AFB/PPRC.1/4
June 2, 2010

Adaptation Fund Board
Project and Programme Review Committee
First Meeting
Bonn, June 14, 2010

PROJECT/PROGRAMME PROPOSAL FOR EGYPT

I. Background

1. The Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, adopted by the Adaptation Fund Board, state in paragraph 41 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 approval by the Board. In the second step, the fully-developed project/programme document would be reviewed by the PPRC, and would finally require Board's approval.

2. The Templates Approved by the Adaptation Fund Board (Operational Policies and Guidelines for Parties to Access Resources from the Adaptation Fund, Annex 3) 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. Based on the Adaptation Fund 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 Adaptation Fund was sent out on April 8, 2010.

5. According to the paragraph 41 of the operational policies and guidelines, a project or programme proposal needs to be received by the secretariat not less than seven weeks before a Board meeting, in order to be considered by the Board in that meeting.

6. The following project concept titled "Adaptation to Sea Level Rise by transferring high risk areas of the Nile Delta coasts in the Mariculture" was submitted by the United Nations Development Programme (UNDP), which is a Multilateral Implementing Entity of the Adaptation Fund. It was received by the secretariat before the closing date for consideration of projects in the 10th Adaptation Fund Board meeting. The secretariat has carried out a technical review of the project concept and assigned to it the diary number AFB/MIE/Coastal/2010/1, and is submitting to the Project and Programme Review Committee the following documents:

1. Summary of the project, prepared by the secretariat.
2. The technical review sheet, filled in by the secretariat.
3. The original concept, as submitted (in Annex).

II. Recommendations

7. The PPRC may want to consider and recommend to the Board:

a) Not to endorse the project concept contained in the Annex;
b) To request that the UNDP reformulate the proposal and the suggested budget, taking into account issues suggested by the secretariat in the technical review sheet.

1. Project Summary

Egypt - Adaptation to Sea Level Rise by transferring high risk areas of the Nile Delta coasts in the Mariculture
Implementing Entity: *UNDP*
Executing Entities: *Ministry of Water Resources and Irrigation, Coastal Research Institute, National Water Research Center)*

Project execution cost: USD 400,000
Total project cost (execution included): USD 5,200,000
UNDP management fee: USD 520,000 (10%)
Total amount of financing requested: USD 5,720,000

Project Background and Context: The Nile Delta coastal zone is highly vulnerable to the impacts of sea level rise through direct inundation and salt-water intrusion. The Rosetta region, which is located near the intersection of the Rosetta branch of the Nile River with the Mediterranean Sea, has encountered excessive erosion rates near its promontory. The proposed project will aim at livelihood diversification through the introduction of mariculture with the goal of minimizing adverse impacts of climate change.

Component 1: Technical design and socio-economic feasibility of mariculture development (USD 500,000)

The expected outcome of this component is to develop a strong mariculture development strategy designed and adopted by the government in the Rosetta region of the Nile Delta. Furthermore, the component outputs include a detailed technical design to identify the appropriate species for changed climate conditions, the generation of models to determine more accurately the potential impacts on spawning migrations and changes in availability of larvae and juveniles for pond farming, and a study of likely invasive species and diseases with different climate conditions.

Component 2: Policy and regulatory framework for mariculture development (USD 350,000)

The expected outcome of this component is to develop and adopt regulations for mariculture operations. Specifically, this component covers the development of appropriate environmental and business regulatory standards through laws. Additionally, a provision will be created to incentivize local employment and involvement.

Component 3: On-the ground pilot action for mariculture establishment (USD 3,000,000)

The expected outcome is to build the physical infrastructure and test the sustainable mariculture in an area covering 50,000 m^2. This component includes the development of five rearing ponds, five nursery ponds, two isolations for breeders, and an artificial spawning laboratory.

Component 4: Coastal monitoring capacity (USD 700,000)

The expected outcome of this component is developing the ability to capably monitor coastal stabilization trends. This component will determine the key indicators for the monitoring programme. Furthermore, it will set up monitoring groups with the

participation of local communities so that the impacts of project activities are monitored on the ground.

Component 5: Knowledge management (USD 250,000)

The expected outcome of this component is the establishment of a knowledge, identification, codification, and dissemination system for mariculture development. The lessons learnt throughout the project life cycle would be produced and disseminated among the relevant stakeholders.

ADAPTATION FUND

2. ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT CATEGORY: **REGULAR-SIZED PROJECT CONCEPT**

Country/Region: **Egypt**
Project Title: **Adaptation to Sea Level Rise by transferring high risk areas of the Nile Delta coasts into the Mariculture.**
AF Project ID: **AFB/MIE/Coastal/2010/1**
NIE/MIE Project ID: **00074934** Requested Financing from Adaptation Fund (US Dollars): **5,720,000**
Regular Project Concept Approval Date (if applicable): **n/a** Anticipated Submission of final RP document (if applicable):
AFB Secretariat Screening Manager: **Mikko Ollikainen** NIE/MIE Contact Person: **Keti Chachibaia**

Review Criteria	Questions	Comments
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.
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project?	Yes (letter dated 21 April 2010).
	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?	Yes. The project aims to develop resilience of coastal communities of the Nile Delta to adverse impacts of climate change by livelihood diversification. However, of operational components, only one, representing 62.5 percent, is investment to on the ground pilot action.

