REQUEST FOR CEO ENDORSEMENT[1]

PROJECT TYPE: Full-sized Project
TYPE OF TRUST FUND:SCCF

PART I: PROJECT INFORMATION

Project Title: Climate Resilient Coastal Protection and Management Project			
Country(ies):	India	GEF Project ID:[2]	4536
GEF Agency(ies):	AsDB (select) (select)	GEF Agency Project ID:	40156
Other Executing Partner(s):	Ministry of Water Resources (MoWR)-lead coordination agency; State Governments of Karnataka and Maharashtra; Ministry of Environment and Forests (MoEF)	Submission Date:	2014-02-05
GEF Focal Area (s):	Climate Change	Project Duration(Months)	30 Months
Name of Parent Program (if applicable): For SFM/REDD+ ☐		Agency Fee ($):	181,818

A. FOCAL AREA STRATEGY FRAMEWORK[3]

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Grant Amount ($)	Cofinancing ($)
CCA-1 (select)	1.1 Mainstreamed adaptation in broader development frameworks at the state and country level and in targeted vulnerable sectors and areas. (Components 1 and 2)	Adaptation measures and necessary budget allocations included in relevant frameworks in two states.	SCCF	295,400	1,278,600
CCA-1 (select)	1.2 Reduced vulnerability to climate change in development sectors (Components 1,2 ,3)	Vulnerable physical natural and social assets strengthened in response to climate change impacts including variability in two states.	SCCF	630,232	34,675,000
CCA-1 (select)	1.3 Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas (Component 2 and 3)	Targeted individual and community livelihood strategies strengthened in relation to climate change impacts including variability in two states.	SCCF	171,800	9,595,200
CCA-2 (select)	2.1 Increased knowledge and understanding of climate variability and change-induced threats at	Risk and vulnerability assessments conducted and updated.	SCCF	323,900	2,621,400

[1] It is important to consult the GEF Preparation Guidelines when completing this template
[2] Project ID number will be assigned by GEFSEC.
[3] Refer to the Focal Area/LDCF/SCCF Results Framework when filling up the table in item A.

	the State level and in targeted vulnerable areas (Components 1 and 4)	Systems in place to disseminate timely risk information.			
CCA-2 (select)	2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses (Component 1 and 4)	Adaptive capacity of national and State agencies and networks strengthened to rapidly respond to extreme weather events	(select)	211,800	1,372,800
CCA-2 (select)	2.3 Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level (Component 4	Targeted population groups participating in adaptation and risk reduction awareness activities.	(select)	95,800	1,915,000
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)			(select)		
(select) (select)	Others		(select)		
		Subtotal		1,728,932	51,458,000
		Project management cost[4]	(select)	89,250	2876000
		Total project costs		1,818,182	54,334,000

B. PROJECT FRAMEWORK

Project Objective: Project Objective: To strengthen the resilience of the coast, coastal infrastructure, and communities to the adverse impacts of climate change through preparation of adaptation guidelines and effective mainstreaming of climate change into coastal protection and management

Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Grant Amount ($)	Confirmed Cofinancing ($)
1.Analysis of climate change impacts in coastal areas and preparation of guidelines for climate change adaptation for the whole Indian coast	TA	The impacts of climate change on the Indian coastline are assessed and adaptation guidelines are prepared and endorsed by the Ministry of Water Resources.	1.1 Climate change trends and projections for the Indian coast analyzed and interpreted. 1.2 Development and approval of guidelines and dissemination and operationalization to all coastal states and union/island territories. 1.3 Coastal climate change parameters are incorporated into coastal information systems being developed by central agencies.	SCCF	611,000	100,000

[4] GEF will finance management cost that is solely linked to GEF financing of the project. PMC should be charged proportionately to focal areas based on focal area project grant amount.

2. Climate Resilient Shoreline Planning and Management in two focal states	TA	In the two focal states of Karnataka and Maharashtra shorelines are effectively managed to adapt to immediate erosion as well as long term climate change impacts Increased role of natural coastal protection measures to meet climate impacts and support community livelihoods	2.1 Shoreline management plans in two focal states incorporate climate change impacts and adaptation response. 2.2 Coastal information system in two focal states incorporate climate change parameters. 2.3 Sub project designs for Tranche 2 of the baseline project in two focal states incorporate climate change resilience. 2.4 Plans and designs for six pilot projects and community organizations are engaged. 2.5 Recommendations are prepared to incorporate climate resilience into designs for Tranche 3 of the baseline project.	SCCF	255,000	6,193,000
3. Climate Resilient Coastal Protection in two focal states	Inv	Coastal investments in two focal states incorporate climate resilience.	3.1 Sub-project investments under Tranche 2 of the baseline project incorporate climate change. 3.2 Up to six pilot community project in the two focal states are implemented, with 50% of activities involving women. 3.3 Communities/ local stakeholders source funds and implement follow on maintenance activities.	SCCF	638,932	41,783,000
4. Institutional strengthening, capacity building and enhanced awareness for climate resilient coastal protection and management	TA	Enhanced capacity for climate resilient shoreline planning and development	4.1.The National Water Academy to be established as the training hub. 4.2 About 25 trainers to be selected from various institutes /govt department with	SCCF	224,000	3,382,000

			appropriate skills and experience to be given given a one week training in the guidelines for incorporating climate change adaptation. 4.3 T senior level training courses implemented for selected central level and maritime state officials and stakeholders including the two focal states. 4.4 Awareness materials based on the climate adaptation guidelines are prepared and distributed			
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
	(select)			(select)		
			Subtotal		1,728,932	51,458,000
			Project management Cost[5]	(select)	89,250	2,876,000
			Total project costs		1818182	54334000

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME ($)

Sources of Co-financing	Name of Co-financier (source)	Type of Cofinancing	Cofinancing Amount ($)
GEF Agency	ADB	Hard Loan	46,595,000
Local Government	State of Karnataka	In-Kind	4,933,000
Local Government	State of Maharashtra	In-Kind	2,806,000
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		(select)	
(select)		In-Kind	
Total Co-financing			54,334,000

D. GEF/LDCF/SCCF/NPIF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY[1]

GEF Agency	Type of Trust Fund	Focal Area	Country Name/ Global	(in $)		
				Grant	Agency Fee	Total

[5] Same as footnote #4.

				Amount (a)	(b)[2]	c=a+b
AsDB	SCCF	Climate Change	India	1,818,182	181,818	2,000,000
(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				1,818,182	181,818	2,000,000

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Estimated Person Weeks	Grant Amount ($)	Cofinancing ($)	Project Total ($)
Local consultants*	52.00	316,000	1,861,000	2,177,000
International consultants*	22.00	550,000	1,443,000	1,993,000
Total		866,000	3,304,000	4,170,000

* Details to be provided in Annex C.

F. PROJECT MANAGEMENT COST

Cost Items	Total Estimated Person Weeks/Months	Grant Amount ($)	Co-financing ($)	Project Total ($)
Local consultants*	0.00	0	68,000	68,000
International consultants*	20.73	22,803	86,000	108,803
Office facilities, equipment, vehicles and communications*		20,000	220,000	240,000
Travel*		0	480,000	480,000
Others**	Government Project Management Staff Costs	0	1,600,000	1,600,000
	Misc Admin & Support Cost (GEF:42,197 USD) Contingencies (GEF:4,250 USD; Co-financing: 422,000 USD)	46,447	422,000	468,447
Total		89,250	2,876,000	2,965,250

* Details to be provided in Annex C. ** For others, to be clearly specified by overwriting fields *(1) and *(2).

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

(If non-grant instruments are used, provide in Annex E an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

H. DESCRIBE THE BUDGETED M &E PLAN:

The Monitoring and Evaluation plan is presented in Table 1, below. The monitoring will build on the baseline project monitoring as per the requirements of the ADB Loan Faculty Administration Manual 2011.

Day to day monitoring of the project implementation progress will be responsibility of the consultants based on the project's annual work plan. Periodic monitoring of the project progress will be linked to the ADB review missions for the baseline project--the review missions will examine progress of both the baseline and the GEF-SCCF project.

An independent monitoring assessment will be assigned to appropriate national institute who would conduct independent monitoring and evaluation. The estimated cost of this work is $40,000, which will cover 5 person months of national professional staff and related survey/monitoring costs. The project will be subjected to at least two independent external evaluations. The monitoring institute will conduct an independent mid-term evaluation at the end of the first year of implementation to determine progress being made towards the achievement of outcomes and will identify course correction as needed.

An independent final evaluation will take place within three months of the project completion. The final (or terminal) evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of adaptation benefits. The institute will also be responsible for completion of the GEF-SCCF Climate Change Adaptation Monitoring and Assessment Tool (AMAT), which will be updated at project mid-term and final evaluation

Table 1 Monitoring and Evaluation Plan

Nr	Monitoring Activity	Indicator	Baseline	Target	Sources of Verification	Notes/ timing
1. Component						
1.1	Evaluation of climate change impact assessments and and preparation of adaptation guidelines (Component 1)	Climate change trends and projections for the Indian coast analyzed and interpreted. Planning and design guidelines prepared and endorsed by panel of experts and national level Technical Committee Coastal climate change parameters are incorporated into information systems being developed by two focal states and central agencies	Current knowledge of coastal climate change is limited with no quantitive estimates of climate change. No integrated and quantitive analysis of different climate impact parameters. Current design standards and norms do not address climate change issues. Designers and officials do not have official remit to incorporate climate change resilience or increased budget allocation. Current information systems of the MoWR and states poorly developed and do not include climate change parameters	Integrated assessment of climate change parameters for the Indian coast. Climate change impacts assessed and, planning and design criteria incorporated into guidelines Technical committee endorse guidelines. Adaptation guidelines are communicated by MoWR to all maritime states and union/island territories. The design of the information system being developed by MoWR incorporates climate change parameters. Climate change information compiled for the two focal states.	Adaptation guidelines report. Adaptation guidelines report Minutes and recommendations of technical committee meeting. Communication letters of MoWR Review of Information System being developed in two focal states and MoWR.	Three assessments-baseline midterm and final. (months 3, 12 and 24)
1.2	Status of climate resilient shoreline planning and management in two focal	Shoreline management plans in two focal states incorporate climate change	Shoreline plans and coastal information by mid 2013 at start of	Shoreline plans to be 100% complete and incorporate climate	Review of SMPs and coastal information system in two focal states by	Three assessments-baseline, midterm

Nr	Monitoring Activity	Indicator	Baseline	Target	Sources of Verification	Notes/ timing
	states (Component 2)	impacts. Coastal information system in two focal states incorporate climate change information. Sub project design in two focal states incorporate climate change resilience Planning and design for six pilot projects are prepared and community organizations are established and engaged.	the TA would be 25% complete. Plans would have no or very limited assessment of climate change. Current design approaches and standards. Pilot project sites would have no protection measures or limited protection based on current standards.	change vulnerability assessments and proposals for adaptation. Coastal information in two focal states system incorporate climate change parameters Sub project designs incorporate climate resilience measures. Designs for pilot projects are fully participative and supported by communities and incorporate climate resilience	independent assessor Tranche 1 sub project design reports November 2010 with design revisions in 2012. Tranche 2 sub project design reports scheduled for 2013/14. Evaluation pilot project design and minutes of meetings with communities	and final.(months 3,12 and 24)
1.3	Assessment of progress of climate resilience of coastal protection investments in two focal states. Evaluation of community pilot projects (Component 3)	Sub Project Investments under Tranche 2 of the baseline project incorporate climate change resilience. Up to six pilot community project in the two focal states are implemented with 50% of activities involving women. Communities/local stakeholders source funds and implement follow on maintenance activities (number of communities in project area)	Sub-projects will be designed following standard design criteria in the absence of the project. Survey of situation in communities at six selected sites prior as well as at six control sites prior to initiating pilot projects.	At least 60 % of sub-project investments under Tranche 2 incorporate climate change considerations At least six communities in the project area adopting coastal protection measures and maintenance activities. Communities are empowered to implement coastal protection and natural protection measures are in place	Post construction assessment of sub project sites. Participatory rural appraisals and GPS surveys of beach and dunes including assessment of extent of natural protection at six pilot sites and six control sites. Daily records of type and values employment created and during the	Annual assessments (month 12 and 24) Baseline surveys at pilot sites and control sites to be completed once sites are selected.

