statistics from Artisanal Fishery Department on number of artisanal fishermen dead, their locations and the causes of the death	
Project Purpose	Improve Early Warning Service Delivery to Small-Scale Fishermen in Mauritania	- A new weather bulletin designed for fishermen disseminated via radio four times a day - Hand-cranked and solar-panel equipped radios in use by 6000 fishermen out at sea to receive weather bulletins - A hotline for weather information for fishermen available 24/7 and updated four times per day - Billboards at fishing ports with the latest weather bulletin maintained and updated by the fishing safety authority	- Statistics of delivered weather bulletins via radio - User feedback surveys - Call Statistics to the hotline number	- Radios are not stolen/destroyed/sold on by the fishermen - Relevant authorities are engaged in the entire process - A business model is developed with networks for the hotline operation

[17] Please refer to the *Project level results framework and baseline guidance* for the Adaptation Fund's results framework and guidance on developing a results framework and establishing a baseline [add link here].

Project Components		Expected Outcomes	Measurable indicators	Sources of verification	Risks and Assumptions
A.	Implementation of Sensitization Measures to Reduce the vulnerability of small scale fishermen	Reduced exposure and increased adaptive capacity of small scale fishermen to climate change induced weather hazards	1200 boat captains trained on weather, climate and ocean, and associated dangers	Training reports, feedback forms	Insufficient engagement from fishermen, communication barriers
		Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Early warning services are delivered to fishermen through an adequate communication system Training of trainers on early warning services and safety measures are delivered	Design for the forecast and early warning services delivered by CCPNCC and ONM, in collaboration with fishermen and local intermediary organizations	Design documents, weather bulletins, hotline and billboard services	Telecommunication challenges, lack of understanding and/or disregard of forecast and warnings
			Mauritanian civil protection and fishing agencies trained on weather, climate and ocean and associated risks	Training reports, feedback forms	Agencies able to send right personnel for training events Engagement of national agencies

B.	Production and provision of meteorological data and information for real-time coastal observation	Improved capacity of ONM to deliver marine weather and early warning services to help reduce risks associated with climate related losses and contribute to socio-economic development and poverty alleviation.	One new marine meteorological automatic weather stations installed and operational at the coast of Mauritania	Site acceptance test reports	Agreement on GPRS data transmission with operators reached or optional solution developed
		Improved provision of localized weather and climate information and advisory services for the major coastal cities and fishing locations of Mauritania, while complementing the existing coastal observing system for the West African region	Data management solution for real-time observation data developed and operational at ONM	Time series of weather information available at the ONM databases	
			Numerical coastal ocean state model adopted and operational at ONM for early warning alerts on the coastal zone through observing and monitoring the weather and climate conditions on the coastline	Model product archives	
			Specialised training of ONM staff on the application and maintenance of the numerical coastal model and the modern data centre	Training reports by staff members	Availability from hosting institutions
			Modern data centre established at the ONM for		ONM headquarters established at a permanent location with a dedicated

			weather, climate and ocean data		server room
C.	Improving the quality and availability of coastal and maritime weather and early warning services	Strengthened capacity of national centres and networks to respond rapidly to climate change induced extreme weather events	Weather hotline for fishermen receives at least 50 calls per day	Statistics from operators	Hotline pricing by operators at sustainable level
			1200 boat captains trained on the operation of hand-cranked and solar-powered radios and the interpretation of weather bulletins	Training reports	
			At least 6000 fishermen reached daily through the radio weather bulletins	User feedback surveys	

Table 10: *Results Framework Alignment Table*

Project Objective	**Project Objective Indicator**	**Fund Outcome(s)**	**Fund Outcome Indicator(s)**
Strengthen ability of small-scale fishermen, and Mauritania's coastal community at large, to undertake concrete actions to adapt to climate change induced hazards	30% reduction in the loss of life and property resulting from extreme weather-related events	Outcome 1: Reduced exposure at national level to climate related hazards and threats Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic & environmental losses Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level Outcome 4: Increased adaptive capacity within relevant development and natural resource sectors Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas Improved provision of localized weather and climate information and advisory services for the major coastal cities and fishing locations of Mauritania, while complementing the existing coastal observing system for the West African region	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis 2.1 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks 2.2 Number of people with reduced risk to extreme weather events 3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses 4.1. Development sectors' services responsive to evolving needs from changing and variable climate
Project Outcomes	**Project Outcome Indicators**	**Fund Output**	**Fund Output Indicator**
Reduced exposure and increased adaptive capacity of small scale fishermen to climate change induced weather hazards	1200 boat captains trained on weather, climate and ocean, and associated dangers	Output 1: Risk and vulnerability assessments conducted and updated at a national level Output 3: Targeted population groups participating in adaptation and risk reduction	2.1.1. No. of staff trained to respond to and mitigate impacts of climate related events 2.1.2. Capacity increase of staff from targeted institutions trained to respond to and mitigate
Strengthened awareness and	Design for the forecast and early		