	3. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities?	Requires clarification. The project attempts to create social and economic benefits through employment and livelihoods diversification but the concept does not illustrate clearly enough, who are the beneficiary communities and how the project will bring about a positive change to the climate resilience of those communities. The main adaptation measure proposed is the introduction of mariculture and this is said to involve "mainly fishermen and their families". The design component mentions both off-shore and on-shore mariculture but the investment pilot component mentions only on-shore mariculture: the relation of these two very different types of mariculture should be clarified. The concept does not clearly describe, what the current land use is in the on-shore areas that would be converted to mariculture, who their current and future land-users are, and what kind of further-reaching economic, social and environmental effects the land-use change would have, especially from the point of view of farmers and fishermen. Also, the long-term sustainability of the benefits needs to be further detailed. The proposal does not explain how the significant land-use change that is the goal of the project relates to environmental benefits, or how negative environmental impacts due to water pollution would be avoided, nor does it explain the sustainability of the chosen infrastructure solution.
	4. Is the project / programme cost effective?	Evaluation of the cost-effectiveness would require specialist input. The proposal does not explain the cost-effectiveness of the project design. It only compares the maintenance costs in the project scenario with that of the no-project scenario (sea walls). The "tentative estimation" of 10-fold cost effectiveness in favour of mariculture compared to the sea wall solution is not well explained.
	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?	Requires clarification. The proposal is said to be in line with the Second National Communication which is in final stages of formulation. However, this document has not been made available or referred to in detail.
	6. Does the project / programme meet the relevant national technical standards, where applicable?	Requires clarification. "This will be elaborated during the project design phase"

	7. Is there duplication of project / programme with other funding sources?	Requires clarification. The project is said to complement and not duplicate an existing SCCF project but the exact ways in which it will do so are not explained.
	8. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes, one of the components of the project relates to knowledge management. The section on how this will be done would need to be expanded.
	9. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Requires clarification. The current budget break-down to component level does not fully enable evaluation of whether justified or not. Especially, further clarification should be provided on: - The cost of component 4 that seems very high, especially since similar activities seem to be funded by the SCCF-UNDP project - The cost of component 1 seems also high given that the investments seem to have already been designed (page 9 refer to "initial studies and calculation by the coastal research institute") - Justifications must be provided on the level of the MIE fee and the activities under "project cycle management fee charged by the MIE".
Resource Availability	1. Is the requested project / programme funding within the cap of the country?	n/a (No cap decided yet)
Eligibility of NIE/MIE	2. Is the project submitted through an eligible NIE/MIE that has been accredited by the Board?	Yes.
Implementation Arrangement	1. Is there adequate arrangement for project / programme management?	n/a (Not required in Project Concept phase)
	2. Are there measures for financial and project risk management?	n/a (Not required in Project Concept phase)
	3. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans?	n/a (Not required in Project Concept phase)
	4. Is a results framework included?	n/a (Not required in Project Concept phase)

Technical Summary	The project plans to address sea level rise (SLR), expected to be 18-59 cm by 2100, and associated problems such as coastal erosion, water-logging and water-bogging, in the Rosetta branch of the River Nile. These problems will translate into lost livelihoods, land and property. An existing preventive measure, massive sea

	wall built by the government has turned out to be ineffective. The alternative approach suggested in this project is helping local population to build up their economic capital and be more resilient to future climate change. The project proposes to introduce mariculture (marine and coastal fish farms of native marine fish species) to this end. Coastal sea ponds "will function as coastal buffer to sea intrusion further into the in-land and at the same time provide for important economic development alternative that is much more resilient to anticipated SLR risks. Mariculture on vulnerable land of the Nile delta will harness available workforce, improve food security, reduce the impact of saline intrusion, harness rainwater, and provide employment to the local population." The components of the project are: 1. Technical design and socio-economic feasibility of mariculture development, US$ 500,000. 2. Policy and regulatory framework for mariculture development, US$ 350,000. 3. On-the ground pilot action for mariculture establishment, US$ 3,000,000. 4. Coastal monitoring capacity, US$ 700,000. 5. Knowledge management, US$ 250,000. The project is linked to an existing SCCF project, "Adaptation to Climate Change in the Nile Delta Through Integrated Coastal Zone Management" (GEF ID 3242), and builds on its experiences. The livelihoods aspect is new to this project. Concerns: 1. The concept paper does not illustrate what have been the impediments for development of mariculture so far, nor does it provide any analysis of viability of mariculture. This leads to the crucial question of whether the main objective of the project would be business-as-usual economic development, or real climate adaptation where economic development is a tool. 2. The capacity of the implementing and executing agencies to carry out a business development project in fisheries is not explained, and the way in which the private sector and communities would be involved is not elaborated. In component two, allowances are mentioned as a way of involving local communities: it is not explained how these would be used and why they would be better alternative than other forms of financing in the particular situations (considering economic and social sustainability). The prominent role that is described for the private sector in the project (possibly large private aquaculture companies) would have to be balanced with development goals targeting local communities. 3. The concept mentions that the direct beneficiaries of the mariculture structures to be developed are 5,000 people in the local population, "mainly fishermen and their families" but it does not explain the geographic impact of the project, and the population that would benefit of the improved adaptation. It also does not explain selection of the communities/people farmers. 4. The proposed AF project is explained to complement and increase the viability of the SCCF project by

	focusing on livelihoods. More clarification would be useful of explaining how important the livelihoods aspect really is, as they were excluded from the SCCF project design.
Date:	June 2, 2010