Nr	Monitoring Activity	Indicator	Baseline	Target	Sources of Verification	Notes/ timing
					pilot projects.	
1.4	Status of institutions, capacities and awareness in relation to climate change and adaptation (Component 4)	Training programs in two focal states incorporate climate change adaptation. National Water Academy established as training hub. Cadre of 25 trainers from various states and national institutions are given training in the guidelines for climate change adaptation. Two senior level training courses for selected central level and maritime state officials and stakeholders are implemented Awareness materials are prepared and distributed.	Limited non quantitive knowledge of coastal climate change impacts at all levels. No quantitive knowledge of climate change impacts.	High level of awareness of coastal climate change including good quantitive knowledge of impacts and adaptation responses by key stakeholders. Medium to high level of awareness of climate change and understanding by state government in the two focal states and CWC/MoWR	Questionnaire to assess understanding of selected government institutes. Questionnaires to communities and other stakeholders to assess understanding of climate change. Training reports including feedback from participants.	Three assessments-baseline, midterm and final (months 3, 12 and 24)
2. GEF-SCCF Climate Change Adaptation Monitoring and Assessment Tool (AMAT)						
2.1. Baseline Information-prepared as part of the submission for CEO endorsement 2.2 Final Project Target -prepared as part of the CEO endorsement 2.3 Mid Term Results to be completed at midterm of project month 15 2.4 Terminal Results to be completed at end of project month 30						

PART II: PROJECT JUSTIFICATION

A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:

A.1.1. The GEF focal area/LDCF/SCCF strategies/*NPIF Initiative*:

Consistent with the adaptation priorities identified in India's Initial National Communications to the UNFCCC (2004), the project will implement targeted interventions to support the needs of coastal climate change adaptation. It will catalyze and leverage additional co-financing resources from ADB Sustainable Coastal Protection and Management Investment Program (SCPMIP). The GEF-SCCF financing will help to cover additional costs relating to climate change studies, planning and design to ensure the SCPMIP supported investment projects incorporate enhanced resilience to climate change and help the projects objectives of achieving sustainable development under a changing climate. At national level the project's focus is directed at safeguarding India's coasts against future climate risk, by analyzing climate trends and projections, preparing planning and design criteria for climate adaptation and pursuing a range of adaptation measures in climate change resilience building and institutional strengthening. The project is directly aligned with the scope of GEF-SCCF expected interventions, as articulated in the GEF-SCCF programming paper. As climate impacts fall disproportionately on the poor, the project also explicitly recognizes the link between adaptation and poverty reduction by ensuring that coastal protection and coastal infrastructure contains heightened climate-resilience in supporting the sustainability of income generation within coastal communities with special emphasis to support the role of women. In addition, the project focuses strongly on systemic support for mainstreaming, aligning directly to GEF's intended shift to a more programmatic approach to GEF-SCCF adaptation financing.

The project will support the development of guidelines for integrating climate change resilience measures into shoreline management planning and the design of climate resilient coastal protection and other coastal infrastructure. The GEF-SCCF financing will support community level coastal protection pilot projects which will provide a base and demonstration for upscaling under the baseline SCPMIP supported investment project. The lessons learned and technical capacity developed through the project will further enable broader climate change adaptation mainstreaming in development planning at state and national levels.

As stated above, the GEF-SCCF grant will leverage the mainstreaming of climate change adaptation within coastal protection investments supported by the ADB's SCPMIP which is being implemented as a three tranche program of investments with a total funding envelope of US$400 million over eight years (i.e. from 2012 to 2020). At an outcome level the interventions described above will contribute directly to GEF Climate Change Adaptation, and key outcomes including:

CCA-1 - **Outcome 1.1 "*Mainstreamed adaptation in broader development frameworks at country level and in targeted vulnerable sectors and areas*",** through the analysis of climate change impacts and mainstreaming of climate change resilience in participatory shoreline management planning, preparation of guidelines for climate change adaptation endorsed by a national technical committee and incorporation of provisions for climate change adaptation into sub project designs in two focal states;

CCA-1 - Outcome 1.2: "*Reduce vulnerability in development sectors"* through incorporation of climate resilience parameters in planning and design of coastal protection and infrastructure in two focal states;

CCA-1 - Outcome 1.3 "*Diversified and strengthened livelihoods and sources of income for vulnerable communities in targeted areas,*" by reducing impacts on property and livelihoods due to coastal erosion and through the protection of coastal livelihoods through interventions ensuring the integrity of coastal ecosystems including the beaches and development of new income generation opportunities through community based projects.

CCA-2 - Outcome 2.1 "*Increased knowledge and understanding of climate variability and change induced risks at country level and in targeted vulnerable sectors and areas,"* through analysis of climate and interpretation of latest climate change projections, and preparation of planning and design criteria for coastal climate change adaptation for the Indian coast. The application of the climate change analysis and development of design

criteria will be taken up in the two focal states of Karnataka and Maharashtra through a process of shoreline planning, vulnerability assessments and the development of adaptation measures and incorporation of climate resilience measures into the baseline sub-project designs and investments. The strengthening of institutional knowledge and capacities will be taken up via training of trainers, as well as high-level training for central agencies and officials from the project's maritime states.

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

Based on GEF priorities (outlined within November 2010 GEF Council paper,) the project will focus on adaptation to address two priority areas of GEF-SCCF financing. These include: (i) infrastructure development; and (ii) integrated coastal zone management. The interventions proposed within this project are country-driven, designed to be cost-effective, and specifically aim to integrate climate change risk considerations into coastal zone infrastructure investment. The project also closely responds to national and sub-national sustainable development and poverty-reduction strategies, and addresses adaptation priorities identified in the country's Initial National Communication to the UNFCCC.

A.1.3 For projects funded from NPIF, relevant eligibility criteria and priorities of the Fund:

N/A

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.:

The Initial National Communication to the UNFCCC: India highlighted that future climate change in the coastal zones is likely to manifest through the aggravation of some of the existing coastal issues including erosion, flooding, subsistence, deterioration of coastal ecosystems. This would have significant implications for the coastal population and agricultural and other developmental performance of India. The importance of climate change is recognized at the highest levels of Government in India. In June 2007, the Prime Minister's Council on Climate Change was formed to coordinate national action plan for assessment, adaptation and mitigation of climate change.

National Action Plan for Climate Change NAPCC is of special relevance to the project. The Water Mission (one part of the NAPCC) with respect to coastal zones the Water Mission calls for the collection of necessary additional hydro-meteorological and hydrological data for proper assessment of the impact of climate change; and data and measures to address increased saline intrusion of coastal and island aquifers due to rising sea levels. To date there is quite limited progress on the assessment of the climate in the coastal zones under the NWM of the NAPCC. The GEF-SCCF support will support the up-scaling of the two coastal information systems being developed in Karnataka and Maharashtra to the central level as well as preparation of adaptation guidelines, training of trainers and training in the adaptation guidelines.

State Action Plans for Climate Change (SAPCC) under the direction of MoEF have been prepared for most states; the plans are directed at translating national policy into action at the state and local levels, and decentralizing NAPCC objectives into local contexts. The SAPCC for Karnataka and Maharashtra are especially relevant. The compiled outputs for the SAPCCs for all the maritime states will form a key input towards the development of coastal climate change adaptation strategies and guidelines. Especially relevant are the vulnerability assessments and adaptation proposals of the SAPCC for the coastal areas. The complementary resources of the SAPCC and GEF-SCCF projects will allow for more in depth analysis and development of targeted strategies and guidelines for climate change adaptation in the coastal zones of focal maritime states.

The 12th Five Year National Plan (2012-2017) has been drafted but not yet issued. The report of the Steering Committee on Water Resources and Sanitation for the Twelfth Five Year plan has been prepared by the Planning Commission, in consultation with MoWR and other ministries. The report identifies the need for further studies and research needed for obtaining detailed, precise and area-specific information on the impact of climate change on water resources, and on the vulnerabilities of certain areas and settlements such as coastal and low-lying areas. The steering committee report recommends that participatory action for mitigation and adaptation need not wait for those studies, but should be taken in hand and considered immediately. The report also identifies that data improvement, including a coastal management information system, should be viewed as a national effort with: the central government taking the lead in working out protocols and procedures for collection and validation of data by all agencies; creating appropriate institutional arrangements to ensure independent and professional conduct of the surveys; providing financial and technical support to the States, and; ensuring that all agencies follow prescribed

protocols and transmit the data to the central pool.

GEF-SCCF support will help prepare a compilation and analysis of climate change information and development of adaptation criteria and guidelines for planning and design for climate resilient coastal protection and management. The GEF-SCCF support will also help strengthen the linkage between the two SCPMIP coastal data systems, as well as linkage with relevant climate change information systems under other programs including MoEF and its support for the establishment of a central climate change information system in CWC. The GEF-SCCF will develop guidelines, support training and awareness programs through training of trainers, as well as senior level staff training for central agencies and other maritime states.

PROJECT OVERVIEW:

B.1 Description of Baseline Project and Problems it Seeks to Address

B.1.1 Baseline Project Rationale

The **'Sustainable Coastal Protection and Management Investment Program (SCPMIP)** is the project's baseline initiative, supported through a multi-tranche ADB loan.. The baseline program has been designed to address immediate coastal protection needs and coastal instability using environmentally and socially appropriate solutions in the states of Karnataka, and Maharashtra.[6] The baseline aims to develop institutional capacities to meet the long-term needs of sustainable coastal protection and management, and support initiatives to increase the participation of the private sector and communities in coastal protection and management. At present, the baseline program incorporates only very limited consideration of climate change issues. The GEF-SCCF project is being developed to incorporate important climate change adaptation planning to inform the significant scope and potentials of this baseline.

