



PROJECT IDENTIFICATION FORM (PIF)¹

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND:SCCF

PART I: PROJECT IDENTIFICATION

Project Title:	Addressing climate change vulnerabilities and risks in vulnerable coastal areas of Tunisia		
Country(ies):	Tunisia	GEF Project ID: ²	5105
GEF Agency(ies):	UNDP (select) (select)	GEF Agency Project ID:	4697
Other Executing Partner(s):	Ministry of Environment, Coastal Protection and Planning Agency (APAL)	Submission Date:	2012-09-20
GEF Focal Area (s):	Climate Change	Project Duration (Months)	60 months
Name of parent program (if applicable): ➤ For SFM/REDD+ <input type="checkbox"/>		Agency Fee (\$):	550,000

A. FOCAL AREA STRATEGY FRAMEWORK³:

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCA-2 (select)	2.1. Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable areas	2.1.1. Adaptation measures and necessary budget allocations included in relevant frameworks	SCCF	660,000	5,045,000
CCA-2 (select)	2.2. Increased adaptive capacity to climate change in development sectors	2.2.1. Vulnerable physical, natural and social assets strengthened in response to climate change impacts, including variability	SCCF	4,000,000	49,000,000
CCA-3 (select)	3.1. Innovative and sustainable economic instruments established to accelerate country-wide adoption and up scaling of proven coastal adaptation measures	3.1.1. Innovative frame for Regulations, financing, insurance and fiscal mechanisms that provide effective risk sharing and risk reduction in coastal areas	SCCF	590,000	500,000
(select) (select)			(select)		
(select) (select)			(select)		
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(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)	Others		(select)		
Sub-Total				5,250,000	54,545,000
Project Management Cost ⁴			SCCF	250,000	620,000
Total Project Cost				5,500,000	55,165,000

B. PROJECT FRAMEWORK

¹ It is very important to consult the PIF preparation guidelines when completing this template.

² Project ID number will be assigned by GEFSEC.

³ Refer to the reference attached on the [Focal Area Results Framework](#) when filling up the table in item A.

⁴ GEF will finance management cost that is solely linked to GEF financing of the project.

Project Objective: to promote innovative adaptation strategies, technologies and financing options to address the additional risks posed by climate change on populations and key socio-economic sectors in Tunisia's most vulnerable coastal areas

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Cofinancing (\$)
1. Enabling policy and institutional frameworks	TA	1. Institutional capacity to plan for and respond to increasing climate change risks in coastal areas is improved	<p>1.1. Regulations and enforcement mechanisms governing coastal land use and EIA strengthened to include climate risks management requirements, with a particular focus on siting and construction of infrastructures and tourist facilities</p> <p>1.2. Advanced methods and tools for coastal risk assessment and adaptation planning (e.g. DIVA, COSMO, CVAT, SMP, etc.) introduced at 10 planning authorities (APAL, DGAT, ANPE, OTEDD, ONTT, AFT and 3 vulnerable municipalities) and related training package delivered to 300 key technical staff and decision makers for them to understand and respond to the impacts of climate change induced risks/disasters on coastal infrastructure, economies and livelihoods;</p> <p>1.3. Hardware and software delivered to improve observation capacities, data collection and treatment (inundation modelling, topographic and bathymetric software, floating water wings with sensors and three numerical tide-gauges)</p> <p>1.4. In at least 4 vulnerable coastal regions and municipalities (Northern coast of Tunisia and Djerba), spatial plans (SDA, PAU), zoning regulations and disaster management strategies revised, based on impact scenarios, shoreline</p>	SCCF	660,000	5,045,000

			management planning and cost-benefit analysis of adaptation options			
2. Replicable adaptation measures in the target coastal sites	Inv	2. Climate change resilience of priority coastal areas enhanced through implementation and dissemination of innovative risk reduction measures covering 40 km of coast and benefiting 150,000 inhabitants	<p>2.1. Shore protection practices and technologies to mitigate long-term risks from SLR introduced in the Gulf of Tunis, Northern coast of Tunisia and Djerba sites, with a focus on:</p> <ul style="list-style-type: none"> - climate-resilient beach nourishment (22 km) - sediment-filled geotextile material tubes (2 km) - sand dune rehabilitation (12 km) - low-lying wetlands and marches restoration and conservation (5 km) - restoration/plantation of vegetative buffers with native species (3 km); <p>2.3. Controlled extraction and improved management systems for coastal fresh aquifer implemented in Djerba to prevent saltwater intrusion resulting from SLR;</p> <p>2.2. Technical capacities, institutional functions and associated budgets in place at the APAL and municipalities for the maintenance, planning and expansion of the introduced shore protection and coastal adaptation practices;</p> <p>2.3. A coastal risk monitoring and early warning system focusing on SLR-induced erosion, urban flooding and saltwater intrusion designed and introduced in Djerba</p>	SCCF	4,000,000	49,000,000
3. Economic incentives for coastal adaptation	TA	3. Innovative and sustainable economic instruments established to accelerate country-wide adoption and up scaling of proven coastal adaptation measures	3.1. A comprehensive coastal adaptation investment plan of Tourism sector developed and initiated in Djerba with participation of key tourism facility owners and operators that includes detailed costing and sources	SCCF	590,000	500,000

			of finance (both public and private); 3.2. Regulations and disbursement procedures of the National Fund for the Protection of Tourism Zones adjusted and innovative financing instruments introduced (e.g. modified tax products in the tourism, transport and O&G sectors) 3.2. Property insurance and fiscal mechanisms that provide effective risk sharing and risk reduction incentives in coastal built environments designed and introduced amongst 1,000 highly exposed businesses and households			
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
Sub-Total					5,250,000	54,545,000
Project Management Cost ⁵				SCCF	250,000	620,000
Total Project Costs					5,500,000	55,165,000

C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	Ministry of Environment/ APAL	Grant	51,000,000
Other Multilateral Agency (ies)	KFW	Grant	3,000,000
GEF Agency	UNDP	Grant	1,165,000
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
Total Cofinancing			55,165,000

D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b) ²	Total c=a+b
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⁵ Same as footnote #3.

UNDP	SCCF	Climate Change	Tunisia	5,500,000	550,000	6,050,000
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
Total Grant Resources				5,500,000	550,000	6,050,000

¹ In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

² Please indicate fees related to this project.

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1 The [GEF focal area/LDCF/SCCF](#) strategies:

1. The project is in line with one of the key strategic priorities of the SCCF on integrated *coastal zone management*. As informed by the guidance, SCCF projects can focus on “implementation of adaptation measures such as beach nourishing at particularly important sites; Construction of hydrological models; Institutional support for implementation of integrated coastal zone management and disaster management” (GEF/LDCF.SCCF.9/4/Rev.1 Revised Programming Strategy on Adaptation to Climate Change for the Least Developed Countries Fund (LDCF) and the Special Climate Change Fund (SCCF). Following this guidance the project will address the long term needs for shoreline protection in the face of climate change in Tunisia. It will implement such measures as beach nourishment, dune system and coastal marshland restoration, controlled extraction and management of the groundwater reserves in the coastal areas to buffer the saltwater intrusion. The project also addresses the needs for improved coastal risk monitoring and early warning systems in response to the increasing storminess. Policy transformations and economic instruments that will be put in place ensure long term climate resilient management practices of coastal regions and their human and economic assets.

A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:

2. The project fully satisfies the SCCF eligibility criteria as stated in the GEF Council Paper GEF/C.24/12 and Revised Programming Strategy on Adaptation to Climate Change for the Least Developed Countries Fund (LDCF) and Special Climate Change Fund (SCCF) GEF/LDCF.SCCF.8/Inf.4. It has also followed the Draft Programming Strategy on Adaptation to Climate Change for the Least Developed Countries Fund (LDCF) and The Special Climate Change Fund (SCCF)⁶. The SCCF programming guidance prioritizes integrated coastal zone management and highlights the “implementation of adaptation measures such as beach nourishing at particularly important sites; Construction of hydrological models; Institutional support for implementation of integrated coastal zone management and disaster management”. These are the main elements that the proposed SCCF project follows. The project is designed to address the main national adaptation priority on integrated coastal zone management and takes three pronged approach for long term resilience of the coast. It firstly revises critical national regulations on coastal zoning based on impact scenarios generated by numerical coastal models and develops local adaptation plans for the vulnerable coastal locations identified by SNC. Secondly, it provides direct investments for advanced and climate resilient coastal defense options, considering the coastal land use current practices and future priorities, geomorphological specificities of the coastline and a range of plausible scenarios of SLR impacts. Thirdly, it introduces economic and financial instruments, such as taxes and insurance mechanisms both to mobilize internal resources for coastal defense and adaptation investments and drive away development infrastructure from the highly sensitive and exposed coastal regions for a long term coastal resilience. Thus, the proposed project is aligned with the SCCF Results Framework Objective CCA-2 and CCA-3 as described in Table A above. This approach is also aligned with the scope of expected interventions as articulated in the SCCF programming paper and decision 5/CP.9. Specifically, the project is catalytic and leverages considerable resources from the government of Tunisia. The proposed set of economic and financial measures are also highly catalytic and will leverage additional resources from other related initiatives as well as public and private sources. It is country-driven and constitutes a direct follow-up to the main recommendations contained in the Initial and Second National Communications which both give priority to the mainstreaming of adaptation concerns into the development of coastal

⁶ GEF/LDCF.SCCF/R3/1.Rev.3; prepared by the GEF Secretariat.

regions of Tunisia. And last but not least the project fully complies with the additional cost requirement for the SCCF projects. As defined by the GEF Clarification on the Concept of Additional Cost of Adaptation to Climate Change GEF/LDCF.SCCF.12/Inf.04 “analyses of climate change risks and necessary modifications to Business As Usual (BAU) project can be considered an additional cost”.