ADAPTATION FUND

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

PROJECT/PROGRAMME PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

PROJECT/PROGRAMME CATEGORY:	**Regular Project**
COUNTRY/IES:	**Egypt**
TITLE OF PROJECT/PROGRAMME:	**Adaptation to Sea Level Rise by transferring high risk areas of the Nile Delta coasts into the Mariculture**. (PIMS 4449, Atlas Proposal ID: 00059784 Project ID: 00074934)
TYPE OF IMPLEMENTING ENTITY:	**Multilateral Implementing Entity (MIE)**
IMPLEMENTING ENTITY:	**UNDP**
EXECUTING ENTITY/IES:	**Egyptian Coastal Research Institute, National Water Research center, Ministry of Water Resources and Irrigation.**
AMOUNT OF FINANCING REQUESTED:	**US$ 5,720,000**

PROJECT / PROGRAMME BACKGROUND AND CONTEXT:

Egypt belongs to low middle income countries with total population of over 75 million (Census, 2006). Despite considerable advancements in economic reforms, the country is faced with increasing population growth rates straining availability natural resources for economic development. Moreover, while the shock to financial sector has been limited, as a result of recent global crisis, the real economy has been affected, especially through the decline of Suez Canal revenues, tourism receipts, FDIs, and construction sector. Egypt is fairly unique in the distribution of its population, land-use and agriculture, and economic activity which makes it extremely vulnerable to any potential impacts of climate change on its water resources and coastal zones. Despite being a large country with an area of about a million square kilometer, its lifeline is constrained along a narrow T-shaped strip of land (which constitutes less than 5% of its land area) along the Nile and the coast around the Nile delta. The Nile supplies about 95% of the country's total water requirements, including water intensive irrigated agriculture along its banks and in the delta. Agriculture is quite critical to the national economy as it employs 30% of the work force and contributes 17% to the gross national product (GNP). Major urban centers, commerce, and industrial activities are also confined to the narrow corridor along the Nile and the coast around its delta. This makes Egypt highly exposed to the impacts of seal level rise that is induced by climate change related thermal expansion of the Mediterranean waters and coastal subsidence characterized northern coasts of Africa.

The coastal zones of Egypt are perceived as vulnerable to the impacts of climate change, not only because of the direct impact of sea level rise, but also because of the potential impacts of

climate changes on their water resources, agricultural resources, tourism and human settlements. In particular, the low lying Nile Delta region, which constitutes the main agricultural land of Egypt and hosts over one-third of the national population and nearly half of all crops (World Resources Institute, 2007), industrial activities and commercial centers, is highly vulnerable to various impacts of climate change. The Nile Delta shoreline extends from Alexandria to the west to Port-Said to the east with total length of about 240 km and is typically a smooth wide coast. This zone consists of sandy and silt coasts of greatly varying lateral configurations, depending on where the various old branches of the Nile have had their outlets. The coastline has two promontories, Rosetta and Damietta. There are three brackish lakes connected to the sea.

The Nile Delta region is presently subject to changes, including shoreline changes, due to erosion and accretion, subsidence and sea level rise due to climate changes. Agrawala et al., 2004 surveyed specific large economic centers of Alexandria, Rosetta and Port Said and obtained quantitative estimates of vulnerable areas and expected loss of employment in case of no action. They concluded that the Nile Delta coastal zone is highly vulnerable to the impacts of sea level rise through direct inundation and salt water intrusion. The projected impacts of SLR on the Nile delta such as coastal inundation or saline intrusion are consistent with the results of global vulnerability assessments of coastal areas. Land subsidence in the Delta is currently estimated at 1-5 mm/year (Emery et al., 1988; El Fishawi and Fanos, 1989).

Of particular concern are future impacts of increased flooding frequency, inundation of coastal areas, and saltwater intrusion to the groundwater table. OECD (2004) summarized and ranked the key climate change impacts and vulnerabilities in Egypt for sectors important to the national economy. The socio-economic impacts associated with saline intrusion and inundations are far-reaching and include migration, unemployment and possibly political unrest. The risks to the coastal zone are ranked 'most serious'.

Ranked Key Climatic Changes and Vulnerability in Egypt

Resource/ Risk	Certainty of impact	Timing of impact	Severity of impact	Importance of resource
Coastal Resources	H – M	M – L	H	H
Water Resources	M	M	H	H^{+}
Agriculture (mediated by SLR & water resources)	H – M	M – L	H - M	H - M
Energy	M - L	M – L	M - L	M - L

Second National Communication of Egypt built on the results of IPCC fourth Assessment Report that indicated that a global sea level rise of 18-59 cm is expected by the end of this century. Based on this, and land subsidence rates two models have been initiated: (i) the business as usual scenario; and (ii) the actual situation in progress. For each model, three scenarios were considered namely the IPCC scenarios B1 and A1F1 as well as a new CoRI scenario which assumes a linear increase rate of air temperature till 2100. Table below summarises the scenario outputs and projected land loss from SLR.