ownership of adaptation and climate risk reduction processes at local level	warning services delivered by CCPNCC and ONM, in collaboration with fishermen and local intermediary organizations Mauritanian civil protection and fishing agencies trained on weather, climate and ocean and associated risks	awareness activities	impacts of climate related events
Improved capacity of ONM to deliver marine weather and early warning services to help reduce risks associated with climate related losses and contribute to socio-economic development and poverty alleviation.	One new marine meteorological automatic weather stations installed and operational at the coast of Mauritania Data management solution for real-time observation data developed and operational at ONM Numerical coastal ocean state model adopted and operational at ONM 2 permanent ONM staff trained on marine meteorology and numerical ocean state modelling Modern data centre established at the ONM for weather, climate and ocean data	Output 1: Risk and vulnerability assessments conducted and updated at a national level Output 2.1: Strengthened capacity of national and regional centres and networks to rapidly respond to extreme weather events	1.3 Early warning systems developed 2.1 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks
Strengthened capacity of national centres and networks to respond rapidly to climate induced extreme weather events	Weather hotline for fishermen receives at least 50 calls per day 1200 boat captains trained on the operation of hand-cranked and solar-powered radios and the interpretation of weather bulletins At least 6000 fishermen reached daily through the radio weather	Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	2.2.1. Percentage of population covered by adequate risk reduction systems 3.1.1 No. and type of risk reduction actions or strategies introduced at local level 3.1.2 No. of news outlets in the local press and media that have covered the topic 6.1.1.No. and type of

	bulletins		adaptation assets (physical as well as in terms of knowledge) created in support of individual or community livelihood strategies

E. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

The budget includes a strong investment component to develop national observation infrastructure, data processing and management facilities and telecommunications. These investments enable the provision of high-resolution, real-time products and services for the coastal communities along with investments into human resources at ONM.

Table 11: *Project Budget by Activity*

COMPONENTS / ACTIVITIES	COST			
	Year 1	Year 2	Year 3	Total
Component A: Implementation of sensitization measures to reduce the vulnerability of small-scale fishermen				
Activity A.1: Project Kick-off Workshop				
Technical Assistance	$10,000.00	$0.00	$0.00	$10,000.00
Workshop venue and hospitality	$23,870.00	$0.00	$0.00	$23,870.00
Sub-Total Activity A.1	$33,870.00	$0.00	$0.00	$33,870.00
Activity A.2: Marine risk sensitization for local communities, government actors and officials				
Consultancy for the development of training programmes and materials	$25,000.00	$0.00	$0.00	$25,000.00
Workshop series for federations of fishermen on marine risk sensitization	$25,000.00	$50,000.00	$25,000.00	$100,000.00
Sensitization campaigns for government officals on marine risk sensitization	$31,670.00	$24,038.00	$25,000.00	$80,708.00
Sub-Total Activity A.2	$81,670.00	$74,038.00	$50,000.00	$205,708.00
Activity A.3: Community-focused Climate Change Adaptation and Disaster Risk Sensitization for Fishermen communities				
Design of forecasts and early warning services, in collaboration with fishermen and local intermediary organizations	$100,000.00	$50,000.00	$50,000.00	$200,000.00
Series of consultative community-based actions on weather, climate and ocean associated risks and mitigation actions	$20,000.00	$50,000.00	$50,000.00	$120,000.00
Technical Assistance	$9,460.00	$29,476.00	$0.00	$38,936.00
Sub-Total Activity A.3	$129,460.00	$129,476.00	$100,000.00	$358,936.00

Activity A.4: Training of trainers on the dissemination of early warning services and awareness on safety measures				
Consultancy for the development of training of trainers' programmes and materials	$45,000.00	$0.00	$0.00	$45,000.00
Delivery of Trainings of trainers on early warning services and safety measures	$67,298.00	$0.00	$0.00	$67,298.00
Sub-Total A.4	$112,298.00		$0.00	$112,298.00
Sub-~~Toal~~Total Component A	***$357,298.00***	***$203,514.00***	***$150,000.00***	***$710,812.00***
Component B: Production and provision of meteorological data and information for real-time coastal observation				
Activity B.1: Marine meteorology and coastal ocean numerical ~~modelling~~modeling training program				
Acquisition and installation of one (1) marine meteorological automatic weather station at the coast of Mauritania	$20,000.00	$0.00	$0.00	$20,000.00
Telecommunications and Maintenance	$8,000.00	$0.00	$0.00	$8,000.00
Sub-Total Activity B.1	$28,000.00	$0.00	$0.00	$28,000.00
Activity B.2: Implementation of a numerical coastal ocean state model at ONM				
Installation of Data management solution for real-time coastal observation data	$100,000.00	$0.00	$0.00	$100,000.00
Software	$2,000.00	$0.00	$0.00	$2,000.00
Maintenance costs	$39,840.00	$0.00	$0.00	$39,840.00
Sub-~~Toatl~~Total Activity B.2	$141,840.00	$0.00	$0.00	$141,840.00
Activity B.3: Operationalization of a data processing centre at ONM				
Establishment of modern data center at ONM	$50,000.00	$0.00	$0.00	$50,000.00
Hardware	$30,000.00	$0.00	$0.00	$30,000.00