Development problems: India has a coastline of 7,525 kilometers (km) of which 5,425 km are along the nine national coastal states of the mainland, with an additional 2,100 km of coastline in offshore islands comprising union territories. About 20%–25% (about 250 million people) of India's population lives within 50 km of the coast of which 70% reside in rural areas. The coastal environment is also of importance to major economic and production sectors, including important fisheries, agriculture, tourism, ports and maritime shipping, and other major transport and communication sectors and their related infrastructure. Effective and sustainable management of the shoreline is vital to economic and social development, and has great bearing on the economic sustenance and sustainable livelihoods of the large sector of population living in India's coastal areas.

All the coastal states and territories are affected by coastal erosion to some degree. Coastline erosion over the years has intensified. In the states of Karnataka, and Maharashtra; the focus of the baseline program[7] about 50% of the 1,100 km of coastline is facing marked erosion, with an additional 530 km prone to erosion and 330 km requiring immediate protection. Rock sea walls are the prime measure to address erosion; nevertheless, at the current rate of seawall construction the shorelines and , key coastal ecosystems are projected to be increasingly and severely degraded within the next 20 years. The rise in sea levels and the likely increased frequency and intensity of storms will aggravate this, with serious economic and environmental consequences for coastal states. The sea level rise is projected to be in the range of about 0.3m in the Indian subcontinent by the middle of the century; a projected rise of 1 meter in sea level by the end of the century could displace 7.1 million people in India, with a loss of 5,764 square km of land and 4,200 km of roads.

Coastal erosion is caused by both natural events (such as storms and currents) and those anthropogenic (including seawalls, dams, riverbed quarrying, harbors, and inlet destabilization effects). In India, there are numerous examples showing how human activities have contributed to or caused coastal erosion. These include change in sediment supply through dredging, river damning, sand mining and the construction of littoral barriers such as groins, jetties, and ports. Beach degradation is also caused by ad hoc coastal development and urbanization, leading to loss of vegetation and further erosion.. Sediment traps (such as dredged navigational channels) and alteration to wave processes caused by jetties and ports also play a role. Coastal erosion is responsible for loss of land, houses, infrastructure, and business opportunities; and poses a high risk to human well-being, economic

[6] These three states were selected after consulting the states and central government, and considering coastal erosion and instability status in these states. The loan agreement has been signed by Maharashtra and Karnataka; the participation of Goa may come later in the program but this is still under discussion. No specific GEF interventions are proposed for Goa.

[7] ADB. 2007. *Technical Assistance to India for Preparing the Sustainable Coastal Protection and Management Project.* Manila

development, and ecological integrity. The impact will be much more extensive and widespread in the coming years, as the coastline is increasingly subject to a wide range of economic developments, many of which create conflicts and pressures on the already disturbed natural coastal environments. Rural poor coastal communities are the most vulnerable to the impacts of erosion and poor coastal management. Many of India's rapidly growing urban areas are also vulnerable to coastal erosion.

Threats and constraints to coastal ecosystems. Despite their tremendous ecological and economic importance, India's coastal ecosystems are under increasing threat. There are numerous direct and indirect pressures arising from different types of economic development across the country. It is clear that the cumulative impacts of pressure on the coastal ecosystems are intensifying as a result of both India's economic and population growth; coastal communities are affected through erosion and other impacts, as the drivers of change, degradation or loss of coastal ecosystems and ecosystem services. The threat of climate change is over and above this. The degradation of coastal habitats affects the wellbeing of all people in ways that cannot be measured in economic terms. The coastal wetlands, of India play and extremely valuable role, these include tidal mudflats (23,620 sq. km) and mangroves (4,870 sq. km). These wetlands are one of the most productive ecosystems and play a significant role in the ecological and economic sustainability of a region, and are essential to ecological and physical characteristics of the coast. Disturbances to the coastal wetlands either from anthropogenic or climate change impacts can be very significant.

Development coordination. There has been limited external assistance for coastal protection and management in India. Nearly all investment funding has been from the states, central government, and the private sector. The lack of external and/or coordinated assistance has resulted in a lack of exposure to new ideas and practices. The World Bank recently approved the Integrated Coastal Zone Management Project. The World Bank and ADB worked closely to harmonize interventions for coastal protection in India. The focus of the World Bank's project is on coastal zone management, mapping, and planning; and piloting integrated coastal zone management in the states of Gujarat, Orissa, and West Bengal. The focus of the proposed ADB-supported investment program is on designing coastal erosion protection infrastructure in the states of Karnataka, and Maharashtra.

B.1.2 Baseline Project Overview

Investment plan. An indicative long list based on prioritization of subprojects has been carried out for financing under the investment program. All subprojects to be included under the investment program will have to meet the selection criteria and defining: (i) erosion status; (ii) technical, institutional, and economic feasibility; (iii) compliance with social, environment and related safeguard requirements; (iv) endorsement by stakeholders, including agreements to support the project; and (v) state priority. The proposed intervention area includes the coast together with deltas along with estuaries, which are highly populated with intensive human land use areas. The estuaries and have been identified, by the Intergovernmental Panel on Climate Change (IPCC) as the coastal ecosystems most vulnerable to climate change and sea-level rise.

Road map. A road map (a sector strategy), comprising the policy and institutional actions and an investment program, has been prepared to support the two focal states to move toward integrated and sustainable coastal protection and management. The objective of the road map is to reduce coastal erosion and instability in the states. The road map envisages actions to protect and manage the shorelines of the three states, meeting the needs of communities and other stakeholders, while maintaining the ecological integrity of the shorelines.

Multi-tranche Financing Facility (MFF). The baseline project is based on the MFF modality which divides the loan into Tranches; the first Tranche of the loan has now be firmed up and committed to, whilst investments for the 2nd and 3rd Tranches remain indicative and are yet defined. The MFF provides the opportunity and incentives for high implementation quality since future tranches are subject to the performance of the ongoing tranche, and sufficient readiness for implementation. The MFF is a flexible approach which allows changes and refinements to be incorporated as the project progresses; this enables the outputs of the GEF-SCCF project to also be incorporated into 2nd and 3rd Tranches of the baseline project.

B.1.3 Baseline Project; Impact, Outcome and Outputs

The impact of the investment program will be improved income and reduced poverty of the coastal communities in the subproject areas of the coastal states of Karnataka, and Maharashtra. The outcome of the investment program will be protected and managed shorelines in the three states, meeting the needs of stakeholders and protecting the environment. The key performance target is protecting and managing 150 km of coastline with government,

community and private sector participation. The GEF-SCCF project will build on baseline project outputs focusing on the incorporation of climate change impacts. The investment program outcome will be achieved through the following outputs:

Output 1: Sustainable Plans and Management for Shorelines Developed

(i) Participatory shoreline management plans (SMP). SMPs will be prepared for the coastlines of the two focal states to meet long-term shoreline management needs; plans will be participatory and integrated with the participation of women. Shoreline plans will address key issues of the coastal processes, shoreline land use, and present proposals for the long-term sustainable management and protection of the shoreline. The plans will also identify potential economic development opportunities in coastal areas.

(ii) Coastal management information systems. Coastal management information systems will be developed and established for the two states. The databases will source information from national and state level institutions and other specialized agencies, including the Ministry of Environment and Forests. These will establish effective mechanisms for sharing information with state and district level coastal agencies and stakeholders. Maintenance of the management information system will be a key responsibility of the coastal information management units (CIMUs) to be established within each SEA.

(iii) Management and planning of subprojects. The investment program will support management and supervision of subproject implementation, and preparation of detailed design of subprojects for future tranches. Planning and design of projects for implementation will be selected based on the outputs of the shoreline management planning process. Selected projects will be formulated and submitted for preliminary selection and assessment. Feasibility studies, including numerical modelling as required, will be carried out for all projects to assess their technical and economic viability as well as their social and environmental impacts.

Output 2: Coastal Erosion and Instability Managed and Reduced

(i) Reducing coastal erosion, salinity and instability. Coastal erosion, salinity and instability will be reduced through economically viable protection works, using environmentally and socially appropriate solutions. Key areas of other coastal protection interventions include (i) navigation inlets and training of river and drain mouths; (ii) natural protection through the development and planting of dunes, and planting of mangrove or other trees for protection and shelterbelts; and (iii) coastal management, including water quality, dredging, and reclamation.
(ii) Community and private sector engagement. The key components will be (i) training provided to at least six local communities in shoreline management and income-generating activities, and (ii) new initiatives toward income generation of local communities. The states will take steps toward encouraging private sector investments in coastal protection and management, including putting in place enabling policies and guidelines for private sector participation in coastal protection and management as feasible.

Output 3: Enhanced Capacity for Shoreline Planning and Development
The baseline output will aim to build:
(i) Capacities at district and state levels will be enhanced to prepare and implement participatory SMPs. Coastal Infrastructure Management Units (CIMU)s will be established and shoreline management plans will be prepared and updated at 5 year intervals. SMPs will form the basis of long-term shoreline protection and management.
(ii) Enhanced capacity of local experts and agencies and government institutes. The capacity of local experts and agencies, local bodies, and stakeholders will be enhanced to provide specialist support for planning, modelling, design, checking, and review for coastal protection and management.
(iii) Improved capacity of communities and stakeholders. The mandates and capacities of communities and stakeholders will be improved to manage and maintain . Locally based community stakeholders and beneficiaries will support project coordination and monitoring during implementation, as well as management and maintenance of coastline..
(iv) Mandated state executing agencies. The states will take all necessary steps to empower the SEAs to coordinate all coastal management programs. Towards this, the capacity of the SEAs will be enhanced. Establishment of a CIMU within the State Executing Agencies (SEA) will support the coordination of the management information system.

B.1. 4. Baseline Project Investment and Financing Plan

The SCPMIP investment cost is estimated at $404.6 million including taxes and duties of $35.5 million to be

financed by the government. The loan agreement is based on three participating states; Karnataka, Goa and Maharashtra. Goa is not included in Tranche 1 and involvement in Tranche 2 and 3 is not fully confirmed. No specific GEF-SCCF activities are proposed for Goa however the national level adaptation guidelines and training would be directed to all maritime states.

The investment and the financing plan are presented in **Table 2**, below.