Total affected area and its percentage of the Nile Delta area, A1F1 scenario

Year	2025	2050	2075	2100
Total Area Affected (km^2)	152.86	256.27	450.00	761.40

Total share from the Nile Delta Area (%)	0.61	1.03	1.8	3.01

Because of its geomorphologic characteristics, the northern coast of Egypt has been subjected to active protection through structural measures, since 1981. The government, through its Shore Protection Agency (SPA) has invested $10,000,000 / year in past 10 years. However, many of the structural measures, especially protective sea walls are subject to direct impact from the coastal erosion, questioning their long term functional stability and effectiveness in the face of accelerated SLR and expected coastal inundation and submersion levels, as a result of climate change.

Rosetta region is a well-known Pharaonic and Islamic region located the near the intersection of the Rosetta branch of the River Nile with the Mediterranean Sea east of Alexandria. Excessive erosion rates have been observed near the Rosetta promontory, due to the cessation of sediments following the construction of the High Dam on the River Nile about 1000 km to the south. The region surrounding the city is well known for its water-logging and water-bogging problems. The concern regarding this vulnerable coastal spot has been raised by the Coastal Research Institute (CORI) at the Ministry of Waters and Irrigation of Egypt. CORI has carried out a quantitative vulnerability assessment of the potential impacts of sea level rise for Rosetta. For a sea level rise of 0.5m, the study estimated the loss of about 1/3rd of employment as well as the loss of $2.9 billion from land and property[1]. In addition, coastal erosion problems are expected to be exacerbated by sea level rise. The Government has built a massive sea wall near the tip of the promontory as a protective measure against already existing erosion problems. However, recent observations indicate that this massive hard structure is seriously challenged by coastal erosion. Alternative means of long term coastal protection has to be sought that is more robust and based on win-win, "no-regret" adaptation strategies. As such, CORI, based on the results of continuous research and observation, suggest softer measures of coastal protection. The approach is to help local population build-up their economic capital and be more resilient to future anticipated impacts of climate change. The proposed project will therefore aim at livelihood diversification through introduction of mariculture, as the primary goal for minimizing adverse impacts of climate change. Mariculture, is a specialized branch of aquaculture involving the cultivation of marine organisms for food and other products in the open sea / ocean, an enclosed section of ocean or ponds or raceways that are filled with sea waters. A good practice of mariculture will help the coastal communities to increasingly rely on sea rather than land-based agriculture. Under circumstances of high risks of climate change induced sea level rise and increasing financial burden associated with protective infrastructure incurred by the government, the project proposes an adaptation option that directly targets the vulnerable coastal population and offers a more sustainable livelihood option in the low lying coastal lands submersion of which will be increasingly unavoidable as a result of SLR. Mariculture (marine and coastal fish farms of native marine fish species) is increasingly becoming an important element of Integrated Coastal Zone management and widely recommended as an adaptation measure in the low lying coastal areas subject to risks of seal level rise. Sea ponds will function as coastal buffer to sea intrusion further into the in-land and at the same time provide for important economic development alternative

[1] As in the similar study conducted for Alexandria, the loss of historic and archeological sites has not been unaccounted for.

that is much more resilient to anticipated SLR risks. Mariculture on vulnerable land of the Nile delta will harness available workforce, improve food security, reduce the impact of saline intrusion, harness rainwater, and provide employment to the local population.

PROJECT / PROGRAMME OBJECTIVES:

The project objective is to develop resilience of coastal communities of the Nile Delta to adverse impacts of climate change by introduction of sustainable maricuture as a livelihood diversification and adaptation measure.

PROJECT / PROGRAMME COMPONENTS AND FINANCING:

PROJECT COMPONENTS	EXPECTED CONCRETE OUTPUTS	EXPECTED OUTCOMES	AMOUNT (US$)
1. Technical design and socio-economic feasibility of mariculture development.	1. Models generated to determine potential CC impacts on spawning migration and availability of juvenile for pond farming; 2. A field-based study to identify the most appropriate native fish species for changed climate conditions, including water temperature, salinity, water circulation patterns; 3. Coastal protection through mariculture open sea and pond system designed; 4. Mariculture business plan developed with participation of local companies and community groups	1. Scientifically sound and socio-economically feasible mariculture development strategy designed and adopted by the government in the Rosetta area of the Nile Delta	500,000.

2. Policy and regulatory framework for mariculture development.	1. ICZM revised to include mariculture as part of the ICZM framework; 2. Legislative adjustments and sub-laws regulating climate resilient maricuture development formulated and adopted; 3. Private sector licencing and incentive measures for mariculture business development with direct involvement of vulnerable coastal communities established;	1. Regulations for mariculture operations developed and adopted	350,000.
3. On-the ground pilot action for mariculture establishment	1. Five rearing ponds installed (4000 m^2 each); 2. Five nursery ponds installed (1000 m^2 each) 3. Two isolation for breeders installed (1000 m^2 each); 4. Artificial spawning laboratory established; 5. Local mariculture business has been set up with direct involvement of local coastal population;	1. Sustainable miriculture designed and tested on 50,000 m^2 (12 feddans) benefitting over 5000 local population, mainly fishermen and their families;	3,000,000