Trainings	$20,000.00	$0.00	$0.00	$20,000.00
Sub-Total Activity B.3	$100,000.00	$0.00	$0.00	$100,000.00
Activity B.4: Improve marine meteorological and oceanographic observations on the coast of Mauritania				
Installation of numerical coastal ocean state model	$60,000.00	$0.00	$0.00	$60,000.00
Software and technical assistance	$10,000.00	$40,000.00	$0.00	$50,000.00
Maintenance costs	$30,000.00	$60,000.00	$0.00	$90,000.00
Sub-Total Activity B.4	$100,000.00	$100,000.00	$0.00	$200,000.00
Activity B.5: Develop tools and capacity for weather and marine product generation				
Development of tools and product generation	$0.00	$100,000.00	$0.00	$100,000.00
Specialized training of ONM Staff	$0.00	$240,320.00	$0.00	$240,320.00
Sub-Total Activity B.5	$0.00	$340,320.00	$0.00	$340,320.00
Sub-Total Component B	***$369,840.00***	***$440,320.00***	***$0.00***	***$810,160.00***
Component C: Improving the quality and availability of coastal and maritime weather and early warning services				
Activity C.1: Development of dissemination tools to end users				
Establishment of weather hotline for fishermen to receive at least 50 calls per day	$0.00	$30,000.00	$0.00	$30,000.00
Telecommunications and maintenance	$0.00	$15,472.00	$15,472.00	$30,944.00
Sub-Total Activity C.1	$0.00	$45,472.00	$15,472.00	$60,944.00

Activity C.2: Provision of safety tools to fishermen				
~~Equipement~~Equipment and distribution of hand-cranked and solar-powered radios to fishermen	$0.00	$80,000.00	$0.00	$80,000.00
Maintenance costs	$0.00	$13,844.00	$0.00	$13,844.00
Sub-Total Activity C.2	$0.00	$93,844.00	$0.00	$93,844.00
Activity C.3: Coastal safety weather delivery pilot phase				
Training of 1200 boat captains on the use of radios and interpretation of weather bulletins	$30,000.00	$10,000.00	$0.00	$40,000.00
Technical Assistance	$10,000.00	$3,168.00	$0.00	$13,168.00
Sub-Total Activity C.3	$40,000.00	$13,168.00	$0.00	$53,168.00
Activity C.4: Pilot phase evaluation and service improvements				
Pilot project evaluation	$0.00	$0.00	$34,190.00	$34,190.00
Sub-Total ~~Acitivity~~Activity C.4	$0.00	$0.00	$34,190.00	$34,190.00
Activity C.5: Operational service delivery start-up				
Delivery of daily weather bulletins to at 6000 fishermen through radio	$0.00	$0.00	$30,000.00	$30,000.00
Technical Assistance	$0.00	$0.00	$10,216.00	$10,216.00
Sub-Total Activity C.5	$0.00	$0.00	$40,216.00	$40,216.00
Sub-Total 3 Component C	***$40,000.00***	***$152,484.00***	***$89,878.00***	***$282,362.00***
Sub-Total Project Components	**$767,138.00**	**$796,318.00**	**$239,878.00**	**$1,803,334.00**
Project/Programme Execution cost	$62,500.00	$62,500.00	$62,500.00	$187,500.00
Total Project/Programme Cost	$829,638.00	$858,818.00	$302,378.00	$1,990,834.00
Project Cycle Management Fee charged by the Implementing Entity				$169,216.00
Amount of Financing Requested				**$2,160,050.00**

Table 12: Project Execution Costs

	Year 1	Year 2	Year 3	Total (USD)
Project Coordinator	$20 000,00	$20 000,00	$20 000,00	$60 000,00
Telecommunications Expert	$12 500,00	$12 500,00	$12 500,00	$37 500,00
Weather and Climate Expert	$12 500,00	$12 500,00	$12 500,00	$37 500,00
Maintenance Vehicle Fuel and Repair	$6 000,00	$6 000,00	$6 000,00	$18 000,00
ICT Costs and Fees	$6 000,00	$6 250,00	$6 000,00	$18 250,00
Consumables and admin costs	$5 500,00	$5 500,00	$5 500,00	$16 500,00
Total	$62 500,00	$62 750,00	$62 500,00	**$187 750,00**

The MIE management fee will be utilized by WMO to cover its indirect costs in the provision of general management and specialized technical support. The table below provides an indicative breakdown of the estimated costs in providing these services. If the national executing entity requests additional Implementation Support Services (ISS), an additional fee will apply in accordance with WMO fee policy regarding ISS and would be charged directly to the project budget.

Table 13: *MIE Management Fee Costs*

Project Cycle Management Costs (WMO)		
Category	**Indicative Services Provided by WMO**	**Estimated Service Cost (USD)**
Identification, Sourcing and Screening of Ideas	• Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). • Verify soundness and potential eligibility of identified idea and match with AF expectations. • Provide technical support and backstopping to write technically and operationally viable project. • Source technical expertise in line with the scope of the project needs.	***11,064***
Development & Preparation	• Negotiate and obtain clearances by AF. • Respond to information requests	***15,366***
Project Support and Implementation Cost	• Provide technical monitoring, progress monitoring and evaluation, and validation and quality assurance throughout • Support from WMO corporate systems • Allocate and monitor Annual Spending Limits based on agreed work plans. • Receipt, allocation and reporting to the AFB of financial resources. • Oversight and monitoring of AF funds. • Provide technical and operational information as needed to facilitate implementation of project activities • Return unspent funds to AF	***142,786***
Total		***169,216***