Table 2 Program Investment Plan

Item		Whole Program ($ million)	Tranche 1 ($ million)
A.	Base Costs		
1.	Planning and design	19.8	6.3
2.	Coastal erosion and instability reduction	309.3	41.8
3.	Capacity development	19.7	8.2
Subtotal (A)		**348.8**	**54.3**
B.	Contingencies	41.9	4.2
C.	Financing Charges During Implementation	13.9	0.8
Total (A+B+C)		**404.6**	**62.7**

The ADB loan is for an amount up to $250 million from ADB's ordinary capital resources to help finance part of the investment program. The MFF will consist of three tranches, subject to the government's submission of related periodic financing requests, execution of the related loan and project agreements for each tranche, and fulfillment of terms and conditions and undertakings set forth in the framework financing agreement (FFA).

An agreement for the first tranche ($51.6 million loan) was signed on 17th August 2011. The program will improve incomes and reduce poverty in coastal communities in Karnataka and Maharashtra states by addressing immediate costal instability problems and medium-term needs of coastal protection and management.

The total cost of first tranche is $62.7 million for the two subprojects in the states of Karnataka and Maharashtra. The first tranche of the MFF will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, and such other terms and conditions set forth in the FFA and the loan and project agreements, the financing plan is shown in **Table 3** below.

Table 3 Financing Plan

Financing Plan ($ million)		
Source	Amount	Share of Total (%)
Asian Development Bank	250.0	61.8
State governments	119.8	29.6
Other Sources including Private sector	34.8	8.6
Total	404.6	100.0

B.1.5. Baseline Project Implementation

The responsibility for overall project management and implementation is the: Karnataka Public Works, Ports and Inland Water Transport Department, and Maharashtra Maritime Board. The government of each state will establish a program steering committee, to be chaired by the SEA departmental secretary, to provide broad project oversight; policy guidance; facilitate interdepartmental coordination; and help institutionalize effective mechanisms to plan, improve, and manage coastal management initiatives. A program management unit (PMU), headed by a full-time project director, will be established in each state. The implementation arrangements are summarized in **Table 4**, below.

Table 4 Baseline Project Implementation Arrangements

Aspects	Arrangements
Implementation period	2011– 2019
Estimated project completion date	Early 2020
Project management	
(i) Oversight body	Program steering committee of each state
(ii) Executing agency	Karnataka Public Works, Ports and Inland Water Transport Department, and Maharashtra Maritime Board.
(iii) Key implementing agencies	As above
(iv) Project implementation unit	A program management unit, headed by a full-time project director has been established in each state.
Procurement	All goods and services to be financed under the multitranche financing facility will be procured in accordance with ADB's Procurement
Consulting services	A team of international and national consultant have been contracted to support the 1st tranche of the program over 40 months to mid 2015

B. 2. Problems the Baseline Project Seeks to Address

The coastal protection strategy in India aims at protecting the land behind the beaches and overall economic growth. Protecting the coastal areas and the environment are relatively new concepts in India. The most frequently applied methods for coastal protection have been through the use of hard structures, such as seawalls or groins. Long-term plans to manage coastal erosion are available. However, resource constraints result in the measures being undertaken to target the more vulnerable sections of the coasts and as local emergency measures. Such interventions provide mostly land protection. Seawalls and groins continue to be preferred measures though they do not necessarily address the root cause of the problem. As the pressure on the coastal zone keeps expanding because of human-induced activities as well as relative sea level rise, there is an urgent need to find sustainable solutions for coastal protection.

Continuing coastal erosion worldwide is leading to the development and installation of innovative techniques for effective and unobtrusive shoreline and near shore control. There are increasing examples of replacement or modification of traditional hard rock protection with softer options such as beach nourishment, dune management, and artificial reefs. The investment program is designed to facilitate the transition to softer solutions, with a focus on environmentally appropriate and sustainable solutions.

The benefits of coastal protection to coastal economies are enormous. Interventions to prevent coastal erosion and protect beaches and adjoining land will benefit port operators and users, fishermen, tourism operators, beach users, farmers, and other property owners and local communities living near to and/or depending on coastal ecosystem services and resources. In addition, the introduction and development of new technologies have lower environmental and social impacts than rock walls, which are the traditional solution to coastal erosion problems in India. The introduction of these new technologies for coastal protection leads to solutions that not only protect the coastline from erosion but enhance income-generating opportunities for communities living near the affected areas.

Institutional environment. The mandate for coastal erosion mitigation is typically entrusted to the state level coastal divisions, which is part of a larger state department with a much broader and largely technical mandate. The technical and human-resource capacity of the coastal divisions is limited, with minimal experience in modern and sustainable coastal protection and management measures. Staff are frequently transferred to other unrelated sections / divisions, and untrained persons are posted for short durations. There is no specific permanent institution or training provided for coastal engineering in any State.

Integrated management and the use of environmentally and socially acceptable solutions for coastal protection require effective local level community participation. The processes for these solutions are presently limited and new methodologies will have to be developed to meet these requirements. Maintenance is a key issue; a high level

of local support for maintenance is required in some areas, such as beach stabilization work. Development of protection works could open up opportunities for communities and other stakeholders, with some initial support, to help realize potential financial benefits.

B.2.1. Community Led Protection Measures

Natural protection is a low cost approach which is appropriate for less severe levels of erosion and beach instability. Natural protection is being developed internationally and to some extent in India. In India the main thrust is the establishment of mangrove and shelter-belts, for which there are now a number of projects and programs. Less well researched areas include; integrated climate resilient beach and dune management, beach nourishment in under nourished areas to attain climate resilient profiles, introduction of climate resilience to existing mangrove systems, integrated climate resilient estuarine, delta, inlet, spit and/or barrier island management plans and 'sustainable mangrove development in higher wave energy and erosion zones'.

Natural protection measures form a part of the investment plan for the SCPMIP Karnataka and Maharashtra with an indicative 5% of the total investment directed to the natural protection component.. Natural protection includes mangrove, beach and dune management, shelter-belt, *nalla* (drain) alignment, beach nourishment, beach scraping. The project preparation report for the SCPMIP identifies various options for beach and dune management. Beach management incorporates promoting the development of sand dunes through sand fences and planting. Zoning of the dunes as protection area is required to limit human and animal access and control development to minimize erosion. Additional measures can include beach nourishment, beach scraping (scraping sand from the lower beach to the higher beach/dune area) and *nallah* (drain) training and clearing. An area being supported by the baseline project is the use of geotextile containers as a substitute for rock. Small sand filled geotextile bags of about $1m^3$ size are appropriate for community use and can be put inside dunes to provide additional protection/stabilization.

Destabilization of the coastal wetlands and mud may occur under climate change. Various methods have been developed internationally to establish mangroves in areas where natural and conventional regeneration is not possible Community participation is important to ensure long term sustainability including limiting of the cutting of firewood and grazing by livestock.

The SCPMIP projects in Maharashtra and Karnataka include provision for beach management consultants and coastal wetland ecologists who will be examining the potentials for natural protection measures as alternatives to rock and other engineering approaches. These consultants will mobilize during 2012 or early 2013 and would be able to provide guidance on natural protection technologies and strategies which can form the base of the design of the pilot projects.

For community based natural protection programs there is a need to better develop the concepts and to pilot viable and sustainable implementation methods. Effective community engagement and participation is critical together with sourcing of long-term sustainable sources of finance for maintenance. It is proposed that pilot community based natural protection projects in the under the GEF-SCCF financing. Depending on the evaluation of the pilot projects the application of community based pilot projects could be up-scaled in Tranches 2 and 3 of the SCPMIP scheduled for 2014 to 2019. The lessons learnt and performance evaluation of the pilot projects will be extremely valuable.

B.2.2. Vulnerabilities to Climate Change

The baseline project includes only limited scope to address climate change. There remains uncertainty of the climate change impacts but the likelihood is that beaches and mud flats will become increasingly under risk of erosion. Even small increases in vertical sea level rise and wind parameters can potentially have major impacts on the coastal hydrodynamics including horizontal loss of the foreshore and erosion impacts on the land and settlements. Land subject to minor erosion could become sites of major erosion, presently stable beaches and mud flats could become locations of erosion. Stable and productive mangrove could become vulnerable if the mud strata start to erode.

Information from the coastal states indicates that currently about 22% of the Indian coast to be affected by erosion[8]; estimates are that 40% of the Maharashtra and 90% for the Karnataka coastlines respectively suffer from some

[8] National Coastal Protection Project

degree of erosion. Beaches and mud flats are the natural protection to the coast; their long term sustainability is very sensitive to changes in sea and wind regimes as well as anthropogenic changes. Despite significant investments in rock protection most of the coast remains sensitive and potentially unstable; small changes in the regimes of natural sand supply and the coastal hydrodynamics can trigger major changes in the equilibrium of the beaches and mud flats and increased degradation of the rock protection. Small changes in sea level and wind parameters

Beach erosion is the physical movement of sediment away from the shore via wave and current action. Sea level rise has the capacity to exacerbate erosion by promoting offshore transport of sediment. The best-known and most widely applied modeling of this process is offered by Bruun (1962). The 'Bruun Rule' suggests that shoreline recession is in the range of 50 to 200 times the rise in relative sea level; this recession is caused by a beach's desire to maintain an equilibrium profile. To maintain the equilibrium profile in the presence of sea level rise, sediment is removed from the shoreline, which causes the erosion. Sand is subsequently deposited offshore so that the near-shore zone gains elevation at a rate equal to the rise in sea level. As sea level rises, the beach profile adjusts by shifting landwards and upwards by removing sediment from the shoreline and depositing it in the nearshore zone. The volumes of eroded and deposited material are equal. Increased sea levels of about 150mm over the last 20 years may well be contributing to some of beach instabilities found on many of the Indian beaches. Long-term instabilities of the beaches which comprise 43% of the India coast are considered one of the main areas of vulnerability from climate change. Low cost and environmentally appropriate methods of protection need to be developed and implemented; these may not in themselves provide full protection but may be able to slow the rates of erosion. The very high costs of fully engineered protection may not be economically viable and partial protection and support for some level of retreat maybe required. Changes in the predominant wave directions resulting from climate change may have significant effect on the long term equilibrium of beaches.

Migrating Inlets: All along the Indian coast the migrating river mouths have resulted in long shore parallel spits which are estimated to be especially vulnerable to increased sea level, wave energies and river flood flows. Breaching of the spits can result in major shift in the location of the inlet with potentially major impacts to existing investments and navigable access to the river mouths. Deltas are also potential areas of higher impacts of climate change.

Mud Flats and Mangroves: sea level rise and increased wave action will affect mangroves which form the main natural protection where the correct salinities exist. Although the mangrove is tolerant to changes in sea levels and salinities it is likely that mangrove will be most vulnerable at the margins, especially in areas of high energy erosion prone shorelines including areas of revetment where sediment removal and natural recruitment no longer occurs and where conventional planting methods become ineffective. Changes in the coastal hydrodynamics from sea level rise or changes in predominant wave direction can potentially cause shifts in the mudflats with potentially significant loss of mangrove in affected areas.