4. Coastal monitoring capacity	1. Monitoring programme for SLR and Climatic Changes indicators established; 2. Quality control and assurance procedures defined. 3. Training designed and delivered for coastal monitoring and quality control system; 4. Selected equipments deployed in selected locations (see details under the component 4); 5. Participatory monitoring mechanisms put in place to monitor the impacts of project activities on the coast.	1. Continuous monitoring capabilities to monitor coastal stabilization trends established.	700,000.
5. Knowledge management	1. Best practices for sustainable mariculture reviewed and customized for the Egypt circumstances (feeding into the outcomes 1 and 2); 2. A knowledge product – "climate resilient mariculture in Egypt" - produced, based on project lessons; 3. Regular lessons learned notes posted on Adaptation Learning Mechanism.	1. Knowledge identification, codification and dissemination system established for maricuture development as coastal resilience measure.	250,000
6. Project/Programme Execution cost			400,000
7. Total Project/Programme Cost			5,200,000
8. Project Cycle Management Fee charged by the Implementing Entity			520,000
Amount of Financing Requested			5, 720,000

PROJECTED CALENDAR:

MILESTONES	EXPECTED DATES
Start of Project/Programme Implementation	June 2011
Mid-term Review (if planned)	April 2013
Project/Programme Closing	September 2015
Terminal Evaluation	January 2016

PART II: PROJECT / PROGRAMME JUSTIFICATION

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

Component 1: Technical design and socio-economic feasibility of mariculture development

As some parts of the Nile Delta, nearest to the Mediterranean Sea, already experience prolonged inundations, including parts of the ancient city of Rosetta, the pressure is mounting on the Egyptian authorities to do more to protect the Nile Delta, from rising sea levels. Therefore the government is seeking for various options drawn from the good international practice to be customized and applied in the context of the Nile Delta. The government has already received a $4 million grant support from the Global Environment Facility to address the risks of SLR. The GEF project is to design and field-test so called "living shoreline" approach that has been successfully applied in many coasts of northern America and Europe. The proposed AF project will take more people-centred approach by designing and applying mariculture as a viable adaptation solution that helps harness local workforce, create climate resilient livelihood and establish integrated water and land use practice that may provide more viable and longer term solution to SLR risks. Under this component the project will undertake the detailed technical design by identifying appropriate species, including native species, for changed climate conditions, including water temperature, salinity, water circulation patterns; generating models to determine more accurately the potential impacts on spawning migrations and changes in availability of larvae and juveniles for pond farming; studying likely invasive species and diseases with different climate conditions; evaluating potential increases in the virulence of dormant pathogens due to climate change impacts. The pond design specifications will be completed and detailed business plan developed to set up the mariculture and associated infrastructure. Local communities, governments and companies will take active role in business design and determine their financial role during the project design phase.

Component 2: Policy and regulatory framework for mariculture development

Under this component the project will create the conditions for establishing sustainable

mariculture business practice in the Rosetta area of Nile Delta. It is therefore paramount to set appropriate environmental and business regulatory standards through associated laws and by-laws and clarify local enforcement mechanisms. Provision of local employment and involvement of local companies will be incentivized through the business licensing, established mariculture credit conditions, or monetary allowances for local community engagement. High environmental standards will be designed based on the international best practice that addresses likelihood of the spread of disease and high costs of water, electricity and fuel, contributes to coastal wetland restoration, maintenance and coastal stabilization. Government and private sector resources will be drawn upon by the project. More specific contributions will be determined during the project design phase.

Component 3: On-the ground pilot action for mariculture establishment

Project will build the physical infrastructure for mariculture establishment. Based on initial studies and calculations by the Coastal Research Institute at the Ministry of Water and Irrigation of Egypt, five rearing ponds installed (4000 m^2 each); five nursery ponds installed (1000 m^2 each); two isolation for breeders installed (1000 m^2 each); and artificial spawning laboratory established. Local communities will be mobilized to build this infrastructure through direct employment guarantee scheme that will be co-financed by the government of Egypt. Under this component a pilot business case will be financed by the project that will initiate a good mariculture practice. The good mariculture business case will be built based on the best international practice (e.g. USAID "adapting to coastal climate change: a guidebook for development planners" UNESCO and CBD guidance and standards for sustainable mariculture)

Component 4: Coastal monitoring capacity to monitor coastal stabilization trends established

Given the innovative nature of the proposed adaptation solution that combines the mariculture - as important livelihood and business opportunity, with mariculture - as coastal stabilization solution, playing the role of a dynamic buffer against sea intrusion and coastal inundation, it is necessary to have a system of regular monitoring. The project will help CoRI enhance its coastal monitoring capacity in the target area near Rosetta and ensure systematic monitoring to help establish coastal stabilization trends. The project will determine the key indicators against which the monitoring programme will be designed and employed. Two sets of targeted training will be organized: (i) oriented to quality control and quality assurance of monitoring data; the results of such monitoring will judge the long term adequacy of marine aquaculture as an adaptation method to SLR in the Nile Delta. This will be organized through engagement of IOC/UNESCO and other key organizations in this area of expertise; (ii) oriented to marine aquaculture (fish-farms or floating tanks, ponds). This will be organized through FAO and other specialized organizations and companies. The project will also incur the cost of procuring special monitoring equipment and associated software (e.g. Continuous Recording Doppler Current Meter, Recording Tides and Wave Gauge: wave height, frequency and direction, including software for operation and results visualization, etc). The project will also set up monitoring groups with participation of local communities so that the impacts of the project activities are monitored on the ground. As a result of monitoring necessary adjustments into the mariculture infrastructure and management practice can subsequently be made and further replicated in

other relevant parts of Nile Delta coast.