F. Include a disbursement schedule with time-bound milestones.

Table 14: *Project Timeline. X = Milestone and Reporting deadline*

	Year 1												Year 2												Year 3											
	1	2	3	4	5	6	7	8	9	#	#	#	1	2	3	4	5	6	7	8	9	#	#	#	1	2	3	3	4	5	6	7	8	9	#	#	#
Activity A.1: Project Kick-off Workshop																																				
Activity A.2: Marine risk sensitization for government actors and officials																																				
Activity A.3: Disaster Risk Sensitization for Fishermen																																				
Activity A.4: Training of trainers (community leaders and government officials) on early warning services and safety measures																																				
Activity B.1: Marine meteorology and coastal ocean modeling training program																																				
Activity B.2: Implementation of a numerical coastal ocean state and weather model at ONM																																				
Activity B.3: Operationalization of a data processing centre at ONM																																				
Activity B.4: Improve marine meteorological and oceanographic observations on the coast of Mauritania																																				
Activity B.5.: Develop tools and capacity for weather and marine product generation																																				

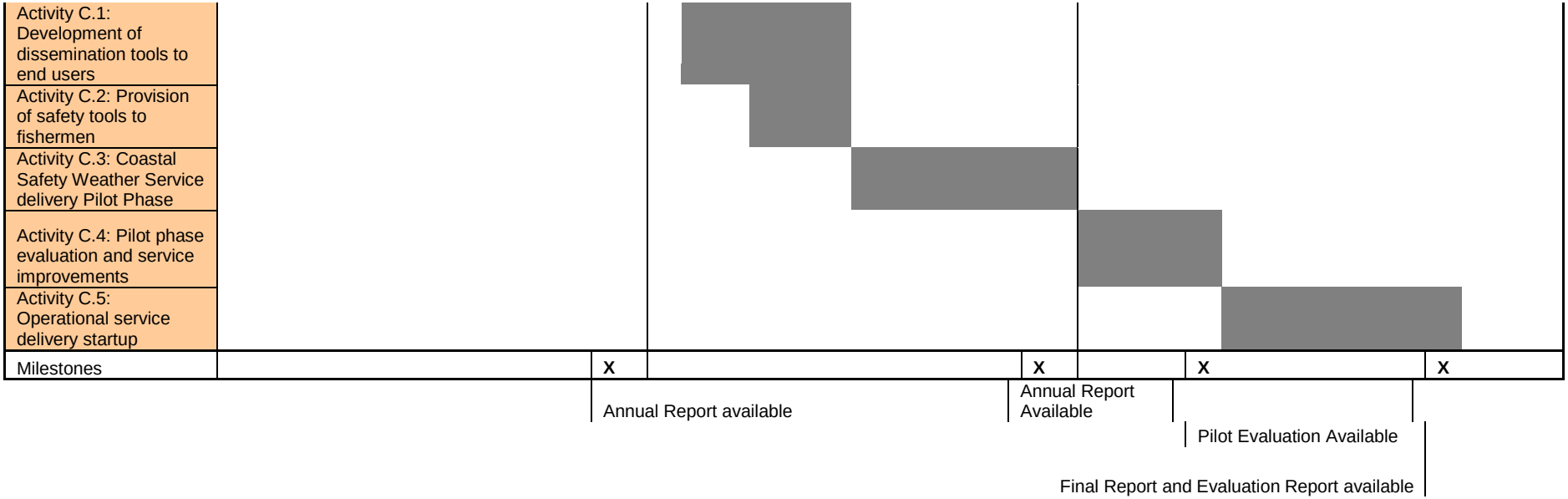


Table 15: *Disbursement Schedule*

	Upon Agreement signature	One Year after Project Start	Year 2	Total
Scheduled Date	30 July 2014	30 July 2015	30 July 2016	
Project Funds	$829,638.00	$858,818.00	$302,378.00	$1,990,834.00
Project Execution Costs	$62,500.00	$62,750.00	$62,500.00	$187,750.00
Implementing Entity Fee	$56,405.33	$56,405.33	$56,405.33	$169,215.99
			Grand Total	**$2,160,050.00**

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

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT[18] *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Ministère Délègue Auprès du Premier Ministre Chargé de l'Environnement *Sidi Mohamed Ould El Wavi* *Chargé de Mission,* *Autorité Nationale Désignée pour le Fonds d'Adaptation Board, et Point Focal National de la CCNUCC.* *Rue 21 185 Ksar Nouakchott, Mauritanie* *Tel : +222 4600 8383* *Fax : +222 524 3138*	Date*: (Month, day, year)*

6. Each Party shall designate and communicate to the Secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

B. IMPLEMENTING ENTITY CERTIFICATION *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

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 of Mauritania and subject to the approval by the Adaptation Fund Board, understands that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
Mary Power *Director, Office for Resource Mobilisation and Development Partnerships* *World Meteorological Organization* Implementing Entity Coordinator	
Date: *(Month, Day, Year)*	Tel. and email:+41 22 730 8003
Project Contact Person: Al-Hamndou Dorsouma	
Tel. And Email: +41 22 730 8309; adorsouma@wmo.int	

Annex I: Key issues arising from Community Consultation

Following up on the AFB comments on the initial submission, an extensive community consultation was conducted with fishermen federations of Mauritania (South and North) from 15-20 September in Mauritania. The consultation with the Fishermen Federation South in PK 144 ~~disctrict~~district (165 km in South of Nouakchott) and with Fishermen Federation North in Nouadhibou (465 km in the North) enabled the Expert mission to better understand the needs, priorities and expectations of artisanal fishermen of Maurtinia on the project proposal. These include:

- Emphasizing the importance of the artisanal fishery sector: In Mauritania, the artisanal fishery sector is being considered by the government as a key priority; due to its role in providing revenues to the country and the families, creating jobs, ensuring food security especially over drought periods. Although, this sector is very vulnerable to a number of challenges, including among others: lack of basic infrastructure for the development of the sector, limited knowledge of the availability of the fishery resources, over-fishing, meteorological disturbances, competition with the industrial fishing industry. While the fishery department is well aware of risks that occur at sea, they continue to provide licenses to new fishermen. The artisanal fishery department needs to be adequately involved in the project, as this will allow for further buy-in and sustainability of this project.