B.3. Description of the Incremental Value of the GEF-SCCF Activities

B.3.1. Introduction

The GEF-SCCF grant will support mainstreaming of climate change resilience into coastal protection and shoreline management. The GEF-SCCF grant support will be carefully targeted and will build on and develop complementary actions to the baseline SCPMIP project with special attention to the vulnerabilities of the coastal communities and the development of low cost, community based economically viable and sustainable adaptation responses to develop a range of mechanisms to:

(i). Provide a clear analysis and interpretation of potential impacts of climate change and development of guidelines for appropriate adaptation interventions which can be applied to support the development of national-level processes and mechanisms to integrate climate change adaptation into shoreline management planning--including guidelines, and methodologies--to ensure and support climate resilient development and avoid potentially risky investments along the coast;

(ii). At the operational level, implement climate-proofing of the coastal investments incorporating state of the art climate science, impacts and vulnerability assessments in the two focal states of Karnataka and Maharashtra. Vulnerability assessments will be carried out through; (i) detailed assessment of specific case studies to analyse and assess vulnerabilities of typical coastal scenarios, these would include the tranche 2

sub projects, the pilot community project and other selected project (ii) applying the analysis of case studies and typical coastal scenarios to prepare climate vulnerability assessments for the shoreline management plans in the two focal states.

(iii). The systematic development and strengthening of technical and institutional capacities to plan, implement and maintain policies and operations that integrate climate resilience within sustainable coastal protection and shoreline management.

A definitive analysis and interpretation of potential impacts of climate change is required to support the baseline project. Without supporting climate change studies the construction of coastal protection infrastructure and shoreline management planning will proceed largely according to the current standards that do not explicitly consider climate change related risks and vulnerabilities. Without clear and officially endorsed design guidelines planners and designers have neither the knowledge base, nor the mandate to design for potential impact scenarios under climate change. As a result investments will be less 'resilient' than they need to be, given the potential impacts of climate change. The SCCF funding will enable climate change parameters to be factored into planning and design and allow a significant number of coastal protection infrastructure investments under the SCPMIP to be climate proofed; meaning the design will consider risks arising from climate change alongside other drivers of coastal change. The process of climate-proofing will build on experience and develop lessons and policy recommendations for the modification of coastal protection regulations and standards at state and national levels. Related analytical and spatial planning capacities will also be developed in the pilot States and at the national level.

The GEF-SCCF support will also create indirect benefits on similar coastal protection infrastructure investments in India's coastal regions, starting with the west coast states of Karnataka and Maharashtra, but laying a foundation to upscale the approaches to other coastal states. Under the SCPMIP some basic site based climate change vulnerability assessments and integration of climate resilience factors and design into investments for selected sub-project pilot sites have been undertaken during Tranche 1 of the investment program. The objective is to develop more scientific and rigorous approaches to mainstream this process for all SCPMIP Sub Project Sites (during Tranche 2 and 3). The overall outcome from this GEF-SCCF funding will be greater climate resilience of for the two focal states of Karnataka and Maharashtra together with the development of guidelines and training of trainers which, will be of benefit all other coastal areas of India.

A core element of the combined baseline together with GEF-SCCF project support will be to examine climate change related risks through participative dialogue with local communities and district /*panchayat* level officials. By linking the scientific analysis of climate change impacts with the information at the district and community level will allow the development of integrated guidelines and approaches to support climate-proofing reduction of vulnerability reduction at all levels. The objective will be to develop and support the use of low cost community based natural protection measures through cost-effective, environmentally sustainable approaches. The community approaches will be implemented through pilot community protection projects and provision of finance for conservation and the use of soft infrastructures and natural protection measures together with the promotion of livelihood development including increased participation of women.

The soft community project approach will not be appropriate nor will it be a sufficient solution to all coastal erosion issues and parallel interventions. Using more intensive investment engineering type solutions will still be required for more serious erosion problems. Maintaining the environmental integrity and sustainability of the shoreline will remain a key objective for all protection measures.

Dissemination of relevant adaptation knowledge through national knowledge-sharing networks will be a key objective. This will be undertaken in the context of ongoing efforts in mainstreaming climate change adaptation policy, coastal infrastructure development, and capacity building on efforts by ADB and other development partners in India. By aligning lessons learned from local level investments with national level programs, related to coastal zone management and climate change adaptation initiatives, this proposed project will catalyze climate resilient development in vulnerable sectors and regions in the two target states.

Furthermore, the GEF-SCCF project will promote awareness and strengthen the technical capacity within key sector agencies and professional groups with coastal protection and shoreline planning responsibilities to promote climate-resilient decisions at national and local planning levels. Through this, information on the vulnerability of coastal areas to climate change will be fed into coastal planning processes so that options for coastal development can be assessed and recommendations made regarding changes in the planning or zoning of coastal areas or provision of resilience strengthening measures to reduce risks to existing or planned infrastructure. This may possibly include the identification of areas that are not recommended for certain types of development, as well as

guidance/recommendations for climate resilient development standards.

This will involve engagement with the Government of India (GoI) at national level as well as at the State and local levels and with the private sector, NGOs and community groups. Institutional strengthening within the GoI will focus on the MoWR and its subsidiary bodies while promoting cross-sector linkages between GoI agencies at all levels, the private sector, NGOs and community groups. Through the GEF-SCCF supported activities, the Ministry of Environment and Forests (MoEF), which is the central authority for regulating and controlling the activities in the coastal zone of the country, will be increasingly involved in the project as well as various national level bodies such as the National Coastal Zone Management Authority (NCZMA), State / Union Territory Coastal Zone Management Authorities (SCZMA), Central and State Pollution Control Boards and other State level agencies. During the project implementation, further stakeholder consultations will be undertaken to refine institutional arrangements and the project's design..

B.3.2. Design Parameters for the GEF-SCCF Project

From consultations with state and central government stakeholders, it was agreed that the GEF-SCCF project should be developed to address key coastal management and protection priorities, as listed in **Table 5** (below).

Table 5. Key Parameters for the GEF-SCCF Support

Link and complement ongoing programs		Should link and complement overall strategies for coastal protection and management. Four key linkages have been identified • The SCPMIP in Karnataka and Maharashtra • The MoEF CZM Program at national level and also in Gujarat, Orissa and Tamil Nadu. • The State Action Plans for Climate Change (SAPCC) with special reference to coastal planning for maritime states. • Ongoing research by relevant Indian Research Institutes
Avoid duplication, additionalities and fill gaps		Should not duplicate but complement ongoing initiatives and should establish additionalities and fill the gaps
Address key areas of vulnerability		Should address key areas of vulnerability under climate change in the two focal states but also provide benefits to the other coastal states in the form of appropriate guidance and enhanced awareness.
Both current and future needs		Should incorporate current needs as well as requirements for climate change adaptation.
Innovative and value added		The GEF-SCCF supported initiatives should be innovative and add value to ongoing initiatives and programs.
Sustainability		Designs should be incorporate sufficient factors of safety to meet projected climate impacts together with a greater emphasis on maintenance to rectify damage.
Participatory and Consultative Design Mechanisms		The design of the GEF program should be participatory and consultative with relevant stakeholders
Clear well defined outputs		The project should have clear outputs that can be measured, verified and monitored.
GEF project to include physical investment		Based on the GEF Project Identification Form and consultations with relevant stakeholders, it was agreed that some physical investment aiming at piloting specific innovations should be included in the GEF-SCCF project. Projects should be easily implementable within a six month period

B3.3. Information Needs for Coastal Climate Change Adaptation

There are many publications on the Indian coasts; however a review of the available literature shows that there are only a very few studies directly related to climate change, its resultant impacts on the coastal zone or specific guidelines for adaptation The GEF-SCCF grant is designed to review ongoing research contributions that can be used as a foundation for estimating the impact and identifying the gaps in information to decide future lines of action**.** Most studies have listed broad areas of impact however few have been able to produce quantified predictions of impacts due to the scientific uncertainties involved in making such predictions. Climatic change impacts in coastal areas will be both diverse and extensive including alterations to physical, biological and human elements. More detailed understanding of the functioning of coastal systems is required to facilitate the impact prediction, planning and management. There is a need for a coordinated and multidisciplinary approach to impact assessment rather than a narrow sectoral approach. Potential impacts may be directly related to temperature and

other components of climate. The primary effects on the coast include the effects from:

(i). Sea level rise due to thermal expansion of sea water, melting of glaciers and ice caps and over exploitation of groundwater
(ii). Changes in wave parameters including size and direction due to climatic changes of winds as well as increases in wave heights from seal level rise. Equilibrium and stability of beaches is very sensitive to changes of predominant wave directions.
(iii). Changes in frequency and intensities of storms and storm surges
(iv). Vertical land movements-vertical land movements from isostatic (changes in the earth's crust) adjustment and localized land settlement from groundwater abstraction, urban development
(v). Changes in freshwater flow regimes including flood flows will have effects in the estuaries; salinity in estuaries is influenced by the seawater level as well as the freshwater flows regimes.

The Government of India has coordinated a number of assessments of climate change projections, impacts and mitigations at the national level including; Climate Change studies supported by Asian Development Bank. Asian Least-Cost Greenhouse Gas Abatement Study (ALGAS) supported by Global Environment Facility (GEF); Climate impact assessment study under the Indo-UK collaborative project and the National Communications supported again by GEF. The recent assessment by National Communications project involving 131 teams across various disciplines has covered all the three aspects: climate projections, impacts, adaptation and mitigation. Based on all these assessments, India has recently prepared the National Action Plan on climate change.

A Centre for Climate Change Research (CCCR) has been established at Indian Institute of Tropical Meteorology, Pune by the Ministry of Earth Sciences. This Centre has the capability to analyze the rainfall trends for the future. The Centre for Atmospheric Sciences at IIT, Delhi has been working in the area of cyclones and storm surges. The National Institute of Oceanography (NIO) has observed significant gaps in the understanding of land level changes in relation to sea level rise and has identified this as one of the main areas of research. The geoscientific data on the stability of landmasses are handled by the Geological Survey of India; NIO has a geological section which has some involvement in land mass changes. The projections of SLR at different stations are also being examined. The design modifications required for the coastal protection measures would be in the domain of the activities of the Central Water and Power Research Station (CWPRS) which falls under the Ministry of Water Resources. The National Institute of Ocean technology working under the Ministry of Earth Sciences has also developed some capacity in the area of coastal engineering.

B.3.4. Current Gaps in Climate Change Adaptation for the India Coastline.