A.2. National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, NBSAPs, national communications, TNAs, NIPs, PRSPs, NPFE, etc.:

3. This project follows from the findings and key recommendations of the National Communications of Tunisia that identified sea level rise and coastal development as a top priority for adaptation action. The SNC even supported a comprehensive coastal V&A assessment which forms the basis of this proposal. This flagship study recognizes, inter alia, the need to build supportive national capacities to accelerate the diffusion of innovative adaptation technologies and practices in vulnerable areas such as Djerba and underscores the criticality of exploring new financial options and economic instruments to sustain adaptation efforts over the long run. In fact, the vulnerability study was recently updated and concluded that that more than 790 Km of Continental Tunisian coastline (55%), and 266 Km of low Island coastline (59%) are vulnerable to SLR. The study also confirmed that economic impact of climate change related SLR on agriculture and tourism is estimated to 0.63% of GDP/year. As a result the coastal adaptation is prominently featured in all national strategies in Tunisia Such as the 12th National Development Plan (2012-2014) and National Development Strategy (2012 –2016) that both identify coastal adaptation as one of the key priorities for sustainable development in Tunisia. For example, National Development Plan calls for full integration of climate change effects into land and water management planning, protection of vulnerable shorelines against coastal erosion, deployment of TWW reuse technology as well as private sector involvement, local decentralization and fiscal reforms for greater environmental and climate resilience. This priority was confirmed after the 14th of January 2011, key date for Tunisian shift from dictatorship to new era tending for setting up democracy. In fact, the need to strengthen local governance as a condition for sustainable development and climate resilience at regional and local level is now more important than ever. Lastly, by strengthening the resilience of coastal regions and promoting new policy options for the long term management of SLR-induced shoreline changes (including managed retreat and setback zones), the project will provide a tangible contribution to the socio-economic well-being of the country.

B. PROJECT OVERVIEW:

B.1. Describe the baseline project and the problem that it seeks to address:

4. Over the past decades, Tunisia has grown as a modern middle income country as a result of structural reforms and prudent macroeconomic management. However, as with the rest of the Mediterranean Region, emerging impacts from anthropogenic climate change poses a serious challenge to Tunisia’s economic growth and environmental sustainability, with the potential to undermine development gains achieved, and attainment of the MDGs, especially for the poorest segment of the society.

5. While each region of Tunisia faces its own climatic challenges, the INC and SNC identified the coastal zone as particularly vulnerable to short and long term climate change effects and highlighted it as a priority area for adaptation intervention through the SCCF. The coastal region has a varied topography and an irregular 1445 km of continental coastline extended from the North to the East, and 450km of island coastline. The Tunisian coast has also vulnerable coastal wetlands distributed among 100 000 ha of lagoons, 55 000 ha of Sebkhah, 200 ha of estuaries, 31 000 ha of intertidal areas and 5 100 ha of coastal oasis. The coastal region constitutes the backbone of Tunisia's economy with important agricultural activity, industry and ports offering access to external markets. It is also considered an important water reserve for the whole country, with coastal aquifers accounting for over 50% of Tunisia’s shallow groundwater resources. The

coast represents 79 % of economic activities and 90 % of the total housing capacity for tourists; and a large part of the irrigated agriculture is concentrated here.

6. The Tunisian coastal area contains approximately 70% of the country's total population and shows one of the highest urban concentration rates (more than 1,000 inhabitants/km² in Tunis and Sfax, against a national average of 57 inhabitants). It also includes a number of public facilities (universities, high schools, schools, hospitals, telecommunication and transport infrastructures, port facilities). Strong population pressure has already made this region fragile. Tunisian industries are almost exclusively based in the coastal regions: textile, metallurgical and food processing industries, and the other. This region also contains the majority of large cities, placing further pressure on the fragile ecosystem. For example, in Tunis and Sfax, 68% of urban districts and 96% of residential areas lie between 0 and 2 meters above sea level. With such a developmental context, it is clear that any deterioration of the coastline and the coastal region due to climate change will have serious implication on Tunisia's economy and human development

7. IPCC reports and other recent scientific assessments (including the SNC's coastal vulnerability and adaptation study) project a hotter, drier and less predictable climate in the country with temperature increase by 1.1°C in 2020, rainfall and water availability decline by 28% in 2050 and more intense and frequent extreme weather events (floods and droughts) over the century. Similarly, climate change-induced sea level rise (SLR), which is increasingly being felt along the coast, is expected to vary between 38 and 50 cm and is set to be primary causes for increased shoreline erosion, extended coastal inundation or permanent submersions of low lying coastal areas, reduced safety of sea-defense structures and breakwaters as well as salinization of fresh coastal groundwater and estuaries (thus diminishing underground water quality and exacerbating existing and anticipated water stress in a context of growing demand). In fact, rising sea levels maybe the most crucial aspect of Tunisia's vulnerability to climate change. Already now, in some areas, the sea levels have been rising at times up to four times higher than the world average (in combination with subsidence). A recent global study by the World Bank⁷ identified Tunisia among the top 12 developing countries that are both highly exposed and vulnerable to coastal threats of SLR. It states approximately 5% of the population would be impacted by 1m SLR. The report identifies Tunisia among 7 most vulnerable coastal countries worldwide, in terms of % of population exposed to SLR impacts.

8. Among the most pressing SLR challenges, coastal erosion and shoreline retreat are regarded as the most important threat, resulting in part from natural processes, but accelerated by human intervention, such as reduced sediment transfer and hard engineering work in coastal strip. Sand beaches, that form close to 35% of the coastline and which underpin 80% of the tourism industry, are particularly threatened and predicted to disappear at an accelerated rate, rising up to 135 cm /year in the Island of Djerba. Overall, the SNC indicated that a scenario of 0.5 m SLR would lead to tremendous socio-economic impacts, including 10,000 hectares of lost agricultural land and 53% of coastal fresh aquifer, a total damage to natural and infrastructural productive capital worth US\$ 2.6 billion (10% of GDP in 2006), annual economic losses of US\$126 million (with 65% in the tourism sector) and approximately 35,000 lost jobs (1% of the total active population). Amongst the most affected areas are the Tunisian small islands where the insularity conditions will amplify the above patterns of vulnerability and risk. The island of Djerba (the largest island of North Africa) was flagged in the SNC as a national climate change "hotspot" on account of water scarcity, fragile resource base (including limited and depleting groundwater), high vulnerability to coastal submersion and erosion (around 40% of its shoreline is made of low-lying land and sand beaches already subjected to severe erosion), high reliance on vulnerable tourism activities (almost entirely located on the seafont) and important planned infrastructure investments (e.g. Lella Hadhria tourism resort project).

9. A major challenge for Djerba and most coastal areas in Tunisia lies in the fact that, on the one hand, local human activities and economies are particularly dependent for their adaptation on

⁷ Dasgupta S. et al., 2007. *The impact of Sea-Level Rise on Developing Countries: A comparative analysis*. World Bank Policy Research Paper 4136, Washington

the services and goods provided by coastal ecosystems, while, on the other hand, these territories face an unprecedented environmental stress triggered by rapid land-use changes and shoreline artificialization. At present, a number of non-climate pressures may aggravate and accelerate the effects of climate change in coastal zones and limit their capacity to adapt to external shocks.