- Enhancing communication with fishermen: Fishermen federations suggest that the installation of a telecommunication system through mobile phones or radio system would improve the delivery of early warning services and link fishermen with their federations while at sea. This would also help mitigate the risks in providing rescue measures in case of emergency. Fishermen feel that mobile phones would be a practical and efficient option, based on cost-benefit judgment. This would be in complement to the GPS owned by most of them. It is expected that in providing such support the project can build on the ongoing initiative by the telephone service provider, Mauritel to extend its mobile network by the coast. Fishermen federations also advised that for early warnings to be followed by fishermen, there is a need for them to be directly involved so as the information is well translated into local languages and that they can stop fishermen from going at sea when the risk is very high.

- Improving the quality and reliability of meteorological information: Fishermen federations suggest improving the quality and reliability of the weather forecasts and warnings by the National Meteorological Service, as fishermen do not automatically follow these instructions. It is worth noting that the situation of the meteorological services in Mauritania is dramatic, as ONM is facing a lot of challenges in terms of basic needs such as staffing, training, equipment, weather stations and data centre, budget. For instance, the only one meteorological station in Nouadhibou - the most important city of Mauritania - is not working because of maintenance problems.

- Prioritizing the safety of fishermen at sea: Safety at sea is seen as one of the key priorities, given the number and frequency of risks they face at sea, including both risks of accident and weather-related risks. They consider this project as an opportunity to equip them and provide them with appropriate means of protection, including life vests, rescue facilities, etc. Another way of ensuring safety at sea is to properly train fishermen and raise their awareness on the risks and the means of protection. For fishermen, there is also a need to better equip the national marine which does not have the capacity to rescue them when at risk.

- Improving fishermen' access to market: fishermen from the South have a huge need of better conserving their products before getting access to markets. Therefore, they feel it is important to get a fish conservation system, especially an ice factory that can help them transform drinking water into ice. This can only be done through use of drinking water which is not easily available in that area. The community is also more interested in a desalination system of sea water. Lack of ice hampers the conservation of the fish and hence the competitiveness of the products to the market. Though important for the development of fishery sector, Fishermen Federation South which made the suggestion recognized that it does not fall under the scope of the project that especially aims at providing weather related services to reduce sea risks of local fishermen.

Pictures from the community consultation

Fishermen consultation at PK 144, Federation South

Discussion with fishermen coming from sea, at PK 144

Fishermen consultation at Nouadhibou, Federation North

Fishermen consultation at Nouadibou, Federation North

Canoes at sea, Federation North

Community leaders, Federation South

Coatal erosion at Nouadhibou

Fishemen Canoes at Nouadhibou port

Office of Fishermen Federation South

Office of Fishermen Federation North

Fishermen houses on the cost, PK 144

Fishermen coming from sea, Nouadhibou

Annex II: Office National de la Météorologie (ONM), Mauritania – Baseline Information

Prior to the inception of the National Meteorological Office (ONM) of Mauritania, meteorological functions performed[19] were related only to aeronautical activities and the maintenance of existing weather stations used for weather predictions for the safety of planes coming in and out of Mauritania. However, in 2005 due to an increase in storm surges and noticeable increase in related accidents, loss of property and deaths, and following a ministerial report on inadequateness of the current services to ensure the security of the lives and livelihoods of Mauritanians, ONM was established in December 2006 under the auspice of the Ministry of Transport and Equipment. Its mandate is "the observation and study of weather, climate and atmospheric components of the environment to ensure the safety of persons, goods and contribute to economic and social development of Mauritania by the provision of meteorological information appropriate for all users." ONM was also asked undertake national hydrological activities as part of its mandate.

Over the last five years, ONM, with a limited investment from the government and in partnership with the World Meteorological Organization and other related weather and climate centres was able to begin providing services. ONM currently employs 80 people from meteorologists to observers. The Office comprises of 8 Managers, 1 agro-meteorologist, 3 technicians, 4 meteorologists (3 forecasters and 1 geographer), 21 technicians, 43 observers and the rest miscellaneous support staff.

The annual budget of ONM is 90 Million MRO and 50 Million MRO for investment. This equates to approximately 490,000 USD. In 2011, ONM's revenue for value added services was roughly 8 Million MRO (27,000 USD). ONM provides climate information to port institutions as well as offshore oil and mining companies.

The existing national weather observation network, as was shown in Figure 2, is composed of 14 weather observation stations located at regional airports, of which 7 are automatic and 7 are manual; 1 Automatic Marine Weather Station with tide gauge at Nouakchott Port and 2 Atmospheric Sounding Stations operated by ASECNA at Nouakchott and Nouadhibou with two soundings per day. Through the Marinemet project, there will be additional equipment implemented Q3 of 2012 comprised of 3 additional Automatic Weather Stations along the Mauritanian coast and 1 Tide gauge to Nouadhibou Port.