There are many current gaps in climate change analysis and adaptation for the India Coast. The main identified areas include:

(i). Lack of Integrated Analysis of Climate Change Trends and Projections for the Indian coast: Although there are various state and central government initiatives to assess the coastal climate change impacts there is a need to undertake a comprehensive analysis for the Indian coast. There is a need to build and develop work being implemented by key Indian research institutions, such as IITMs, NIO, MoES, MoEF, DST as well as sourcing the latest international climate research to analyze and compile best possible projections for climate impacts for the Indian coastline including assessment of uncertainties.
(ii). Lack of planning and design criteria and guidelines to support coastal protection and management decision making. Coastal planners and designers have limited understanding of how to incorporate climate change into coastal protection and management activities.
(iii). Lack of an integrated coastal information system; there is very limited access to coastal information. Open access to coastal climate change information is critical for sustainable coastal management. The information system should incorporate the impacts of climate change.
(iv). Issues of uptake and mainstreaming of coastal climate change adaptation needs to move climate change analysis and guidelines forward to actions on the ground. The SCPMIP investments in Karnataka and Maharashtra are required to incorporate climate change into planning and design but the resources are insufficient for a comprehensive analysis.
(v). Greatest vulnerability from climate change appears to relate to increased instabilities of the beaches, dunes and coastal and estuarine mud flats, these form the natural protection which if becomes unstable could potentially lead to widespread damage. A part of the SCPMIP is directed to the development and strengthening of the natural coastal protection measures including beach and dune management, mangrove

and coastal planting, and beach nourishment. There is a need to better understand sustainable approaches and effective community involvement.

(vi). There is limited capacity in coastal protection management and especially climate impacts. Sustainability of new initiatives needs to be supported through strengthening of institutional capacities and enhanced awareness. The SCPMIP training component is designed to support training in the two focal states.

B.3.5. GEF-SCCF Project Proposal

Four components are proposed for the GEF-SCCF project. Components two, three and four link to the three components of the baseline project; component 1 is a new additional component. The project proposal is summarized below.

Component 1: Analysis of Climate Change Impacts in Coastal Areas and Preparation of Guidelines for Climate Change Adaptation for the Indian coast.

1.1 Analysis and interpretation of climate change trends and projections for the whole Indian coast.

This component will build on and develop ongoing work being implemented by the key Indian research institutes as well as sourcing latest international climate research including the IPCC Fifth Assessment Report (scheduled to be issued in 2013). The studies will incorporate analyses and interpretation to derive the best possible estimates of climate impacts for the Indian coastline including assessment of uncertainties.

An in depth analysis and assessment of national and international research findings will be undertaken through international and national specialist consultants working with and building on ongoing work in three focal Indian research institutes; the focus of the analysis will include:

(i). Historic trends in sea levels
(ii). Projections of sea level rise from climate change
(iii). Analysis of Vertical Land Movements
(iv). Downscaled climate change projections of temperature, wind and rainfall
(v). Analysis of changes in wave characteristics from climate change
(vi). Analysis of projected changes in storm surges

1.2 Preparation of planning and design criteria and guidelines for coastal climate change adaptation

Planning and design criteria and guidelines to support coastal protection and infrastructure decision making will be developed. These will be based on analysis of the various climate change assessments and defining the impacts and vulnerabilities of various coastal sectors under climate change. Scientific, engineering and economic analysis of the impacts and appropriate design criteria for climate change resilience will be developed. Close consultation will be kept with CWPRS at all stages.

Case studies from the two SCPMIP focal states together other programs including the MoEF CZM project would be analyzed to assess the levels of vulnerability of different coastal situations to climate change.. The case studies will be analyzed to develop the most appropriate approach to incorporation of climate resilience; including cost benefit analyses of different adaptation approaches; possible scenarios would include, do nothing, immediate and deferred adaptation. The outputs of the case studies will be applied to develop adaptation criteria and guidelines applicable to all coastal states. Adaptation criteria would be compliant with official notifications of the coastal resilience zone.The climate change impacts, adaptation criteria and guidelines will be reviewed by an advisory panel of experts nominated by each coastal state and union territory; the panel will provide a wide range of expertise with a good geographical spread of knowledge of the different conditions of the Indian coastal states. The outputs of the peer reviews will analyzed and synthesized into the final version of the guidelines. The final guidelines will be submitted to the National Technical Committee who will provide the formal government endorsement

1.3 Coastal climate change parameters are incorporated into information systems being developed by central agencies.

The GEF-SCCF grant will provide support to incorporate climate change parameters into the

coastal information systems being developed by central agencies including the coastal information system being established by MoWR and the systems being developed by the MoEF ICZM project. The objective will be to ensure the 'coastal climate change information package' has compatibility and can link with key Indian coastal information systems including the SCPMIP, the National Coastal Information System and the MoEF information systems.

The project will prepare specific guidelines for the 'coastal climate change information package' which can be taken up by the coastal information systems being developed by other central agencies and coastal states.

GEF-SCCF Component 1 Value Added: The consultants will develop adaptation guidelines by interpreting the work of various international and national institutes. Through a broad spectrum of resources it will be possible to develop the best possible state of the art information on climate change impacts and projections and recommendations pertaining to the most appropriate adaptation response. Peer review and official endorsement of the findings by a panel of experts will provide an appropriate basis for adoption of the guidelines by state and national level agencies and institutions including designers of SCPMIP supported interventions. The project will facilitate and provide an appropriate basis for upscaling and mainstreaming of the SCPMIP information systems in the two focal states.

Component 2: Climate Resilient Shorline Planning and Management in Two Focal States

Component 2 will provide additional expertise to support the SCPMIP to incorporate climate change adaptation measures, including:

(i). Provision of simple assessments of coastal vulnerabilities to climate change based on reference to case studies in the adaptation guidelines.
(ii). Incorporation of climate change resilience and adaptation measures into the preparation of the shoreline management plans.
(iii). Shoreline plans including climate resilience must comply with notifications of the coastal resilience zones.
(iv). Coastal information system in two focal states incorporate climate change parameters.
(v). Provision of additional expertise to support the SCPMIP designers incorporate appropriate measures for climate change resilience for the Tranche 2 designs.
(vi). Based on the 'climate adaptation guidelines' conduct analyses of potential climate change impacts and prepare specific recommendations for climate resilience for the short list of possible Tranche 3 sub projects. The SCPMIP designers would be able to refer to the adaptation guidelines and the specific recommendations for climate resilience.
(vii). Economic assessments, including benefit-cost analysis, of different adaptation scenarios and design decisions will be undertaken and applied in the sub project designs.
(viii). Case studies from real issues in the SCPMIP states will be incorporated into the adaptation guidelines.
(ix). The GEF-SCCF grant would support the detailed planning and design of up to six pilot community natural protection projects at selected locations in Karnataka and Maharashtra. Pilot locations will be selected based on the shoreline management plans.
(x). Planning and design of pilot projects will incorporate community participation to ensure viabilities and sustainabilities including approaches protect community livelihoods from climate change impact and support employment of women and marginal groups in the planting and maintenance activities.

GEF-SCCF Component 2 Value Added will provide climate resilient project planning and designs based on the climate studies and analyses. Case studies from the focal states including outputs and lessons learnt from the community pilot projects will be used to support the adaptation guidelines.

Component 3: Climate Resilient Coastal Investments in Two Focal States

Component 3 will be directed at reducing coastal erosion and instabilities through focused economically viable coastal protection investments. Investments for coastal protection and management sub-projects would be funded through the co-financing from the ADB SCPMIP loan for Karnataka and Maharashtra.

The GEF-SCCF would directly support the implementation of small pilot community natural protection projects. These would be demonstration projects to be implemented during 2014. The pilot projects would be natural protection projects focusing on beach and dune management based on community based coastal management. There is limited experience of this type of approach in India and limited experience in community led coastal management and protection interventions. The pilot projects are proposed to test and demonstrate approaches including; support for community awareness, the application of zoning of dunes, fencing, planting and protection of dunes, use of small geotextile bags inside the dunes for additional protection, training and maintaining the openings of small river outlets and development of strategies for retreat where full protection measures are not viable. The design of sustainable approaches to community based management will form a key part of the pilot projects. The GEF-SCCF finance will support up to six communities based pilot natural protection projects in the two focal states to demonstrate and test new initiatives.

The locations and preliminary approaches of the community based natural protection would be supported by the SCPMIP through the shoreline planning activities and their specialist natural protection consultants. Close coordination would be maintained with community stakeholders and district Government officials. The GEF-SCCF would prepare the planning, detailed design and cover the investment costs for the pilot projects.

The community protection projects will be implemented as community driven initiatives. This will require training and awareness of the issues and supporting the effective engagement of community organizations in shoreline management including the establishment of shoreline management organizations (SMO). The approaches to community engagement would be tried and assessed under the GEF-SCCF project. The SCPMIP baseline project would be able to support upscaling of community projects in Tranche 2 and 3 of the loan incorporating lessons learnt from the pilot projects.

GEF-SCCF Component 3 Value Added: The adoption of climate adaptation guidelines would facilitate incorporation of climate resilience in the design and implementation of subprojects. The GEF-SCCF consultants will directly interact with the SCMPIP project for the Tranche 2 investments. For Tranche 3 sub projects the ' adaptation guidelines' will be prepared and endorsed and the GEF-SCCF consultants who will prepare recommendations for climate resilience for the short list of possible projects.

In general, there is a lack of long term monitoring in India and only limited evaluation of natural protection measures. The long-term sustainability of natural protection projects is critical and effective models for community engagement and ensuring long term funding mechanisms need to be identified. The GEF-SCCF support up to six pilot projects which will allow the testing of new approaches and the development of appropriate models for community engagement and developing mechanisms for long term maintenance and management. Upscaling of community led natural protection projects will be undertaken under tranche 2 and 3 of SCPMIP.

Component 4: Institutional Strengthening, Capacity Building and Enhanced Awareness for Climate Resilient Coastal Protection and Management.

Component 4 will develop training based on the adaptation guidelines within the two focal states and nationally. The GEF-SCCF funds would provide specific support to:

(i). Incorporate of climate change adaptation responses into the training programmes. The National Water Academy in Pune working with the CWPRS would form the training hub.

(ii). Training of 25 trainers in the application of climate change guidelines including the coastal climate change information package. The objective would be to develop a cadre of experienced trainers with understanding of climate impacts and measures for adaptation. The cadre of trainers to be trained will be from various disciplines and different institutes including the National Water Academy, NIO,CWPRS, and selected state institutes. The training will be provided by the implementation consultants together with resource person from the three focal institutes and other organisations.

(iii). Provide training courses for senior level staff and decision makers from the central agencies and maritime state officials and stakeholders. Training will be by the cadre of trainers and other resource persons. Incorporate climate change adaptation into the training programs in the two focal states. (iv). Provide dissemination of information for enhanced awareness of stakeholders and strengthening of international knowledge networks in climate change adaptation for coastal areas.
GEF-SCCF Component 4 Value Added would include the incorporation climate change and climate change adaptation into the SCPMIP training. The GEF-SCCF fund would allow training activities to be widened outside the focal states including training of trainers and some provision of training for national level institutions, central government and other maritime states. The national water academy would be the established as a training hub for coastal climate change adaptation.

The cost estimate for the proposed GEF-SCCF project budget is shown in **Table 6** below.