10. These drivers include maladaptive practices such as (i) fast growing urbanization and construction on the coasts boosted by tourism and real estate development (ii) infrastructure-heavy investments in “hard” shoreline protections (such as groins, seawalls, breakwaters, levees, etc.) that trap sediments and accelerate erosion processes, (iii) over-abstraction and inefficient use of ground water, especially in agriculture, that result in more active intrusion of seawater and soil salinization (iv) sand mining, (v) pollution/degradation of water bodies and hydro systems (including floodplains and wetlands). The effect of these pressures leads to loss of natural buffering functions of coastal zones and exacerbates exposure to water stress and sea-level rise. Combined with current baseline stressors, emerging climatic and eustatic changes will clearly jeopardize sustainability of coastal settlements, infrastructures and economies if no risk reduction measures are put into motion in order to respond to the above threats. The long-term solution required in Tunisia will be to establish a national system that can effectively address the adverse impacts of SLR and related water stress in coastal areas and generate a strategic shift towards a more climate-resilient coastal management regime. This will entail *inter alia*, to (i) accelerate the development and application of climate-sensitized policies and legislation, (ii) build national and local adaptive capacities to undertake science-based adaptation planning and manage uncertainty in the long term, (iii) strengthen abilities to generate/manage climate information in support of climate risk management (CRM) decisions, (iv) bring adaptation technologies, best practices and intellectual capital to the most vulnerable areas and stakeholders. Tunisia will also need to set up adequate economic instruments both to generate and channel larger funding for well tested climate proof coastal adaptation measures at a broader scale and provide adequate incentives for reducing exposure of critical investments (tourism resorts, houses, etc.) and re-directing them away from risky areas.

11. Baseline Project: There have been some important efforts directed at coastal protection, amongst which two initiatives are of particular relevance to the proposed project that in combination will serve as the baseline project. Through the Ministry of Environment and its Coastal Planning and Protection Agency (APAL), The Government of Tunisia (GoT) has put together the unprecedented National Programme for Coastal Erosion Protection that aims to preserve a set of 14 highly vulnerable tourism beaches (125 km in total) by undertaking anti-erosion works using engineering protection structures (e.g. groins, seawalls, and breakwaters,) in combination with artificial beach reinforcement and nourishment. The total cost of the programme is estimated at US\$100 million. A first phase of works started late last year and covers such sites Gammarth-Lagoulette (9km), Rades-Slimene (11 Km), of Rafrat (4 Km), El Kantaoui (2 Km) of Khnis-Ksiba (16 km), Kerkena (6km), the northern coast of Jerba (9 km) and the cliff of Monastir (3 km). The tender documents for these eight sites have been prepared and will be implemented as part of the 12th Development Plan. The seven remaining sites will be subject to detailed studies of implementation in the second phase of the Plan and focus on coastal areas located in the Gulf of Tunis and the Djerba Island. In parallel, in recognition of the need to move towards a more climate and environmentally-friendly development path, the GoT has decided to launch already in 2011 a flagship policy initiative on how to develop and promote a “Green Economy” in Tunisia which can lead to higher share of green sectors contributing to GDP, boost green jobs, lower energy and resource intensive production, and reduce levels of poverty. These programmes in combination provide a unique opportunity to address coastal adaptation priorities in the country. However, despite growing commitment and on-going efforts, the baseline projects as described above fall short alone of achieving the long-term solution of coastal adaptation as they require targeted support for transmitting the best knowledge and practices. As such, the Coastal Protection Programme of the government predominantly focuses on infrastructure-based, engineering solutions that have serious shortfalls in granting the long term robustness and resilience of the coastline that is highly sensitive to SLR. Given the long life

of many coastal assets a preferred solution for Tunisia is to avoid the high cost of early "over-engineering", a flexible adaptation pathway can help identify cost-effective steps to build resilience in the context of longer term trends in climate change. Demonstration of such options is necessary, based on coastal models that can generate range of various plausible impact scenarios. Improved land use and coastal zone development control mechanisms are critical to minimize the exposure and build the resilience. Since the tourism and associated infrastructure dominate the coast a set of incentives and control mechanisms such as taxes and insurance products are needed to signal the risk and drive the future investments away from the vulnerable areas and make the tourism and associated infrastructure more climate compatible. In order for this preferred solution to materialize following barriers are to be removed.

- a) *Existing coastal development planning and regulatory frameworks do not support anticipatory and pro-active management of climate change risks.* Tunisia's approach to respond to climate change in coastal systems has mainly been reactive so far. Existing baseline actions, such as the APAL's protection programme, consist mainly of remedial, "end-of-the-pipe" solutions. Approaches based on the "prevent rather than cure" principle are still to be developed. As yet, no concrete steps have been taken for the anticipatory incorporation of climate change risks into the policy and legal frameworks governing coastal management. Spatial planning regulations, building codes and disaster management plans do not factor in forward-looking approaches and measures that protect, accommodate or avoid on-going and anticipated impacts of climate change on the built environment, especially in tourism districts. For example, current rules and distance for coastal development setbacks are not predicated on site-specific assessments of historic and projected trends in shoreline profile nor do they offer a sufficient level of land-use control to avoid allocation of vulnerable lands to housing and construction activities. Similarly, Environmental Impact Assessment requirements do not account for sea level rise scenarios and related capacities for inspection, enforcement and sanction remain limited which results into the sitting and construction of maladapted infrastructures in potentially hazardous areas.
- b) *There is limited expertise and knowledge of various risk assessment and decision support tools for adaptation planning and early responses.* Despite a growing knowledge base, important information gaps remain on the nature, magnitude and distribution of key climate-change driven hazards in coastal areas (i.e. erosion processes; storm surge levels, salinization patterns, etc.). Existing monitoring and forecasting functions within APAL and its partner agencies are limited in scope and lack the robustness, integration and focus needed to convey relevant inputs and warnings to policy makers and vulnerable stakeholders in a timely and efficient manner. When available, data are not processed, shared or used in a way that can support improved vulnerability assessments and adaptation planning. In general, institutional mechanisms, capacities and tools for in-depth biophysical and socio-economic analysis of climate change impacts and adaptation options (including economic valuation methods) are at their early stage which creates a barrier to well-informed decision-making at both policy and operational levels.
- c) *There is insufficient technical capacity and awareness about more cost-effective and robust adaptation solutions to address current and anticipated climate related risks in the coastal regions.* Engineering and heavy infrastructure driven solutions are still a dominant feature of most coastal adaptation responses, including APAL's programme. But these are not designed in full account of long term implications of climate change and cannot offer a sustainable adaptation solution as climate change poses serious limitations to their technical, economic and environmental viability. More complex and integrated approaches are needed to respond to large-scale, rapid and irreversible changes in hydrological and shoreline conditions. However, Tunisia has insufficient knowledge of available cost/effective, flexible and environmental-friendly coastal protection and water management technologies that would

sustain development investments and would not turn into maladaptive, coastal area damaging practices. The value of climate compatible measures to tackle climate-driven SLR and its impacts on coastal settlements and sectors, including its implications on water stress (such as soft shoreline protection strategies or coastal aquifer management to prevent seawater intrusion) clearly needs to be further demonstrated, promoted and scaled up country-wide.

- d) *Inadequate financial environment that limits opportunities to generate adaptation resources and incentives in relation to needs.* While there is mounting awareness of the need to mobilize financing flows additional to development assistance, national capacities to develop and implement innovative economic instruments to attract new public finance and private sector engagement for adaptation remain low. This is compounded by the fact that the costs and benefits of adaptation continue to be poorly assessed and overlooked in most policy and investment decisions. The forthcoming Green Economy Initiative is illustrative of this deficiency. While climate change is amongst its top priorities, the attention is placed primarily on the economic challenges of mitigation and sustainable energy development and adaptation issues are not yet addressed on the same footing. More generally, there are no proper methods and mechanisms yet that allow for the economic dimensions of adaptation in coastal zones to be fully internalized at the level of public sectoral budgeting as well as private enterprises (such as tourism developers) and households (including property owners). For instance, the use of insurance and fiscal incentives to put a price tag on risks and send a powerful signal to discourage risk increasing behaviors (e.g. through higher premiums and property taxes) and promote risk reducing activities (such as climate proofing or relocating homes) is still missing.

- B. 2. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

12. The proposed project will assist Tunisia to remove the above barriers through a comprehensive strategy to improve the integration of climate risks management into the policies and practices governing coastal development, with a special emphasis on low-lying densely populated tourism areas. It will take a long term perspective with regards to climate change, aiming at addressing the most pressing coastal adaptation challenges while creating the enabling environment and technical capacities needed to respond to long term implications of sea-level-rise on natural and human systems. To do so, the SCCF intervention will apply an integrated approach to coastal management by introducing a range of tools, required skills and expertise for coastal flood hazard and inundation mapping with the view of long term climate change impacts generated by numerical models. A comprehensive risk assessment and coastal modeling outputs will underpin a coastal protection and management options varying from protection approaches (artificial beach nourishment, dune rehabilitation etc), to accommodation (wetland restoration, flood warnings etc) and retreat approaches (managed realignment and coastal setbacks). These approaches will be practically applied on specific high risk and sensitivity coastal locations, such as Djerba. Results and lessons learnt from these field interventions will feed back to the policy level and suitable financial instruments be developed to sustain and scale-up the project's best practices.

13. The overall objective of the project is *to promote innovative adaptation strategies, technologies and financing options to address the additional risks posed by climate change on populations and key socio-economic sectors in Tunisia's most vulnerable coastal areas.* In support of this objective, the following outcomes will be achieved.