The IT infrastructure of ONM includes 5 computers at the airport and 18 desktops in Nouakchott headquarters. Currently the facilities have no centralized system for data management, only stand-alone computers without data backup arrangements. There is no dedicated computer room or backup power. There are no high-performance facilities to support numerical models. In addition, ONM has 1 colour printer at the airport and 1 colour and 4 black-and-white printers in Nouakchott. ONM has two data servers, one for real-time data and another for the climate database. The real-time server is non-operational as data connections not implemented to stations. The current Internet connection to the headquarters is: download 1 Mb/s, upload 0.5 Mb/s and to the airport: download 2 Mb/s, upload 0.5 Mb/s. At the Nouakchott airport, there is a

[19] Aeronautical activities were performed solely by the Agency for Aerial Navigation Safety in Africa and Madagascar (*L'Agence pour la Sécurité de la Navigation aérienne en Afrique et à Madagascar*, ASECNA), an air traffic control agency based in Dakar, Senegal.

Puma workstation (through the EU-funded AMESD Project) with a EUMETCast receiver and access to remote sensing and numerical products.

The following provides a comprehensive list of technical training received by ONM Personnel.

Project / Institution (Training Provider)	Training Topic	Venue and Date
WMO & African Centre of Meteorological Application and Development (ACMAD)	Climatological Data Quality Control and how to calculate climate indices	2012
Marinemet Project	Dust and sandstorm warning	Barcelona, Spain / 2011
Marinemet Project	Marine meteorology course in general use of Marinemet models (does not include training specific to Mauritania models)	Toulouse, France / 2010
WMO & UK Meteorological Office	Quality Management Systems workshop	Istanbul, Turkey / 2011
WMO	New technologies in agriculture and agro-meteorology	Kuwait / 2011
UK Meteorological Office	Communicating forecasts via television	2003, 2007
WMO	Numerical Weather Prediction Workshops on how to analyse models outputs and use for forecasts	2005
European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)	Interpretation of weather satellite images	Annual

Annex III: National Programme of Climate Change Coordination Unit (CCPNCC) Mauritania – Baseline Information and mandate :

Attached to the Minister of Environment Cabinet, the CCPNCC's mandate is inter alia :

1. To coordinate climate change issues at the national, international and local levels:
2. To serve as Focal Point of The Adaptation Fund Board and of UNFCCC

Specific activities:

- National Communications preparation
- Adaptation to climate change issues
- Execution of UNFCCC CoP main decisions
- Public information and awareness on CC issues
- Diagnosis and prospective studies on vulnerability to climate change
- Projects formulation and Identification (PIF preparation)
- Promote Funding accessibility to climate change stakeholders

Annex IV: List of relevant Stakeholder contacts, Mauritania, February and September 2012

Name	Title / Organisation	Contact
Key representatives of Fishermen[20]		
Mr. Baye Pekha	President, Fishermen Federation South	Contact through Mr. Bechir
Mohamed Ould	Advisor, Fishermen Federation South	Contact through Mr. Bechir
Sid'Ahmed Sidi Mohamed	President, Federation of Artisan Fishermen, South	e: pechesartisenale@yahoo.fr t: 22360087 / 2236360087 o: 2246517780 / 2246952794
Moctar Soueidi Suine	Vice-President, Fishermen Federation North	+22246700914 moctarsoueidisuine@yahoo.fr
Key Government representatives		
Mohamed Ould Ahmed Mahamoud	Chief, Community Fish Market, Nouakchott	+22222440265 md_ahd_mad@yahoo.fr
Hon. Amedi Camara	Minister of Environment	Contact through Mr. Bechir
Hon. Yahya Ould Haddemine	Minister of Equipment and Transport	Contact through Mr. Bechir
Bechir O. Mohamed Laghdaf	Ex-Director General, Office National de la Météorologie (ONM)	+22246744020 mbechirml@yahoo.fr
Mohamed Elghali Ould Khtour	Director General, Office National de la Météorologie (ONM)	+22248388820 ghalykhtour@yahoo.fr
Sidi Mohamed Ould El Wavi[21]	Chargé de Mission to the Ministry, Focal Point of the UNFCCC, and Coordinator of National Programme of Climate Change Unit	elwavi.sm@gmail.com
Sidati O. Dah	Climatologist, ONM	+22222098143 s31d37@yahoo.fr
Madame Khadidjatou	General Director, Artisanal Fishery Department	Contact through Mr. Bechir
Sidi Ould Mohamed Lemine	Director of Exploitation and Forecasting, ONM	email: sidiloudey2@yahoo.fr

[20] This list only gives the contacts of fishermen representatives responsible for the two Federations. Many fishermen were consulted while working at sea or in the fish market.

[21] Did not meet Mr. El Wavi in February, but had numerous consultations via email and through Mr. Mohamed Bechir, Director General of ONM. We had a specific meeting with Mr. El Wavi in September to address the outstanding issues related to the project.