Component 5: knowledge management and dissemination

The project will capture critical mass of knowledge in utilizing maricluture as an adaptation measure. Based on the lessons learnt throughout the life cycle of the project a knowledge product "climate resilient mariculture in Egypt" will be produced and disseminated among relevant stakeholders helping to publicize the experience of the project aiming at replicating it in other areas subject to be affected by sea level rise.

B. Describe how the project / programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities.

Project will yield lots of economic, social and environmental benefits. Within the scope of the pilot initiative, the project will employ over 5,000 people, mainly fishermen. The expected total production is 2000 ton/year of high quality fish with a market price approaching $ 3,000,000 / per year. The project is expected to be self-sustained after the fourth year with an average depreciation period of 15 years.

The project will promote a good practice of mariculture, based on the international experience and the good practice guidelines. It will introduce an innovative approach to coastal adaptation in the context of Egypt and promote the solution that creates socio-economic wealth and allows the communities to become much more resilient through accumulated capital from mariculture and adoption of a livelihood that will help withstand the SLR risks.

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

Structural cost of the mariculture ponds is far below the sea protection structures (such as sea walls) and their maintenance costs. Based on tentative estimation the ratio of cost effectiveness of the mariculture compared to the structural protective measures will be 1:10, without accounting for additional benefits of employment and income generation associated with mariculture. More detailed assessment of cost-effectiveness will be conducted during the project preparation phase.

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

The project is fully in-line with the national development and adaptation priorities of Egypt. Second National Communication (at the final stage of formulation) has prioritized Nile Delta coastal subsidence and accelerated SLR as a major risk to the country, its economy and livelihood of coastal communities. This is one of the top development priorities in Egypt raising growing concern of the government and drawing increasing attention of development partners. It is classified by SNC as an immediate and urgent adaptation needs to be addressed with no

further delays.

E. Describe how the project / programme meets relevant national technical standards, where applicable.

This section will be elaborated during the full project design phase. National law and regulatory standards will be reviewed to ensure a full compliance with relevant standards.

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

There is no duplication with other funding sources but there is a need for close coordination with the GEF / SCCF funded project "Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management". The project aims to integrate the management of SLR risks into the development of Egypt's Low Elevation Coastal Zone (LECZ) in the Nile Delta. This will be done by introduction of so called "living shoreline approach". This approach refers to a coastal management practice that addresses coastal erosion by providing long-term protection, restoration and enhancement of vegetated shoreline habitats, including dune or wetland restoration. This is a novelty for Egypt and is considered a progressive step forward in improving coastal resilience to climate change induced risks. However, the approach may not suffice unless additional alternative that carry direct socio-economic benefit to local communities are not brought in as core to adaptation strategy. Therefore, the two initiatives are highly complementary offering unique opportunities for synergies and amplifying the impacts. They have clearly defined thematic scope within broader geographic boundaries of one of the world's most vulnerable low laying coastal areas, the Nile Delta. The two initiatives in no ways represent co-financing sources for each other but rather build on related but distinct set of baseline conditions. The co-financing contribution to the AF project will be new and different from that of the GEF project. This will be evidenced through the appropriate letters of commitments provided upon the submission of the full project.

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

The project has a fully dedicated component to knowledge identification, codification and dissemination. Project annual reporting will require coverage of lessons learned. The project will systematically document key lessons good practices and challenges experienced in establishing mariculture as adaptation measure for coastal stabilization and coastal community resilience. Adaptation Learning Mechanism http://www.adaptationlearning.net and other relevant platforms will be used for knowledge dissemination.

H. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation.

The project idea has emerged at the Coastal Research Institute (CoRI) the main technical entity of the Ministry of Waters and Irrigation that is charged with responsibilities for the coastal management. The project idea has been consulted with the UNFCCC focal point and

the host Ministry. It was consulted with the Shoreline Protection Agency. Wide participation and consultations will be arranged with the key government stakeholders as well as local communities during the project design phase. Key stakeholders have been listed in the table below.

Stakeholder name	Stakeholder mandate	Potential role in the project
The Ministry of Water Resources and Irrigation: Shore Protection Authority (SPA)	Responsible for managing the shoreline in coastal areas that have socioeconomic value or natural resource value that are threatened by erosion. It develops coastal zone management plans, designs projects for shore protection and all studies for shore protection, and issues license for projects located in the coastal zone area.	A basic stakeholder that have a lead role in planning, implementing and monitoring shorelines and adaptation measures in Egypt.
The Ministry of Water Resources and Irrigation: Coastal Research Institute (CoRI)	Responsible for investigating the coastal process along the Nile Delta as well as all the entire Egyptian coasts; monitor the evolution of the Egyptian coast, to study the dynamics of its shores and to find out efficient and cost-effective control methods to protect valuable coastal infrastructure from erosion.	A lead research institute in adaptation measures and an important Agency in formulating adaptation strategy in Egypt.
The Egyptian Environmental Affairs Agency	According to Law No 4 for the year 1994, EEAA was given specifically the authority to .participate with the concerned agencies and ministries in the preparation of a National Integrated Coastal Zone Management Plan for the Mediterranean Sea and the Red Sea coasts and the responsibility of initiating and co-coordinating national ICZM activities. A National Committee for Integrated Coastal Zone Management (NCICZM) was set up, and the Secretariat of this Committee was established under the Environment Management Sector of the EEAA. One of the major tasks of the National Committee for ICZM is to develop a programme for the development of a	The lead authority for Climatic Changes Mitigation and Adaptation measures in Egypt.