Outcome 1: Institutional capacity to plan for and respond to increasing climate change risks in coastal areas is improved

14. Baseline: Over the past 15 years, the government of Tunisia has been increasingly realizing the high vulnerability of the coast and has started taking actions. In 1995 (Law 95-72), the GoT created the Coastal Protection and Planning Agency (APAL), with the aim of achieving sustainable development of the coast by preserving its natural environment and ensuring its integrated management. The mandate of APAL covers protection of sensitive ecosystems, licensing and control over development activities within the maritime public domain (including temporary occupations and concessions), design and implementation of coastal protection interventions, approval of EIAs, development planning of tourism beaches, management of the National Shoreline Observatory and environmental monitoring and research. It is a financially autonomous non-administrative public entity (EPNA), placed under the Ministry in charge of environment and made up of one central agency, ten decentralized offices and over 130 administrative and technical staff. Its annual operating budget revolves around US\$ 8 million (2012). It has initiated several strategic initiatives including ICZM projects, UNDP, EU SMAP and LIFE programmes (Sfax, Khroumirie-Mogrod) as well as the large-scale multi-year \$100 million programme for combating beach erosion through artificial sand nourishment and 'hard' protection measures. The APAL fulfills an important institutional role for coastal management. However, the agency still faces important capacity gaps that limit its ability to address increasing threats from climate change on coastal development. Although it is one of its primary missions the APAL still lack the proper tools, software and institutional processes to inform key institutions and local authorities of coastal risks and influence key coastal management policy decisions in vulnerable sectors such as tourism and urban development. Both APAL's Shoreline Observatory and National Observatory for Environment and Sustainable Development (OTEDD) do accumulate a growing knowledge and information base on coastal processes and changes but this does not adequately address climate change risks to coastal zone nor is it made available to other institutions in a way that can support effective adaptation decision-making. During past three years APAL received strategic support from the UNDP in the framework of African Adaptation Programme funded by the government of Japan and UNDP. The project helped update coastal topographic profile by a comprehensive geomorphological and coastal sedimentation studies. Sediment budgets have been used to analyse different sediment inputs (sources) and outputs (sinks) on the coasts, which is to predict morphological change in any particular coastline over time. An update of the coastal topography is a critical foundation for any meaningful SLR and inundation risk predictions and mapping. Institutional capacity of the observatory, particularly in data treatment was also assessed. In response to identified gaps the observatory was endowed with efficient data storage and treatment equipment (new powerful server, specific inverter, powerful personal computer, cartographic GPS, plotter, backup server). In order to strengthen the capacity of coastal observatory in collecting quality marine data and new kind of data (physicochemical, hydrodynamic, oceanographic and Metrologic), the AAP and PEE (« *Programme Environnement et Energie* » funded by EU) projects provided 3 fixed water wings and 4 small floating water wings. These water wings will be placed in the Gulf of Tunis, Gulf of Hammamet and Gulf of Gabès. Also, through the AAP project 4 numerical tide-gauges will be bought and placed in the ports of Goulette, Marina Hammamet, Sousse and Gabès. This newly acquired hardware is an important contribution to the observation and data management capacity of the APAL and its national observatory. The SCCF project will further expand necessary technical capacities while specifically focusing on institutional strengthening and improvement of regulatory framework that will enable the APAL to influence coastal land use planning and development decisions that SLR risks demand. Without SCCF intervention, the technical capacities and skill-sets of APAL and associated organisations (National Observatory) to efficiently conduct, interpret and integrate coastal modelling, climate risk assessment and adaptive measures into shore protection and land-use and decisions is likely to remain limited. This situation is particularly problematic in the tourism sector which has set an ambitious development target of 6 million visitors by end of 2012, to be generated mainly through sea-side tourism activities. To achieve this, the National Tourism Office (ONTT) and the Tourism Real Estate Agency (AFT) have put together under the 11th Five-Year Plan a public-private investment

programme that aims to develop 15 new tourism resorts (hotels, marinas, ports, etc), including the Lalla Hadria project in Djerba. These tourism development efforts have also triggered significant long-lived investments in the infrastructure and water sectors. However, current baseline programmes are being implemented without any due account of emerging and anticipated risks of climate change. So far, APAL and other key planning authorities, such as the General Directorate for Land-use Planning (DGAT) and the National Environmental Protection Agency (ANPE) have made very little use of adaptation planning methods that could help them identify the risks on major coastal investment portfolios and examine costs and trade-offs of different risk management options, such as alternative siting of tourism structures, strategic retreat vs. protection or use of soft” vs. conventional “hard” defense measures. Similarly, regulations and codes governing coastal land and infrastructure development (e.g. code for urban planning and territorial management) are dated back several years or decades and do not account for SLR and associated climate change risks. In the absence of more climate-sensitive and stringent regulations for building setbacks, hazards zoning, construction standards or EIA, the vulnerability and exposure of on-going and planned development investments (especially in the residential and tourism sectors) would continue to increase, leading to a steep trend in human and economic losses from coastal disasters.

15. **SCCF alternative:** The project will build the technical and human capacities within APAL and its partner agencies (DGAT, ANPE, ONTT, OTEDD, AFT and local authorities) to help them better assess emerging and anticipated climate change risks on the Tunisian coast that they are mandated to protect and manage sustainably by setting development controls and guide public and private sector investments towards low environmental impact and climate compatible options. The project will help develop internal technical skills at APAL as well as institutional protocols to ensure regular updates in hazard and inundation risk maps in order to reflect the changing risks of flooding. Moreover, these updates, with the help of the project will account for SLR and related erosion, changes in storm frequency and intensity. This will clearly demand additional hardware and software to improve observation capacities, data collection and treatment. For example, software for inundation modeling, GIS spatial analysis, topographic and bathymetric software will be provided. Floating water wings with sensors and three numerical tide-gauges that would be placed in the ports of Djerba, Zarzis and Boughrara. This will permit a comprehensive and continued monitoring over the entire coastline high risk.

16. The project will identify and introduce a set of analytical and decision support tools to improve coastal risks modeling, socioeconomic assessments and long-term adaptation planning in the context of ICZM (e.g. GIS-based risk mapping, DIVA, COSMO, SMP, RESPONSE, CHMP, RVAT, ACBA⁸, and other relevant models). A dedicated training and guidance package will be developed and institutionalized benefiting at least 300 people from national and local authorities, private sector organizations (in tourism sector) as well as consulting firms specialized in coastal studies. The tools will be applied in 4 coastal regions and municipalities (Northern coast of Tunisia and 3 municipalities of Djerba) to conduct thorough site-specific analyses of climate risks and adaptation with a view to guiding the adjustment of local shoreline management policies, long-lived infrastructural projects (e.g. dikes), spatial and land use plans (*Schéma Directeur d'Aménagement Régional; Plan d'Aménagement Urbain*) as well as disaster risk reduction strategies (e.g. flood plans). The identification of the most effective adaptation options (including protection, accommodation and managed retreat) and technical solutions to strategically managing coastal processes and hazards in the short and long term (e.g. flood and erosion) will result. This will be based on careful analysis of costs and benefits and robustness of potential CRM and land use decisions under the range of impact scenarios. Socio-economic assessments will help demonstrate the cost-effectiveness of certain adaptation measures, such as dune stabilization, groundwater conservation, wetland restoration,, or using vulnerable lands as natural

⁸ Dynamic Interactive Vulnerability Assessment (DIVA); Coastal Zone Simulation Model (COSMO), Shoreline Management Planning (SMP), Risk & Vulnerability Assessment Tool (RVAT), Coastal Hazard Mitigation Planning (CHMP), Adaptation Cost-Benefit Analysis (ACBA)

preserves or for low value uses, as opposed to ‘hard’ structural responses. The project will provide a means by which Tunisian authorities can revise the regulatory frameworks and local enforcement mechanisms for physical planning, hazard mapping, construction permitting and standards and environmental impacts assessment to support greater protection of ecological buffers and restriction of potentially sensitive investments in risky areas. A particular emphasis will be put on the improvement of coastal development setback distance, rules and local enforcement capacities so as to more effectively accommodate future changes in shoreline and reduce potential risks on human safety and the built environment. As mentioned above, the code of urban planning and territorial management is being revised to implement the Integrated Coastal Zone Management ICZM Protocol, which requires an obligatory setback of 100m from the alignment Maritime Public Domain (DPM) in urban areas and especially in tourist areas. With the view of anticipated impacts of SLR the layout of the DPM needs to be revised to adequately respond to the needs for coastal retreat due to sea intrusion and intensified coastal inundation and erosion, especially on the southeast coast of Djerba.