Coulibiely Hemwlin	Chief, Agro-meteorology, ONM	email: coulibaly_hamido@yahoo.fr
Dia Thierno Yoyo	Chief, Marine Meteorology, ONM	t: +222 45 24 3531
Béchir Ould Bardas	Secretary General, Port Authorities, Nouakchott	t: 00 222 36362592
Mohamed Elhacen Ould sidi Mohamed	Vice Director, Port Authorities, Nouakchott	tel: 00 222 36302049
Mohamed Mahmoud Ould Mohamedna	Technical Director, Port Authorities, Nouakchott	t: 00 222 36683780
Sidina Ould Aly	Coordinator, DSPCM	alysidi@yahoo.fr t: 00 222 22376336 t: 00 222 22412671
Dahoud Ould Banine	Assistant Director, Ministry of Interior	t: 00 222 22253559
Mohamed Mahmoud Ould Ahmed Abdellahi	Assistant Director, National Civil Protection Agency	didi.taki@yahoo.fr t: 00 222 44481280
Dowfa lopes	National Civil Protection Agency	dowfalopes@yahoo.fr
Oumar Fall	Consultant, Senior Advisor to the Coordinator of the National Programme of Climate Change Coordination Unit	oumarfall09@gmail.com
Researchers		
Dr. Elimane Abou Kane	Researcher, IMROP	+2226485154 enamile@yahoo.fr
Dr. Moustapha Taleb	Sociologist, IMROP/FAO	moustaphat@hotmail.com
Mr. Mohamed Lemine Tarbiya	Economist, IMROP	+222615307 mlemine.tarbiya@gmail.com
UN agencies		
Ilaria Carnevali	Deputy Resident Representative – Programme, UNDP Mauritania	ilaria.carnevali@undp.org
Alain Olive	Program Office, Environment and Energy Unit, UNDP Mauritania	alain.olive@undp.org

Annex V: WMO Gender Mainstreaming Policy and Related Activities (an excerpt)

A number of major studies and surveys over the last 15 years have drawn significant attention to the under-representation of women in fields of physical sciences, engineering and computing. This has been attributed to many factors such as discrimination towards women's enrolments in secondary to higher education, lack of incentives and awareness to motivate women to engage in science education, training, and research, lack of female role models, and failure of science faculties and enterprises to actively recruit women.

With respect to WMO, women have always participated in the activities of the Organization. However, traditionally it has been in limited numbers and generally not at levels involved with important decision making. With the goal to develop a strategy on Gender Mainstreaming, WMO conducted two global surveys of its 189 Member States on the "Participation of Women and Men in the Activities of the World Meteorological Organization" in 1997 and 2001 (WMO, 1997a and 2001) to establish baseline information on these issues[22]. In addition to the two surveys, WMO also convened two conferences on the "Participation of Women in Meteorology and Hydrology" (WMO, 1997b and 2003). The conferences produced a number of recommendations that were incorporated into the WMO Policy on Gender Mainstreaming, adopted by WMO Congress-XV (WMO, 2007)). At the core of WMO Policy on Gender Mainstreaming is the vision "to provide world leadership in expertise and international cooperation in weather, climate, hydrology and water resources, and related environmental issues, and thereby to contribute to the safety and well-being of people throughout the world and to the economic benefit of all nations".

Through the Gender Mainstreaming Policy, WMO is promoting, encouraging and facilitating gender equality across all levels of WMO by providing balanced and equal opportunities in recruitment, retention and promotion of personnel at all levels of WMO and NMHSs. In addition, the policy aims to facilitate the delivery of weather, climate and water services by the NMHSs targeted at both women and men and establish a mechanism by which progress can be measured. Specifically, the policy provides a foundation for gender-sensitive actions according to its framework for action, which provides guidance and direction to WMO and its Members along four main areas: (i) governance, (ii) employment, (iii) enhanced service delivery, and, (iv) effective monitoring and evaluation. The policy is implemented through national and international coordinated activities of WMO Programmes, regional associations, technical commissions and the NMHSs of the Member States. In particular, NMHSs must develop action plans that are appropriate for addressing gender issues with consideration to the political, cultural and socio-economic issues of each Member State.

The WMO Executive Council (EC) overseas and advises on the implementation of WMO Policy on Gender Mainstreaming at all levels. Following the adoption of the Policy, the EC established an "Advisory Panel of Experts on Gender Mainstreaming" under the leadership of Dr Linda Makuleni (The Permanent Representative of South Africa with WMO and Chief Executive Officer of the South African Weather Service) to assist with the implementation of the policy and to monitor and evaluate progress, which met for the first time in Geneva, Switzerland, February 2010. To date, WMO Secretariat, technical commissions, regional associations and some NMHSs of Member States have already designated their gender focal points.

During WMO Congress XVI (held in Geneva in May/June 2011), the WMO Strategic Plan (WMO, 2011a) was adopted with particular attention to activities dealing with gender issues within key thematic areas such as service delivery, capacity building and disaster risk reduction. The Congress

[22] Among others, the surveys indicated that globally, over 90% of the NMHSs of Members States had very low rates of employment of women in the work force. Furthermore, the surveys indicated that women constitute only 10 – 15% of the participants in most of the WMO activities.

also highlighted the vital role of women in areas such as agriculture and food security, water resources management, family health and overall family wellbeing and management. Furthermore, the Congress urged NMHSs and all projects of WMO to take into account gender aspects in the development and delivery of weather, climate and water services. More information about WMO Policy on Gender Mainstreaming and related activities can be accessed through a dedicated webpage (see reference section).

Implementation of the WMO policy on gender mainstreaming has resulted in a positive trend with respect to the numbers of fellowships awarded to women and an increase of women employed at the WMO Secretariat[23].

[23] The numbers of women being approved for long-term fellowship has increased from 55 in 2004 to 177 in 2010 and at the WMO Secretariat there has been an increase from 28% to 32% in the number of women in the professional category, and similarly an increase from 20% to 26% in the number of women in the director and above categories in the last 5 years.