	national ICZM Plan. The role of EEAA in the Committee is to review the Environmental Impact Assessment reports and provide the environmental license for all projects located within the coastal zone area, develop coastal zone management guidelines as well as chairing the National Integrated Coastal Zone Management Committee (NICZMC).	
Ministry of Housing: Urban Planning Authority, General Organization for Physical Planning (GOPP)	Responsible for developing guidelines for urban planning inside the coastal zone (and outside coastal zone); for any modification or extension or new project in the country; and provides assistance to any developer to prepare the Environmental Impact Assessment within and outside coastal zone areas.	Responsible for land use planning and National land exclusion and allocation for specific tasks.
General Authority for Fish Resources Development (GAFRD) - Ministry of Agriculture and Land Reclamation	No specific mandate for coastal zone management or shore protection but provides licenses for fish farms and fishing activities in the coastal lagoons and other coastal areas, and works closely with the Coastal Guard.	Accepting the responsibility of supervising the fish farm complex after the project is terminated will insure the sustainability of the fish farm and the promotion of the concept.
Agriculture Research Center - Ministry of Agriculture and Land Reclamation	No specific mandate for coastal zone management or shore protection but Research oriented toward agriculture practices, under which the Abassa Aquaculture Research Center falls.	Act as a Center of Excellency and advisor in fish farming practices.
Ministry of Defense: Coast Guard Department	No specific mandate for coastal zone management; important for coastal zone protection in that it is responsible for checking licenses in coastal areas before any project can start and works closely with the Fish Authority to check fishing licenses.	Controlling the Territorial water and 50 m from the high water level.
Ministry of Transportation: Marine Transportation Department in Alexandria	Responsible not only for marine transportation projects but also for providing assistance to developers	Marine Cage Culture had to report to the U/S of Maritime Transportation

	and the Government in all aspects of marine transportation. It works closely with the Marine and Harbor Authority in the area of environmental protection and environmental impact assessment.	and take licenses to operate in the coastal zone.

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

The project is designed to address adverse impacts of climate change on low lying Nile Delta coast of Egypt, its residing population and local economies. As noted above, the government of Egypt, through its Shore Protection Agency, has been investing in coastal protection since many decades ago. With increasing levels of coastal inundation, incidents of coastal flooding and anticipated SLR, the government is under the mounting pressure to identify and implement more effective, including cost-effective measures for coastal adaptation. Despite the fact that the government of Egypt already received the grant investment from the GEF managed Special Climate Change Fund to address coastal vulnerabilities of the Nile Delta, the government assigns the issue a high significance and considers a top adaptation priority. Therefore, it has decided to maximize the investment into this adaptation priority by complementing the two grant streams. This will help the government to test various advanced and innovative approaches to coastal protection, by departing from largely practiced structural measures that are increasingly questioned in terms of long term viability and effectiveness. The two projects offer not only distinct approaches to coastal adaptation but also focus on different geographic localities of the Nile Delta thus covering distinct geomorphological, and socio-economic characteristics that determine varied approaches to adaptation.

Component 1: the project incurs the cost of mariculture technical design, with close consideration of anticipated climate change risks both on the physical coast as well as fisheries.
Component 2: covers the cost of policy change and adjustments in regulating climate resilient mariculture as integral part of the Egypt's ICZM framework;
Component 3: covers the cost of mariculture infrastructure that is to play the coastal protection function. Government and local businesses will co-finance this component, including the business start-up capital;
Component 4: the project will cover the cost of coastal monitoring scheme both at scientific level and community level by applying participatory monitoring to detect environmental and socio-economic impacts of project activities;
Component 5: covers the cost of adaptation learning and knowledge codification derived from the project

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme implementation.

The project will be implemented through The United Nations Development Program (UNDP), in its capacity of accredited MIE. The project will be implemented in close coordination and collaboration with all relevant government institutions, local communities and NGOs, as well as other related projects in the region. UNDP-CO will support project implementation by, contracting project personnel, experts and subcontractors, undertaking procurement, and providing other assistance upon request of the National Executing Agency. The UNDP-CO will also monitor the project's implementation and achievement of the outcomes and outputs and ensure the proper use of Adaptation Fund resources. Financial transactions, reporting and annual auditing will be carried out in compliance with UNDP regulations for national project execution modality.

Executing Arrangements

The project will be executed following established UNDP national execution (NEX) procedures. Implementation arrangements seek to establish a bridge between national authorities responsible for formulating and integrating Climate Change policies, and national, regional and local authorities engaged directly in coastal zone management. Knowledge and information provided through monitoring institutions and best practices and lessons learned through the implementation of pilot projects will be the tools to ensure effective coordination and follow up among the institutions involved in the project.

The Executing Agency/Implementing Partner will be the Ministry of Water Resources and Irrigation through the National Water Research Institute - Coastal Research Institute (CoRI). The Executing Agency/Implementing Partner will appoint a National Project Director and will appoint jointly with UNDP CO and a Project Manager and an administrative/financial assistant. A summary of the roles and responsibilities of the National Project Director, the Project Manager, and the Administrative and Financial Assistant are provided below.

The National Project Director will be a high-level government official primarily responsible for overall implementation of the Project. This responsibility includes representing and supporting project objectives at high decision making levels within the Government of Egypt. The National Project Director also takes the primary responsibility for ensuring that the required government support to reach the milestones of the Project is available.