Outcome 2: Climate change resilience of priority coastal areas enhanced through implementation and dissemination of innovative risk reduction measures

17. **Baseline:** Coastal hazards resulting from SLR and climate change, such as increasing erosion, water stress or extreme storm surges and floods, are of priority concerns for the GoT and have prompted a number of critical national and international baseline investments. Under the 1st phase of the National Coastal Erosion Protection Programme, technical studies for the rehabilitation of 6 priority tourism beaches was undertaken between 2000 and 2006 and initial round of US\$43million, supported by a loan from the Saudi Development Bank, was allocated to APAL in 2011 for the investments in anti-erosion protection works for three segments of the coastline located in the Gulf of Tunis -20 km (Gammarth-Carthage and Carthage-Lagoulette) Kerekena and Rafrat – 10 km and the North-Eastern part of Djerba (Aghrir). Recently KFW has also approved \$25million for these works. The measures supported by the programme focus essentially on hybrid beach protection techniques that combine artificial sand nourishment with construction of hard defense structures (e.g. groins, breakwater, shore embankment, etc.). Preparation of the technical studies of the second phase (5 sites) will also start already in 2012 for a budget of US\$1 million. Similarly, the GoT is investing around US\$90 million in Djerba for the construction of the country’s biggest seawater desalination plant to secure the island water supply in the face of fast growing demand and depleting aquifer resources. The stations of Gabes with a production of 30000m³/day, Gallala (Jerba) - 15 000 m³ / day and the resort of Zarzis - 15 000m³/day are planned in the framework of this investment programme. Moreover, in response to more rapid and uncertain changes and anomalies in climate and extreme weather conditions, the government has put early warning system high on its agenda. As a first step towards improved observation and forecasting capacity, the Ministry of Agriculture and Environment with support from the GIZ Climate Change Assistance Programme, is currently conducting a feasibility study for the development of a national climate change multi-hazard monitoring and early warning system. While encouraging and helpful, these baseline efforts are unlikely to be sufficient to deal effectively with the magnitude and specificity of the climate change threats in coastal areas. In absence of SCCF support, implementation of the requested changes and progress towards adoption of cost-effective and proven CRM practices in coastal zones will probably be much slower and weaker. As such, despite the early steps made to introduce more resilient and soft defense approaches such as beach nourishment, the APAL’s coastal protection programme would continue to be dominated by costly and short-sighted hard engineering solutions. Yet, it is now widely recognized that shifts in climate, hydrology and coastal dynamics pose serious limitations to current structural responses to coastal erosion and have the potential to render them technically, economically and environmentally unsuited for coping with increasing magnitude, intensity and uncertainty of coastal hazards and stresses. Furthermore, important capacity gaps would remain both in terms of designing and implementing appropriate climate-resilient erosion control methods. For example, the technical studies underpinning the design of the APAL’s

protection and beach nourishment solutions were to a large extent conducted before the completion of the SNC V&A analyses and do not sufficiently take into account the latest scientific understanding of sea level rise and changes in local hydro-sedimentary conditions. As a result, a critical part of the investments planned could be lost or rendered inefficient in the near future. At the same time, the programme is focusing almost exclusively on one type of strategy (mix of infrastructural and beach nourishment techniques) and does not consider a more diversified portfolio of new, flexible and ‘climate-smart’ non-structural measures, such as bio-engineering, that can better maximize coastal ecosystem functions and services as natural protective mechanisms and provide greater robustness to all plausible SLR impact scenarios in a broader range of socio-economic and bio-physical conditions. Clearly, under the baseline course of action, APAL will still lack the knowledge and practical tools to take advantage of the full array of ‘soft’ shoreline defense strategies available and bring the nascent adjustment in practices to broader scale and greater sustainability. For instance, APAL had tested in the past under the completed GEF/UNDP Medwetcoast project some bio-engineered sand dune rehabilitation techniques with encouraging results. However, further improvement, sustainability and upscaling of these treatments have not been fully achieved until now, due notably to the fact that the agency still relies exclusively on expensive importation of chestnut fences from France to construct its dune rehabilitation systems, and this despite the availability of cheaper local material, such as date palm leaves that are used already for sand stabilization works in oasis areas. As to aquifer management, even if the GoT is placing important attention on water security in Djerba, insufficient financial and technical means have constrained the implementation of climate-resilient groundwater management measures that can reduce pressures on fresh aquifers and maintain their role of hydraulic barriers against seawater intrusion. Similarly, the work of GIZ on EWS, which has a conceptual, national and multisectoral focus, will necessitate additional technical assistance, capacity building and investments to address the specific monitoring and information needs of the coastal region and operationalise a practical and replicable model at the local level.

18. SCCF alternative: The project will help APAL climate-proof its coastal protection programme and practices by providing the necessary assistance to soundly integrate long-term impacts of SLR in the design and implementation of the on-going and planned beach protection measures. It will do so by reviewing and retrofitting the technical solutions identified for the programme’s first tranche and by ensuring upstream incorporation of SLR impact scenarios and related key design parameters into the feasibility studies of the second tranche. It will also pilot in three priority areas (Gulf of Tunis, Northern coast of Tunisia and Djerba) a set of non-structural and bio-engineering shoreline protection methods that go beyond beach nourishment to address erosion and storm surge processes in a greater variety of socio-economic and geomorphologic settings (low-lying agriculture and urban areas, upland buffer/bankface zones, wetlands and beach strand zones, etc.). The specific framework adopted for the design and implementation of these measures is the “Living Shorelines” approach that has been successfully carried out for protection of sensitive coastal areas in other Mediterranean countries (France, Spain and Italy) and that is being introduced in Egypt’s Nile Delta with support of SCCF. This approach focuses on an innovative set of bank stabilization and management practices that act as erosion-control and storm-surge-protection functions by providing for long-term restoration, maintenance or enhancement of natural habitats and coastal processes. These include active and passive techniques such as bio-engineering treatments for the restoration of natural vegetation, eroded shore banks and sand dune systems, re-nourishing of beaches in combination with ‘living’ structural and organic materials (e.g. biologs, geotubes, etc.) or conservation of ecological buffers within setback zones. The project will increase sustainability and replication of these approaches by working with the Ministry of Agriculture and professional contractors to establish a local supply chain of goods and services in support of living shoreline treatments, including local production of seeds and seedlings of autochthonous species (e.g. sand-fixing beach grass such as *Ammophila arenaria* and *Retama bovei*) as well as low-cost provision of organic and structural materials (e.g. natural fiber logs and mattings, sand-trapping fences made with date palm leaves,

geotextiles etc) The project will also explore and test integrated coastal aquifer management systems in Djerba that will maintain groundwater balance and minimize SLR-induced sea water intrusion and salinization. It is well known that coastal aquifers function as critical buffer against sea-water intrusion provided that their balance is well managed and maintained. This will be done by supporting controlled extraction measures in the tourism and agriculture sectors and, where appropriate (to be further investigated and confirmed during PPG). All together, these actions could save a significant amount of potable water while costing 2 to 4 times lower than desalination. Building on and complementing GIZ support, the project will also help the Ministry in charge of environment and other relevant institutions to incorporate in the on-going national EWS initiative specific indicators and procedures for the monitoring, forecasting and warning of key coastal risks, with a particular emphasis on coastal flooding, erosion and salt content in groundwater. A model for an integrated local EWS, linked to the national one and focusing on the above set of coastal hazards, will be developed and tested in Djerba. Related capacities for operations and maintenance, institutional arrangements and protocols for information storage, treatment and dissemination will also be established.

Outcome 3: Innovative and sustainable economic instruments established to accelerate country-wide adoption and up scaling of proven coastal adaptation measures

19. Baseline: The 2008 SNC coastal study has estimated the total capital cost of adapting to a 0.5 meter SLR scenario at approximately US\$1 billion. Although still tentative and probably underestimated (as it does not fully consider the costs of private adaptation), this figure gives some indication of the financial burden that climate change poses on the country economy and national budget. Clearly, the availability of financial resources in Tunisia, both nationally and internationally, is unlikely to be sufficient to meet such financing needs. Additional funding sources will therefore be required to sustainably support and upscale adaptation efforts in the long term. However, Tunisia still lacks the expertise and practices to make better use of existing financing instruments and find innovative ways to attract and direct appropriate levels of resources towards long-lasting and planned adaptation interventions, including strategic retreat from development and infrastructures in low-lying coastal floodplains and high-hazard areas. Also, while a significant portion of coastal adaptation investments is likely to generate private goods and benefits (such as restoring beaches for specific tourism resorts), the corresponding costs and financing efforts are still inequitably shared between the public and private sector. So far, there have been no mechanisms to increase economic returns and financial contribution from the private players that will benefit the most from coastal adaptation. This is particularly true for the tourism industry which around 80% of its infrastructure is directly located along the coast and exposed to SLR effects. Engaging with the tourism sector for a greater contribution to adaptation funding would therefore be a critical step for Tunisia. The existing National Fund for the Protection of Tourism Zones (NFPTZ) could constitute a powerful mechanism in this regard. However, in its current form, the fund lacks the necessary regulations and resource base to adequately mobilize funding in support of critical adaptation investments. Indeed, the main mandate of the NFPTZ is to maintain the aesthetic value and attractiveness of tourism areas and not to fix environmental and climate-related problems such as beach erosion. For example, between 2002 and 2010, the NFPTZ spent a considerable budget for the installation of tourism facilities and equipments (beach umbrellas, outdoor chairs and tables, showers, toilets, etc.) in more than 100 beaches across 13 governorates. However, no significant investment was made to protect/rehabilitate the beaches and other tourism-supportive coastal systems from environmental degradation or SLR effects. Even though the NFPTZ would have the appropriate mandate and structure, its current level of resources would not suffice to engage meaningfully into adaptation works such as beach nourishment which costs around US\$1 million per km. While some financial reforms do happen in the tourism sector that could potentially offer valuable funding sources and mechanisms for adaptation, these remain insensitive of the issue and the associated financing needs. This is somewhat paradoxical given the critical importance of well-preserved shorelines for the tourism economy and for its resilience to sea level rise. Moreover, the benefit of using