Annex IV: Matrix of comments (initial review by the AFB)

N°	Comment	Response
1	The proposal should elaborate on the extent to which the project is linked to measurable climate change impacts, either observed or projected. These impacts should be linked to the vulnerability of the target communities and selection criteria of beneficiaries	This has been addressed in the new section "Climate variability and change Scenarios for Mauritania". New sub-sections are inserted to particularly discuss the specific vulnerability of the artisanal fishery sector and of local fishermen. New text is inserted on climate change observed and projected impacts linked to the fishermen community. *See section on Project Background and Context (pages 2 to 10)*
2	The proposal should clearly justify the project relative to alternatives at the community level according to the climate change impact targeted	The issue of proposed project alternatives is addressed in the revised version. Business as usual would be the alternative if this project is not implemented. *See section on project sustainability (pages 11-12) and section C on cost-effectiveness analysis (page 27)*
3	The proposal should expand on the immediate community needs identified during consultations in the context of the climate change impacts experienced	The comment on how the project takes into account community needs is now well addressed. After the AF Board comments, a more specific community consultation was held from 15-20 September with fishermen and outcomes are now included. Based on this, the whole project is revised to put more emphasis on immediate community needs *See section on Project Components and Financing (pages 14-15), new sub-section on the importance of artisanal fishery sector (page 5), project justification (pages 16-23) and Annex 1 on key issues arising from community consultation (pages 62 -64).*
4	The proposal should elaborate and enhance the measures to ensure long-term project sustainability, including evidence of commitments made	Long term sustainability of the project is explained in this revised version. As far as sustainability is concerned, it is now clear that the project builds on: i) existing commitments and initiatives in the country, including ongoing projects and future plan for a bigger initiative to protect the coastal zone and establish mobile communication network on the coast, and on exising initiatives on fishery sector and food security. *See section on Project sustainability (pages 11-12) and Section D (page 27).*
5	The inclusion of a project kick-off within the project should be revised due to the direct overlap with the inception workshop budgeted under monitoring and evaluation	Comment addressed *See Part 2 on project justification (page 17) and section C (page 46*)
6	The proposal should provide an analysis of the fisheries sector, including national strategies or policies, relevant to the proposed project, and	An analysis of the fisheries sector is provided, including a specific sub-section on the artisanal fisheries sector. *See new sub-section on the importance of the artisanal fishery sector (page 5) and section D on relevant national strategies and plans (page 29)*
7	An analysis should be provided of the comprehensive inter-sectoral economic impact of the project	The inter-sectoral economic impact of the project is explained, as the early warning tools developed for the fishery sector can be easily up scaled in other vulnerable sectors such as agriculture, infrastructure, health. Thus, in supporting the investment in weather observational infrastructure, tools and training materials, the project will help improve the early warning services for not only the fishery sector, but most of the climate vulnerable sectors. *See Section I on justification of funding (page 36)*

Annex IV: Matrix of comments (Latest review by the AFB)

N°	Comment	Response
1	The revised proposal must clearly demonstrate the observed or projected climate impacts which are being addressed by the proposed measures, and how such measures intend to build the adaptive capacity of vulnerable coastal communities to these stated impacts	This has been previously addressed in the section "Climate variability and change Scenarios for Mauritania". New text is now included under the Background chapter. *See section on Project Background and Context (pages 2 to 10)*
2	The revised proposal should discuss environmental impacts that are being experienced by the proposed beneficiaries and the extent to which the proposed adaptation interventions are designed to maximise positive environmental benefits	This issue is now further discussed in Page 27, with text inserted on environmental problems experienced and environmental benefits
3	The revised proposal should be designed around the priority adaptation needs of community members based on broad consultations including appraisal of alternative options	The comment is addressed under the sub-section *"Importance of weather-related information: priority adaptation measure for small-scale fishermen of Mauritania"* and under Project Justification *See pages 9-11, 17 and 31.*
4	The revised proposal should demonstrate how the introduction of small-scale technical equipment in a harsh marine environment could be a long term sustainable solution	This issue is addressed in the section on Project Sustainability and Project Justification Also see Pages 12, 18, 19 and 24.
5	The revised proposal should include a disbursement schedule with no discrepancies	The disbursement schedule is now revised and updated *See Table 15, page 63.*

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الوزارة المنتدبة لدى الوزير الأول
المكلفة بالبيئة والتنمية
المستدامة

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Le Chargé de Mission

المكلف بمهمة

Letter of Endorsement

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

Nouakchott, 2 April 2014

Subject: Endorsement for "Reducing Mauritanian Fishermen's Risk at Sea - Enhancing Resilience of Mauritania's Coastal Communities to Adapt to Climate Change"

Greetings to the Adaptation Fund Board from the Government of Mauritania

As the Designated Authority for the Adaptation Fund within the Government of Mauritania, I wish to confirm that the above titled project is in accordance with Mauritania's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the country, as outlined in our National Action Plan for Adaptation, National Communication, Strategic Framework for the Fight Against Poverty, Sustainable Development Strategy, and the national elements of the Millennium Development Goals and the Global Framework for Climate Services.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by the World Meteorological Organization and executed by the Office National de la Météorologie (ONM) as the National Executing Agency.

On behalf of the Government of Mauritania, may I take this opportunity to thank the Adaptation Fund Board for re-considering our proposal and supporting our adaptation efforts through this project.

Sincerely,

Sidi Mohamed EL WAVI

Copie: MDEDD

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