The Project Manager will assume overall responsibility for the successful implementation of project activities and the achievement of planned project outputs. S/he will work closely with the national and international experts hired under the project, as well as the Project Assistant, and will report to the National Project Director and to the UNDP Country Office. The Administrative and Financial Assistant will provide assistance to the Project Manager in the implementation of day-to-day project activities. S/he is responsible for all administrative (contractual,

organizational and logistical) and accounting (disbursements, record-keeping, cash management) matters related to the project.

Project Management Unit (PMU): The day-to-day implementation and management of the project will be undertaken by the project management unit, under the overall guidance of a Project Board, which will be responsible for steering the activities of the PMU. Heading the project board will be the Ministry of Water Resources and Irrigation, and members will include the National Water Research Center, Shore Protection Agency, Coastal Research Institute, and UNDP CO representative. Additional members will be decided during the project inception phase. For the PMU, a full time project manager, technical, administrative and financial staff, will be selected jointly by the executing agency and UNDP. The role of the PMU will be to: a) ensure overall project management and monitoring according to UNDP rules on managing UNDP/GEF projects, b) facilitate communication and networking among key stakeholders, and c) organize the meetings of the Project Board.

Project quality assurance will be ensured by UNDP CO. The UNDP CO will monitor the project's implementation, provide guidance and advice, and facilitate communication, cooperation, and coordination among stakeholders and other project partners. At the initial stage of project implementation, the PMU may, if deemed advantageous, wish to meet more frequently to build common understanding and to ensure that the project is initiated properly. The project will hire short-term national and international experts for specific project assignments. Project activities will be contracted out on a competitive basis through tenders.

B. Describe the measures for financial and project / programme risk management.
Project risk assessment and mitigation measures will be further identified and detailed during the project design phase.

Risk	Risk rate	Risk mitigation measure
National legislatures are not sufficiently proactive in supporting in law and sub-law amendments and adoption to set the conditions for mariculture development	Medium	The project will seek to mobilize high level support from the national authorities. The project will produce high quality technical studies and maritime design specifications. It will bring and advocate for international best practice for mariculture that contributes to local economy as well as coastal protection.
Local population is skeptical about the open sea and pond sustem mariculture as a viable business for their communities and is not willing to commit their workforce in the proposed adaptation measure.	Low	Continuous stakeholder consultation and engagement will be employed by the project. Meetings with local stakeholders to explain project activities and enlist support. Community mobilization and participation in design, implementation and impact monitoring of on-the-ground

		adaptation measures will be a project methodology.
Local businesses are not attracted to the new business opportunity and are rigid about the innovation.	Medium	Private sector engagement from the outset of project design stage and through the project implementation. Setting up a platform, through regular meetings and consultations, with the government, local fishermen and business community to indentify and address their distinct roles and interests in the mariculture development.

C. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

Type of M&E activity	**Responsible Parties**	**Budget US$*** *(does not include staff time)*	**Time frame**
Inception workshop	▪ Project Coordinator ▪ UNDP-CO	$3,000	Within first two months of project start up
Inception Report	▪ Project team ▪ UNDP-CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	▪ Project Coordinator ▪	None	Start, mid and end of project
Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis)	▪ Project Coordinator ▪	None	Annually prior yearly reports and to the definition of annual work plans
Monthy reports	▪ Project team	None	At the end of each month
Annual reports	▪ Project team ▪ CoRI ▪ UNDP-CO	$2,500	At the end of each year
Meetings of the Project Coordination Committee	▪ Project Coordinator ▪ UNDP-CO	None	After the inception workshop and thereafter at least once a year
Technical reports	▪ Project team ▪ External	None	To be determined by Project team and UNDP

	consultants		CO
Mid-term external evaluation	▪ Project team ▪ UNDP-CO ▪ External consultants	$ 30,000	At the mid-point of project implementation.
Final external evaluation	▪ Project team ▪ UNDP-CO ▪ External consultants	$ 30,000	At the end of project implementation
Final Report	▪ Project team ▪ UNDP-CO	None	At least one month before the end of the project
Publication of lessons learned	▪ Project team	$ 17,500 (average $ 3,500 per year)	Yearly
Audit	▪ UNDP-CO ▪ Project team	$ 15,000 (average $ 3,000 per year)	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	▪ UNDP-CO ▪ CoRI	$2,000	Yearly
TOTAL INDICATIVE COST		**$ 100,000**	

D. Include a results framework for the project proposal, including milestones, targets and indicators.

Results framework will be prepared during the project design phase based on feasibility assessments and wide range consultations with the key stakeholders.

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

A. RECORD OF ENDORSEMENT ON BEHALF OF THE GOVERNMENT[2] *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:*

Dr. Mawaheb Abu El-Azm C.E.O. of Egyptian Environmental Affairs Agency / (EEAA) Ministry of State for Environmental Affairs (MSEA)	Date*:* April 21, 2010

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 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.	
Y. Glemarec Yannick Glemarec Director Environmental Finance UNDP Implementing Entity Coordinator	
Date: April 22, 2010	Tel. and email:+1-212-906-6843 yannick.glemarec@undp.org

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.

Project Contact Person: Keti Chachibaia
Tel. and Email: Tel: +421 2 59337 422; keti.chachibaia@undp.org