fiscal and market-based instruments not only to accumulate financial capital but also to incentivize risk reduction is still poorly understood in the country. At present, there are no incentives for encouraging private firms and households to engage into risk-abating measures and redirect private investments from the coast towards inland or less risky coastal areas. Moreover, the tourism industry is not charged with responsibilities to have coastal protection (against erosion) and risk reduction plans (e.g. flood risk management plans) or climate proof their infrastructure in a way that reinforces robustness of the coast, does not block coastal sedimentation process or erode natural coastal buffers, such as dune structures. In view of the above, there is clearly substantial room for enhancing and diversifying adaptation financial sources and incentives in Tunisia. This initiative is expected to suggest a package of economic reforms and legislative changes in line with national priorities. SCCF support is therefore needed to address the above deficiencies and gaps.

20. SCCF alternative: The project will implement a set of additional strategies to help Tunisia fill up some of the financing gap facing coastal zone adaptation needs. It will work closely with the NEPRZ, partner with local tourism companies and investors, including banks and link up with Tunisia's Green Economy Initiative. Under this component the project will work on the three complementary fronts. First, it will seek to minimize additional funding needed for adaptation by reducing maladaptation costs (resulting from sunk-costs or costs of delayed decisions) through integration of early cost-effective climate risk management actions and associated budgets into key coastal development programmes, with a particular focus on the tourism sector. Investment programmes through Green Economy Initiative and NEPRZ funding will include the coastal risk management measures, such as flood risk management, anti-erosion and improved sediment management, beach nourishment, artificial dune or dune rehabilitation and coastal setbacks. It will do so by supporting more detailed costing studies of climate change impacts and adaptation together with the necessary policy dialogue and technical capacity development. As a result of these efforts a comprehensive climate risk management and adaptation plan will be developed in Djerba for Tourism industry with participation of key investors, including banks (especially those that are partners of the above mentioned baseline project / investment programmes). The plan will showcase mechanism of private sector engagement into the adaptation planning and financing. The plan will include series of incentives as well as requirements, obligating the tourist sector investors to ensure flood and water-compatibility of the physical infrastructure. This will be based on the selection of the locations in compliance with spatial plan and coastal zoning regulations (under component 1), adhering to building standards etc. Certain percentage of each tourism sector investment programme (determined by scale, location and type of investment) will be charged to finance environmentally and socially sound adaptation measures as described above and demonstrated as robust and resilient under the component 2 of this project. Second, it will strengthen the ability of the Tunisian government to better use the existing financial mechanisms in order to generate sustainable and additional funding for coastal adaptation and management, with a tentative target of US\$10 million leveraged annually (exact amount to be refined during PPG). This will entail examining appropriate ways for enhancing and adjusting the structure, collection and allocation of the existing fees already leveraged by the Ministry of Finance from the concessions awarded within the national maritime domain. The project will also explore the opportunity of integrating new requirements into the criteria of public and private financing instruments (state and banks) for long-lived infrastructures, including tourism resorts and marinas. Similarly, a systematic review of the existing national and local financial resources that could be optimized and better mobilized for adaptation will be conducted. In this regard, technical assistance will be provided to increase the financial contribution of the NFPTZ to adaptation by supporting targeted adjustments to its mandate and institutional frameworks. Among the reforms foreseen, the project will assist with the revision of the main policy priorities, eligibility criteria and regulations governing the NFPTZ to allow for a significant portion of its resources to be directly allocated to the financing of priority adaptive measures (such as beach nourishment, dune protection etc) in vulnerable areas. Potential gaps in geographical coverage, disbursement procedures and management rules that may affect the efficiency of the NFPTZ for

coastal adaptation will be reviewed and revised (a detailed gap analysis will be conducted during PPG). Technical studies conducted under the component 1 will provide a vision and a roadmap to guide the fund's intervention in the area of coastal resilience. In parallel, important efforts will be paid towards increasing the capitalization of the NFPTZ through the diversification and broadening of its resource base. Using the political channel and platform offered by the Green Economy Initiative, the project will help the Ministry in charge of environment and the Ministries of Finance and Tourism to design and incorporate a "climate change contribution" into the new fiscal system proposed under the draft tourism tax bill. In parallel, additional financial contribution from tourism and other coastal-relevant sectors will be sought by testing innovative financing sources and mechanisms, such as the creation of mandatory/voluntary visitor fees in certain locations (airport, natural parks, tourism beaches, etc.) or new "climate taxes" (possibly as a portion of existing total tax) on maritime transport, fishery, oil & gas production, etc. The necessary legal provisions to support the above innovations will be drafted and included for enactment into the Green Economy reform package and subsequent amendments on the next Finance Acts. Thirdly, the project will help the GoT to explore and set up innovative fiscal regimes and mandatory insurance schemes targeting private properties as a means both to catalyze additional finance for adaptation, including gradual relocation of key socio-economic assets, and incentivize risk adverse behaviors across vulnerable businesses and households. To do so, it will work closely with the Ministries of Finance and Interior and will build innovative public-private partnerships with the insurance/reinsurance industry. A system of differential property taxes, insurance premiums and deductibles will be introduced to discourage building activity in risky areas, encourage adoption of climate-proof construction standards, and ultimately, reduce moral hazard across developers and owners. In addition, the value and feasibility of micro-assurance systems will be tested to ensure that the most vulnerable and poor households can also benefit from the new risk sharing instruments.

- B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF). As a background information, read [Mainstreaming Gender at the GEF.](#)":

21. Adaptation benefits through enhancing resilience and improving adaptive capacity of populations, settlements and productive sectors in zones exposed to increasing frequency and intensity of coastal hazards induced by climate change and sea level rise. With support from SCCF, UNDP will help Tunisia undertake a paradigm shift from crisis reactive management to anticipatory climate risks management. UNDP will assist Tunisia's government, institutions, private sector and populations in making the necessary changes in existing policies and practices so as to ensure that coastal development and planning processes adjust to the new patterns of constraints and risks associated with climate change. More specifically, the proposed project will generate significant socio economic benefits to at least 150,000 coastal inhabitants of Tunisia. Project will provide for a direct investment in the robust and climate resilient adaptation measures on 40km of the most sensitive segments of the coastline. The measures will range from protection, accommodation and managed retreat options carefully selected and designed based on coastal topographic profile, type of land use and existing infrastructure, level of exposure - concentration of settlements and economic assets and range of expected SLR and related impacts. The proposed project will significantly strengthen the capability of key provinces in Gulf of Tunis, Northern coast of Tunisia and Djerba to identify, plan and implement the adaptation measures that will deliver greater welfare impacts to the local population and economic sectors. The project will considerably improve technical capacity of National Observatory, APAL and other associated agencies that are responsible for the coastal protection and early warning services. Range of methods and tools for coastal risk assessment, hazard mapping, numerical and physical modeling and adaptation planning will be introduced and at least 300 professional staff will improve necessary skills and knowledge through series of targeted trainings. Given the

magnitude of the SLR challenge before the coastal population, economic sectors and businesses a single grant investment, no matter how significant won't suffice to address it fully. The project therefore introduces set of economic instruments, fiscal mechanisms, special charges and incentives that will mobilize additional internal resources in the country for well-tested coastal risk management and protection investments as well as drive the future investments away from the vulnerable areas and make the tourism and associated infrastructure more climate compatible. The project targets to mobilise at least additional \$10million from the various public and private sources, through range of tax and insurance products as well as coastal development and tourism investment programmes that will be charged to comply with revised construction standards, zoning regulations and coastal adaptation plans in the target locations of high sensitivity to SLR. This will generate significant and long lasting socio-economic benefits beyond the targeted locations. Since tourism industry and associated infrastructure occupies most of the target regions and employs majority of local population the project is engaged directly with the investors and operators in designing economic instruments, charges and new sets of regulations that will drive the portion of economic gains into the coastal protection for the benefit of the sector and the local population that rely on the sector for its earnings.