Table 6 Cost Estimates for the GEF-SCCF Project

Item	Amount US $
Financing by the Special Climate Change Fund[a]	
1. Consultants[b]	
a. Remuneration and Per Diem	
i. International Consultants (22pm)	550,000
ii. National Consultants (44 pm)	260,000
iii. Advisory Panel of National Experts[c] (8pm)	56,000
2International and Local travel	70,000
3. Studies by Focal Research Institutes[d]	180,000
4. Data, Surveys, Studies and GIS[e]	20,000
5. Reports and communications	15,000
6. Misc office equipment[f]	5,000
7. Training, demonstrations, workshops and awareness materials	
a. Training of trainers, senior level training	52,000
b. Implementation of Pilot Community Protection Demonstration Projects including community awareness, participation and coordination[g]	400,000
c. Production of awareness materials	10,000
d. Workshops and consultations	20,000
8. Project management, administration and support costs	65,000
9. Project monitoring and evaluation	10,000
10. Contingencies	105,182
Total Cost of the TA	1,818,182
GEF-SCCF Agency Fee[h]	181,818
Total[h]	2,000,000

Support in Kind by Government
Provision of co-financing through the baseline project-Tranche 1: $54million
Total MFF for Tranches 1, 2 and 3: $ 404 million.
Provision of small office space at CWPRS Pune
Occasional office space in SCPMIP offices in Mangalore and Mumbai
Coordination and liaison support for pilot community projects in two focal states
Constitution of National Technical Committee
Support to officially endorse the climate change adaptation guidelines

[a] Administered by the Asian Development Bank
[b] Experts to be engaged through an International Consulting Firm
[c] Advisory Panel of Experts would be nominated by MOWR and maritime states and approved by ADB to provide peer review climate analyses and adaptation guidelines. It is proposed that one expert or institute from each maritime state and

Union/Island Territory and 4 national experts are engaged. The consulting firm would be responsible for the remuneration of the panel.

[d] Focal research institutes would be sub-contracted by the consulting firm to undertake specific analyses of climate change impacts and support the preparation of guidelines.

[e] Other studies and preparation of GIS to be commissioned as required.

[f] Procurement of 2 computers, projector, printer and scanner equipment to be given to the National Implementing Agency at the end of the project.

[g] Grants for up to six village level community pilot projects including; awareness, training, demarcation of dunes, planting, sand fencing, access paths, beach scraping, river mouth training, small sand filled geotextile bags. Includes the engagement of local community coordinators/ supervisors. About 6 locations in the two focal states, with about 3km of natural protection per project. Projects to be managed and paid through the consulting firm.

[h] GEF-SCCF administration cost which will be withheld by the GEF are 10% or $181,818.

B.3.6. Pilot Community Projects

Selection Criteria: The objective of the pilot community projects will be to develop and test methodologies and approaches to community led protection measures for coastal protection and management incorporating climate change adaptation measures. The pilot protection projects will focus on community based beach and dune management and will test and demonstrate appropriate approaches for India including mechanisms to effectively involve and engage the communities in shoreline protection and management.

The pilot projects will be implemented in close coordination with the SCPMIP. Candidate sites will be identified through the SCPMIP shoreline planning processes with selection of sites endorsed by the project PMU and the project steering committee and agreed to with the target communities Vulnerabilities to climate change will be assessed through the application of the climate change adaptation guidelines and outputs from case studies into the shoreline management planning activities in the two coastal states. Close reference will be made to the MoEF/World Bank Coastal Management Project which is currently defining the coastal zone hazard line for the whole Indian Coast. Sites for the pilot projects should meet the following criteria.

(i). The proposed sites including the community assets exhibit some degree of vulnerability to erosion or have shoreline management issues that might be exacerbated by climate change impacts.
(ii). The sites should not suffer from severe erosion problems requiring specialist analysis, planning and design.
(iii). Demonstrated willingness of the communities to participate in the design and implementation of the pilot interventions and to support long term maintenance and management of the projects.
(iv). To have no requirement for land acquisition or resettlement.
(v). Demonstrated potential for sustainability, including access to sources of finance, labour and other requirements after the project completion.
(vi). Technical appropriateness, financial viability and demonstrated potential for strengthening the resilience of coastal ecosystems and communities to the adverse impacts of climate change and climate vulnerability through innovative solutions.
(vii). Existence of registered local community organizations such as Shoreline Management Organisations (SMOs) or equivalent community based organisations with a functional institutional structure to support the project objectives.
(viii). Demonstrated potential for replication and scaling up.
(ix). Potential for an appropriate role for women and women-headed households in the design and implementation of pilot projects.
(x). Priority for interventions that can support the livelihoods of low income groups
(xi). Relatively compact and locally manageable activities that can be implemented in a six month period
(xii). Must be able to show results within the period of the GEF-SCCF project. The interventions shall be consistent with the provisions contained in the CRZ.

Selection Process: The selection process for the pilot community projects would follow the same process of sub-project selection under the baseline projects. The initial selection of the potential community project sites would be initially based on the shoreline management planning activities including the incorporation of climate change parameters and vulnerability assessments. It is proposed that a short list of about 30 potential sites are taken up for a second stage of evaluation and screening according to the parameters described above. The short list would be presented to the project steering committee in the two states and final selection made by the committee.

Scope of Activities: The proposed community pilot project will focus on natural coastal protection measures focusing on dune and beach management, nalla (drain) alignment, beach nourishment, beach scraping, sand fences and planting technically appropriate species that result in beach and dune stabilization and enhance resilience to climate change and climate vulnerability. In points of more severe erosion the communities could be supplied with non woven geotextile bags with about 1.0-1.5m^3 capacity; bags would be filled with sand, stitched and placed by the community members themselves. Some protection of the bags would be provided by building in parallel the dune systems; the dunes may periodically be washed out but the bags would be able to provide an additional level of protection.

The interventions should provide enhanced opportunities for income generation and livelihoods that would result in improved quality of life of people living in areas most affected by climate variability and climate change. Emphasis should be given to the role of women and to encourage women's participation in planning and implementation.

The pilot community projects would include the following activities:

(i). Participatory rural appraisals backed by technical appraisals to identify issues and community perceptions on protection options
(ii). Meetings and consultation at district/panchayat and community levels to brief and create awareness
(iii). Simple site surveys of selected beach areas to define different land uses,
(iv). Participatory design of the program
(v). Training in planting methods, filling placing and stitching of small geotextile bags
(vi). Provision of appropriate plants, small geotextile bags,
(vii). The design of the pilot projects would include demarcation of the dunes and other vulnerable areas using wooden pegs, details of the agreed beach protection and management activities, agreement on the mechanisms for funding including funding for long term maintenance activities.

B.4 Description of the Socioeconomic Benefits

B.4.1. The Baseline Project

The coastal zone forms a key part of the economy in the Indian maritime states. Rural and urban communities are affected by coastal erosion and issues relating to poor coastal management. The main direct financial and economic impacts of the SCPMIP will be the protection of land, buildings and infrastructure from future damage caused by coastal erosion and monsoon storms. The benefits of the protected land will indirectly benefit the incomes and livelihoods of both urban and rural households and businesses located on the coastline. Tourism, farming and fishing households, ports and industries and their owners, operators and workers will benefit from the subprojects. Removal of erosion risk will be a major initiative to encourage future investment in the coastal zone.

In addition to land protection, the project will support the long term sustainability of the beaches which form the natural buffer to coastal erosion. Previous protection programs largely based on rock revetments have ne lected the intrinsic value of the beaches and in many cases have been a direct cause of increased degradation of the beaches.

Use of new approaches and soft environmentally sensitive protection measures proposed under the SCPMIP are designed to sustain and enhance the beach areas. The beaches are essential for artisanal fishermen to land their boats, provide areas for fish drying and fish processing and form key contributors to the economies in the tourist areas. The tourism potential of much of the coastal area is very high and the long term economic and environmental benefits of sustaining the beaches through the project interventions will be very significant. The GEF-SCCF support will implement community level pilot natural protection projects which will support the development of community engagement and participation in the shoreline protection and management with the objective of securing the long term sustainability of employment opportunities. The coastal zone does and will continue to offer many opportunities for economic development and for the improvement of the livelihood gaps of disadvantaged groups; it also requires initiatives to preserve the environment and address issues of shoreline degradation.

The project will effect significant changes in philosophy and approach to coastal protection and management; it will build capacities and ensure a well planned and programmed transition process from hard environmentally inappropriate protection works to a new approach of participatory planning and integrated development of environmentally appropriate and sustainable solutions. In addition the project will ensure the planning and designs for the proposed investment

program meet the highest standard of environmentally and socially appropriate solutions; the program will include major initiatives to ensure the generation and dissemination of information and knowledge products.

The use of soft technologies can provide both land protection as well as improved and expanded beaches. Both of these have the potential to improve the livelihoods of the shoreline communities. The protection will allow scope for investment of the landside and the stabilized foreshore opens up opportunities including tourism, fishing boat landing, shore fishing, fish processing, etc. There is shown at the sub-project sites in developing community tourism, fish processing, local trading, etc. This component is designed to support communities to promote income generation and improved livelihoods, particularly for poor rural communities; possible areas include finance for small and micro enterprises, minor infrastructure to help improve the value of the shoreline (access, roads, lights etc), and development of a CEPA (communication, education, participation and awareness) programs.

Although there are generally no people directly living on the beach areas there are however a number of marginal groups including women residing or working in the vicinity of the shoreline. The SCPMIP baseline includes budget provision amounting to $3.6 million for appropriate and viable community development initiatives to be targeted towards these groups to enable them to maximize the opportunities created by the coastal protection and management investments. Employment opportunities will also be created as part of the project construction and maintenance activities, and with proper training individuals from poor communities can entry into formal employment through these activities. Where appropriate some part of the income generation proceeds could be used for funding support for shoreline maintenance.

Women are employed in a number of activities related to the coastal economy. Studies during the SCMPIP project preparation indicated the main activities of women were in fish processing, including fish drying and as vendors in tourist areas. The project objectives of land protection and improving the beaches will be of benefit to artisanal fishermen and promote tourism and related livelihoods.The community based natural protection projects will provide employment opportunities for unskilled labor; tending of plants and maintaining the beach area will require creation of labor pools that will be trained and can take on long term responsibilities for managing the shoreline.

B.5 Potential Risks of not Achieving the Objectives and Measures to Address Risks

There is a range of risks that might limit the project's success in achieving its objectives, which would be mitigated by ensuring close coordination with the four executing partners. The areas of medium risk and proposed mitigation measures have been identified and summarized in **Table 7** below.