B.4 Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:

Risks	Rank	Mitigation measures
Insufficient institutional engagement and coordination may prevent successful project delivery especially in the current transitional context, in Tunisia	Medium	A strong commitment from the GoT and the political leadership of the Ministry of Environment will minimize such a risk. Additionally, the project will be prepared and carried out under the oversight of the National Commission for Natural Resources, which brings together the main government institutions concerned with this project. The Commission, placed under the authority of the Prime Minister, will play a key facilitation and coordination role between sectors with the assistance of the climate change focal point. Also, the project will draw upon the momentum and lessons generated by the on-going UNDP AAP initiative as to the best strategies and arrangements to ensure an active interministerial engagement throughout implementation.
Resistance among key socio-economic stakeholders (i.e. tourism operators, property owners, etc.) to participating in new economic instruments for adaptation	Medium to high	To minimize this risk, the project will hook up with Tunisia's 'Green Economy' initiative that is expected to be launched in 2011 and which aims <i>inter alia</i> , to support economic policy reforms and new incentive mechanisms for increasing public and private investment into the environmental sector. The project will add a coastal adaptation layer to this process and will use it as a strategic vehicle and multi-stakeholder platform to foster an active policy dialogue on the desired economic instruments. It will proceed through concerted negotiations involving the government institutions, representatives of key socio-economic groups and other key partners and will seek to reach a broad-based consensus on economically and socially acceptable fiscal and market-based mechanisms for coastal adaptation. Further, by making explicit the costs and benefits of early adaptation and protective actions, it will take an evidence-based approach to raise awareness of the private sector in coastal areas, especially the tourism industry players, and secure its buy in and engagement into the new financial and insurance systems, including the upgraded National Fund for the Protection of Tourism Zones. The project will also take advantage of the growing trend of environmental corporate responsibility as a key factor in coastal productive activities, as well as increasing inclination of national/international tourists, coastal operators and property owners to financially contribute to both public and private adaptation.

Key project risks will be further investigated and addressed during the PPG phase. At project submission, a full risk assessment and management strategy will be presented.

B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:

22. The Ministry of Environment and its National Shore Protection and Planning Agency (APAL) will be the main partners respectively for project implementation and execution. Other key ministries will also sit on the project board and are expected to play a leading role in several parts of the project. Ministries of Transport and Equipment (DGAT) and Interior will actively contribute to the regulatory development process under Component 1 and will provide technical and logistical support to adaptation/ICZM planning and demonstration activities under Component 2. Ministry of Finance and other relevant line ministries (especially Tourism) will be strongly engaged in the development of the desired adaptation financing instruments under Component 3. National Centers of Excellence, such as the National Observatory for Environment and Sustainable Development (OTEDD), National Meteorological Institute (INM) and National Institute of Marine Science and Technology (INSTM), will provide valuable scientific and technical inputs to the project, benefit from the tools and information systems introduced (Components 1 and 2) and will facilitate capture and diffusion of good lessons beyond the project lifetime. Engagement of the private sector, through organizations such as the National Tourism Operators Association, the Insurance Association or the Chamber of Commerce and Industry of Djerba, will also be critical to stimulate investments into “soft” shoreline protection systems, facilitate adherence to new EIA standards and spatial regulations and develop innovative adaptation finance schemes. Similarly, local municipalities, NGOs/CSOs and marginalized groups (women, youth and vulnerable households) in all project sites, will be deeply involved through the application of the UNDP right-based approach and will directly influence and inform local management decisions, project interventions and policy formulation. For example, “Association pour la sauvegarde de l’île de Djerba” (ASSIDJE), the RANDET (network for environment and sustainable development associations), TUNWET (Network for wetland NGOs) that focus on local solutions and actively promote climate resilient coastal development will be important stakeholders of the project. A more comprehensive stakeholder analysis will be performed during PPG and a full stakeholder involvement plan developed, outlining the detailed arrangements for engaging key partners and sharing responsibilities.

Stakeholder Name	Stakeholder Mandate	Stakeholder Role in the Project
Ministry of Environment	<ul style="list-style-type: none"> - Prepare, Monitor and evaluate general policy in areas of environmental protection, nature conservation, and promotion of quality of life. - Mainstream sustainable development principles into public policies and programmes - Promote environmental protection and nature conservation legislation into development strategies. 	Executing Agency; will be responsible for the project execution as per UNDP’s national implementation modality.
National Shore Protection and Planning Agency - APAL	<ul style="list-style-type: none"> - Implement the Government policy regarding the protection and management of the coastal areas. - Coastal areas ecosystem monitoring and protection. 	Implementing partner, as part of the Ministry of Environment and as per its institutional mandate APAL will play important role in day to day implementation of the project

Key Ministries and national institutions: 1- Ministry of Finance and other relevant line ministries (especially Tourism)	<ul style="list-style-type: none"> - Preparation, approval and monitoring of budgets for state investments and operational costs for public institutions, mainly Ministries. - Preparation and monitoring of the annual financial plans 	Members of the Steering Committee / Project Board and will 1- Be engaged in the development of the adaptation financing instruments under Component 3.
2- Ministry of Equipment (DGAT) and Interior	<ul style="list-style-type: none"> - Elaboration and the follow-up of the national strategy of the city planning - Elaboration of a policy of the habitat, environment and city planning - Development of the infrastructure road and port facilities. 	2- Contribute to the regulatory development process under Component 1 and will provide technical and logistical support to adaptation/ICZM planning and demonstration activities under Component. 3- These institutions will provide valuable scientific and technical inputs to the project, benefit from the tools and information systems introduced (Components 1 and 2)
3- National Observatory for Environment and Sustainable Development (OTEDD),	<ul style="list-style-type: none"> - Follow-up of the indicators of sustainable development - Secretariat of the national commission of sustainable development 	
4- National Meteorological Institute (INM)	<ul style="list-style-type: none"> - Meteorological monitoring - Climate modelling and weather forecasting. 	
5- National Institute of Marine Science and Technology (INSTM)	<ul style="list-style-type: none"> - Research in Marine sciences and technologies - Monitoring of the marine ecosystems 	
Local Municipalities	<ul style="list-style-type: none"> - Local governance authority, also responsible for local planning and the environmental protection - Coordination between the administrations and the local elected representatives 	They will be involved across all components and in relation to the measures that will take place in their corresponding municipalities. They will be close partner for project's field-based measures and coastal adaptation planning and policy formulation.
Civil Society Organizations	<ul style="list-style-type: none"> - Advocacy, information dissemination, awareness raising, research and local action - Contribute with the pilot actions in the local and regional development 	SCO will be a closer partner in the implementation of some of the field activities and important partner for advocacy. Key partner for local community information and awareness rising about climate change impacts and adaptation solutions.
Private sector (Tourism): 1- National Tourism Operators Association,	<ul style="list-style-type: none"> - Develop and promote the tourism sector 	These actors will be engaged in the project in order to stimulate investments into "soft" shoreline protection systems, facilitate adherence to new EIA standards and spatial regulations

2- The Chamber of Commerce and Industry of Djerba	- Promote investment and the trade in the sectors industry, agriculture and services tourism,	and develop innovative adaptation finance schemes. They will collaborate closely with local actors (Municipalities, SC) and with key Ministries.
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B.6. Outline the coordination with other related initiatives:

23. The project has been designed in close consultation with key stakeholders within the GoT in order to determine the most strategic niche for SCCF. Discussions were held with the Ministries of Agriculture and Environment, Interior, Tourism and Transport and equipment (DGAT). The project concept has also been extensively discussed with the GEF/OFP and with the UNFCCC Focal Point for review and endorsement. From these consultations, it is proposed that the project will closely cooperate with a number of key related initiatives, some of which can be accounted as baseline activities, others as co-funding sources and others as relevant projects with which strong synergies will be built.

24. The proposed intervention will particularly coordinate with the UNDP project ‘‘Promoting resilient Coastal Development in Tunisia’’ which is one of the 20 country initiatives supported by the broader UNDP Africa Adaptation Programme (AAP) funded under the Japanese Cool Earth Partnership. This country project has a budget of \$3,000,000 and is implemented by the Ministry of Environment and APAL. This pioneering initiative is the first adaptation grant programme implemented at a meaningful scale in Tunisia. Its main purpose is to contribute to strengthened resilience of coastal ecosystems, settlements and socio-economic sectors by supporting national level strategic planning, policy advocacy and technical capacity building of the key concerned institutions. Project’s original timeframe is 2010-2011 but an extension was negotiated until end of 2012. The AAP flagship initiative will lay the critical foundation for the SCCF to effectively focus on direct adaptation investment and upscale coastal adaptation efforts in the most vulnerable and high risk coastal areas. Both AAP and SCCF projects will be closely aligned and will yield important thematic and geographical complementarities, with a view to consolidating mutual efforts towards climate-resilient coastal development and bringing them to broader scales. It will do so by reviewing and retrofitting the technical solutions identified for the programme’s first tranche and by ensuring upstream incorporation of SLR impact scenarios and related key design parameters into the feasibility studies of the second tranche. Under outcome 1, the AAP project reviewed and made recommendations to enhance the technical capacities of the APAL and associated institutions. It conducted series of technical studies, such as update of topographic profile of the Tunisian coast and identified key indicators for coastal monitoring and Early Warning System. It has also reviewed regulatory frameworks related to coastal land-use planning and EIA. It has also developed detailed GIS-based coastal vulnerability and risk maps and prepared an adaptive shoreline management plan in the Northern coast of Tunisia. The SCCF will complement these efforts by building capacity and carrying out the follow-up activities necessary to enable full institutionalization and enforcement of the adjusted regulations, by linking the mapping exercise with the application of advanced risk assessment and adaptation support tools, and by extending the scope of the adaptation planning work to Djerba and to issues related to municipal level planning and coastal disaster prevention (flooding and storm surge). Under the outcome 2 based on the AAP technical studies and by filling up additional gaps as noted in respective section above, the SCCF project will support climate-proofing of the APAL’s anti-erosion programme, focusing respectively on retrofitting its first implementation phase and achieving upstream robustness of the second. Assistance for testing soft, innovative shoreline protection measures (e.g. climate-resilient beach nourishment and living shoreline treatments, etc.) will be provided respectively by the AAP in Northern coast of Tunisia and by SCCF in Djerba. Similarly, the AAP will work at the national-level to integrate the peculiarities of SLR-induced hazards into the GIZ-work on a multi-risk EWS while SCCF will focus on setting up the model in Djerba and Gulf of Tunis. SCCF will also support in developing local ICZMs in the zones of Djerba Island and

governorate of Bizerte in the Northern coast of Tunisia. For outcome 3, support from the AAP will be primarily directed to the sectoral adaptation costing and budgeting exercises along with the upgrading of the National Fund for the Protection of Tourism Zone. SCCF funding will be complementarily used to set up innovative economic instruments, including new fiscal and insurance systems. In parallel, both initiatives will provide important joint contribution to cross-cutting activities such as communication and knowledge management, capacity building and project management. In order to ensure full synergy between these two endeavors and yield greater impacts, it is considered at PIF stage that the SCCF project delivery mechanism be embedded into the UNDP/AAP national project. This option, together with other potential co-implementation arrangements, will be further assessed during PPG and confirmed based on practicality and cost-effectiveness considerations.

25. Additionally, the project intends to capitalize on and create strong linkages with other initiatives in progress, including:

- The WB regional study on “Climate change adaptation and natural disaster preparedness in the coastal cities of North Africa” which focuses in Tunisia on the Greater Tunis area. Under the Ministry of Agriculture and Environment supervision, this project is currently undertaking a detailed assessment of the city key vulnerabilities to climate change and sea level rise and will prepare in 2011-2012 an action plan to improve urban adaptation and disaster preparedness. Close coordination will be ensured through WB and the Ministry of Agriculture and Environment to make sure all relevant features, approaches and lessons from this study are systematically fed into the design and implementation of the SCCF project, especially in support of the adaptation planning exercise to be conducted in Northern coast of Tunisia and Djerba.
- The GIZ Climate Change Assistance Programme, which is already engaged in a number of critical adaptation activities in sectors directly related to coastal development (e.g. agriculture, health, tourism, disaster risks prevention and management).
- The GEF/UNEP Regional project – “Integration of climatic variability into national strategies to implement the ICZM Protocol in the Mediterranean”, that includes Tunisia and which is currently being formulated (PPG) under the GEF Mediterranean Sustainable Development Programme. This project has a primary focus on assessing and addressing climate variability impacts on marine and coastal “hotspots” along with building national capacities for the ratification and mainstreaming of the ICZM protocol into coastal development policies and practices. The SCCF project will coordinate and deliver important complementarities with this initiative, notably by looking not only to climate variability but also to medium and long term implications of climate and sea level changes in coastal areas, by facilitating the revision of land use planning and setback regulations and by developing enabling financial mechanisms for nation-wide implementation of ICZM-relevant adaptation practices.
- The WB-led Water Sector Investment Project-Phase II (‘PISEAU II’), which supports sustainable groundwater management through promotion of advanced TWW reuse technologies for artificial recharge and water demand management.
- The GEF/UNDP project – “Adaptation to Climate Change in the Nile Delta through Integrated Coastal Zone Management” to share experience and lessons on tools and practices for climate-proof ICZM planning and living shoreline treatments.
- The UNDP/RBAS regional “Arab climate resilient Initiative” is intended to develop capacity across the region to adapt to changing climatic conditions in an integrated manner, particularly in the three identified priority areas of: i) water and food security; ii) SLR and coastal erosion; and iii) sustainable energy.

26. During PPG, additional consultations will be held with the main organizations/initiatives of relevance to the proposed intervention and appropriate coordination modalities set up.

C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:

27. This SCCF proposal is strongly aligned with UNDP's comparative advantage, as articulated in the GEF Council Paper C.31.5. UNDP was selected as the preferred GEF Implementing Agency by the GoT based on its recognized added-value in most strategic elements of the project, including integrated policy development, capacity building and institutional strengthening, private sector and community mobilization, environmental finance, and decentralized governance. Also, with strong country presence and through its global network of technical staff, in addition to operational expertise in designing/managing other related CEO approved SCCF/LDCF coastal adaptation projects in Africa, Latin America, Asia-Pacific and Arab-States, including the SCCF "Nile Delta Adaptation" initiative in Egypt, UNDP is ideally positioned to assist Tunisia to conceptualize and implement this project. Indeed, through its global GEF and non GEF portfolio and learning mechanisms, UNDP will bring in its extensive knowledge in climate change adaptation, climate proof coastal development and ICZM. UNDP also holds an additional advantage by already acting as the main strategic partner of the Ministry of Environment and APAL in supporting several highly relevant initiatives, including the Initial and Second Communications which focused primarily on coastal changes and risks reduction and led to the first ever coastal adaptation project implemented in Tunisia with support from the UNDP Africa Adaptation Programme. This initiative and other positive experiences will provide a solid platform and conducive environment to ensure cost-effective and successful delivery of the proposed project.

28. The project is in line with UNDP Tunisia's transitional strategy for 2011-2013, which is aligned with national environmental priorities. In particular, the project contributes to the transitional strategy's Outcome 1 under Objective 4: "Public institutions, civil society and public sector will have new tools for integrated natural resources and ecosystems management". This is implemented in a way to ensure consistency between sectoral strategies and priorities in the field of environment, climate change, and risk management, with special attention to the green low-emission and climate change resilient, gender and a focus on the most vulnerable populations and areas.

C.1 Indicate the co-financing amount the GEF agency is bringing to the project:

29. UNDP Country Office in Tunisia will contribute \$1,165,000 (\$120,000 from its core resources and \$1,045,000 from its programme resources) to the project. Additionally, initial consultations have been organized by UNDP with a number of bilateral development agencies involved in climate change, sustainable tourism and ICZM activities in Tunisia (Saudi Development Bank, KFW) showed a high interest from the development community to bring additional funding to the project. Expected contribution from these partners could add up to US\$52 million. These co-financing opportunities will be further investigated and confirmed during PPG.

C.2 How does the project fit into the GEF agency's programme (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:

30. The proposed project has been designed as a concrete contribution to the goals and expected outcomes of the "United Nations Bridge Programme" (UNBP) and Strategy for the "UNDP support to the democratic transition" (SSDT) in Tunisia (2012-2013). More specifically, the project will support the following UNBP outcome: Public institutions, private sector and civil society have new tools for integrated management of natural resources and ecosystems, including adaptation to climate change. It will also answer the following outcome of the SSDT: Improve local governance for sustainable development.

31. The project is well aligned with the UNDP/GEF Climate Change Strategy and Regional

Business Plan and will directly contribute the overarching goal of assisting developing countries to formulate, finance and implement low-carbon and climate-resilient development strategies.


32. The UNDP CO in Tunisia possesses very good track records in working on sustainable and integrated coastal zone management and maintains excellent relations and partnerships with the Ministry of Environment and all key stakeholders involved in the project. The CO's Energy & Environment Unit currently manages a programme portfolio with a total value of \$8,000,000. It provides adequate staffing and technical capacity to successfully perform all tasks and obligations related to project implementation support. The following staff team will be specifically dedicated to the SCCF project: i) Environment Programme Analyst, tasked with continuous oversight of project implementation, including technical support, quality insurance and monitoring & evaluation; ii) Programme Associate, in charge of project management backstopping, e.g. budget planning and revisions, periodic reporting, audits, technical and financial troubleshooting iii) Finance and Procurement Associates, who support financial management tasks, such as budget reviews, delivery reporting, billing, bidding and contracting of service providers; (iv) Resident Representative, responsible for providing strategic leadership and support to the policy reforms advocated by the project.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Sabria Bnoui Ben Ammar	GEF OFP	MINISTRY OF ENVIRONMENT	08/17/2012

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Yannick Glemarec GEF Agency Coordinator		Sept. 20, 2012	Keti Chachibaia	+421 259337422	keti.chachibaia@undp.org