Table 7 Risks of Not Achieving Objectives and Measures to Address Risks

Nr	Aspect	Mitigation Measures
1	Difficulties of liaison and coordination at different levels (medium risk)	The proposed project will build on the coordination mechanisms being established under the ADB SCPMIP to ensure key information is shared and collaborative decision-making is carried out. The project will be under the direction of central government through MoWR and the IAs are CWPRS and the project directors of the SCPMIP in the two focal states. This arrangement will support the linkages between the focal states and central government. Close linkage between the World Bank ICZM Project, executed through MoEF will be maintained.
2.	There may be limited readiness and/or ability of central and state ministries to include project outputs in revised official ordinance/regulations (medium risk).	The project will (i) prepare guidelines in close cooperation with relevant agencies and research institutes to promote ownership; (ii) articulate, the financial, social, and environmental benefits to relevant agencies; (iii) ensure that guidance for mainstreaming climate change within coastal planning and investment projects are simple and cost effective; (v) to engage an advisory panel to review the guidelines; and (vi) establish a high level technical committee to review and endorse the project findings
3.	There may be implementation delays: Lengthy procedures in project, procurement and financing delays can all pose serious risk to the project implementation schedule (high risk)	The baseline project started in January 2012 and with the proposed GEF-SCCF project programmed for to start in mid 2013 means the GEF-SCCF support are in line with the baseline project. Tranche 2 designs are programmed for 2013/2014. Significant delays in the GEF-SCCF project may result in Tranche 2 design being completed prior to the mobilisation of the GEF consultants. If this were to occur then some design adjustments may be some limited scope to adjust the designs prior to implementation.

4.	Inappropriate solutions may be proposed. Change to soft environmentally appropriate options may not always be perceived as acceptable (low to medium risk)	To ensure that all physical investments are environmentally and socially appropriate it is a requirement of the ADB baseline project that sub-projects for funding are supported by environmental and social assessments.
5.	Sustainability: will require resources, capacities and organizations for management and maintenance of completed works (medium risk)	Local level capacities, funding and organizations require to be established to support this work. A key objective of the pilot community protection projects is to work with the communities working with local government build up capacities and resources to meet the needs of sustainability.
6.	Risks that moderate climatic conditions, with lower storm frequency and intensity could weaken the resolve of government and communities to take climate resiliences actions (medium risk)	This is an inherent risk of climate change adaptation. Recent history and present evidence of extreme weather events are not quickly forgotten. Provision of training and awareness is an important output of the project. A key objective of the project is to ensure official endorsement of the guidelines which form the basis that climate proofing becomes an obligatory part of coastal planning and design.
7	Risks that the community based adaptation measures implemented with project support do not generate sufficient or demonstrable benefits during the life of the project to persuade communities and governments to invest in these(medium risk)	Training and awareness will be provided to help understanding of the climate processes and cycles of climate and scenarios for climate change. Discussions with coastal communities indicate the level of awareness and understanding of vulnerabilities from the sea is quite high.

B.6. Key Stakeholders involved in the Project

The coastal zone involves many different types stakeholders as summarized in Table 8 below.

TABLE 8 SUMMARY OF STAKEHOLDERS

Aspect	Stakeholder Organization	Stakeholder Interest	Outputs of the GEF-SCCF Project and linkages to stakeholder requirements
1. Coastal Infrastructure			
Coastal Protection Works	State Ports-Harbor/Departments Public Works. MOWR/CWC	Planning design of erosion control works.	Incorporation of climate resilience into planning and design of protection works
Ports Harbors Marinas	Dept Fisheries, State and National Ports and private developers	Design, construction and management of ports and harbors	Incorporation of climate resilience into planning and design of new harbors, strengthening of existing harbors.
Estuary Saline Reclamation (Khar lands)	State Water Resources Department	Management of coastal bunds and control gates.	Incorporation of climate resilience into design of bunds and sluices. Changes in design of drainage to accommodate changes in rain intensities and storm frequency
Boat/ship building	Mainly private sector	Shipbuilding and repairs. Small and large scale	Design of slipways, wharves to incorporate climate change impacts..
Village and urban properties	Property owners	Protection from wave and storms. Flood protection in estuaries and tidal river systems	Improved guidelines to support planning and zoning of housing and estimates of coastal vulnerabilities. Guidelines for flood management planning in the coastal zone. Guidelines to incorporate CRZ notification 2011.
2. Coastal Economic Activities			
Artisanal	Small boat fishing-	Long term	Strategies to provide stabilization of beaches and

Coastal Fisheries	mainly launched from beaches or estuaries	sustainabilities of beaches for landing catch and boat parking Temporary fishing huts and fish drying on beaches	dunes to mitigate impacts of increased beach instability from climate change. Avoiding use of rock walls which harm the beaches.
Mechanized Offshore Fisheries	Medium sized boats	Access to fishing harbors at all tidal conditions. Access to post harvest facilities.	Ports to incorporate climate resilience
Shipping	Small medium and large shipping companies	Navigation needs in coastal water and estuaries and harbors..	Guidelines on sea level rise will help assess requirements for ship navigation into harbors, estuaries. Increased instabilities of beaches from climate change will require effective use of dredged material for beach nourishment.
Tourism	Small and large hotels, boat operators, small and large restaurants and beach kiosks Tourist ships	Use of beaches for recreation Temporary tourist kiosks	Strategies to provide stabilization of beaches and dunes to mitigate impacts of increased beach instability from climate change.
Effluent	Government and private sector	Domestic and industrial effluents.	Changes in sea level and coastal currents and wave patterns to be incorporated into design of marine effluents faciliities.
Sand Mining	Licensed and unlicensed sand mining operators	Sand mining in estuaries and rivers	Increased vulnerabilities of foreshore and estuaries may require restrictions on sand mining.
Potable water	River intakes/groundwater	Fresh potable water	Increased sea levels will affect salinity intrusion in rivers and coastal groundwater. Data on sea levels required for planning management of water sources.
3. Coastal Institutions			
Local Government	Panchayat (district - Zilla Parishad, Block - Panchayat Samity, Village/Gram Panchayat)	Development planning and administration in the rural areas.	Increased risks from sea level rise and storm surge to be incorporated into planning and disaster management. Awareness of coastal climate change risks will be supported by the project.
Environment and Forests	National and State Departments of Environment and Forest	Central level regulatory body-environmental policy and regulation Aspects of beach and dune management are within the remit of state environment departments and district forest officers	Improved assessments of coastal climate change to be incorporated into coastal planning and management. Participation of Forest Departments in pilot community projects and follow on upscaling
National CZMA	Ministry of Environment and Forests	National body with authorized by MoEF to oversee coastal activities	Improved assessments of coastal climate change to be incorporated into coastal planning and management
State CZMA	State Departments of Environment and Forests	State body authorized by MoEF to oversee coastal activities	Improved assessments of coastal climate change to be incorporated into coastal planning and management
Pollution Boards	Central and State Levels CPC and SPCB	Pollution management and regulation	Effluent discharges into coastal water to incorporate climate change.
4. Coastal Research Institutes			

Planning Design of Coastal Infrastructure	CWPRS	Lead institute for design of coastal infrastructure including coastal protection	Incorporation of climate resilience into planning and design of protection works
Oceanography and Meteorology	National Institute of Oceanography and Indian Institute of Tropical Meteorology	Sea level rise, isostatic changes, coastal ecosystems, climate change research	Climate change assessment and projections
Coastal processes and coastal zone management	Centre for Earth Sciences	Monitoring, data management and shoreline and coastal planning	Climate resilient shoreline and coastal planning
Coastal processes and coastal engineering	National Institute of Ocean Technology (NIOT)	Design of coastal infrastructure including coastal protection	Incorporation of climate resilience into planning and design of protection works
Fisheries	Central Marine Fisheries Research Institute	Coastal fisheries and ecosystem association	Bringing climate resilience in the fisheries sector
Coastal and harbor engineering	National Institute of Technology, Karnataka	Design of coastal infrastructure including coastal protection and harbors	Incorporation of climate resilience into planning and design of harbor and protection works
Geology	Geological Survey of India ,National Institute of Oceanography	Research on coastal land subsidence and emergence	Providing accuracy to climate resilient planning
Environment Impact Assessment	National Environmental Engineering Research Institute (NEERI)	Impact of coastal developments in the environment	Climate resilient coastal environmental planning
Coastal Ecology and coastal management	Integrated Coastal and Marine Area Management (ICMAM) and National Centre for Sustainable Coastal Management	Studies on coastal ecosystems , coastal regulatory processes and management protocols	Climate resilient coastal ecosystem management
Coastal processes and disaster management	Indian National Centre for Ocean Information Services (INCOIS) and IIT Delhi	Natural hazards such as tsunami, cyclones, storm surges are studied and warning systems developed	Climate resilient coastal disaster management
Ocean Engineering, Offshore Structures	IIT Madras and IIT Kharagpur	Design of coastal infrastructure including coastal protection and harbors	Incorporation of climate resilience into planning and design of protection works

Effective and maximum engagement with stakeholders will be one of project objectives, this will incorporate two parts; (i) identifying the interest and issues of the various stakeholders and developing appropriate measures for adaptation which will be done through consultations and workshops as well as the engagement of a panel of experts from all the coastal states and union/island territories; and (ii) communication to stakeholders of the adaptation guidelines which will be through the preparation and distribution of awareness materials.

B.7. Cost Effectiveness in the Project Design

The GEF/Support relative to the ADB funded SCPMIP is relatively small and the project design has been targeted to provide maximum leverage with the ongoing programs to achieve greatest value added. The GEF-SCCF project will build on the ongoing initiatives of the SCPMIP which provides a very large potential for up-scaling of the GEF-SCCF outputs under the loan program, during as well as after the GEF-SCCF project period.

The GEF-SCCF will undertake analysis and interpretation of ongoing coastal climate change research. There exists nationally and internationally a wide range of research material available which is dispersed and largely unavailable for application to planning and design for coastal protection and management in India. The GEF-SCCF project will engage specialist coastal scientists and engineers to undertake focused assessments and preparation of practical guidelines for climate change adaptation.

To ensure maximum value added and mainstreaming into actions, and Government policy and direction the following activities have been incorporated into the project design.

(i). Outputs from the State Action Plans for Climate Change (SAPCC) would be analyzed in relation to the impacts and adaptation approaches proposed for the various maritime states and union territories. Close liaison would be kept with the SAPCC programs to ensure maximum integration and exchange of information.

(ii). An independent advisory panel of experts will be appointed to review and endorse the project climate change analysis and guidelines for adaptation. To provide interaction of a wide geographical spread of expertise and incorporation of different coastal conditions each state and union territories will be requested to nominate one institute or coastal specialist, in addition to four national level experts will be appointed to the panel.

(iii). The guidelines incorporating the findings of the panel of experts would be submitted to a Technical Committee to be constituted by the MoWR; the Technical Committee would review and provide official approval of the climate change adaptation guidelines.

(iv). The project will work with the SCPMIP coastal planners and designers to support the incorporation of climate resilience into the shoreline planning outputs as well the designs for the sub projects for Tranches 2 and 3. Through these support measures project investments under Tranches 2 and 3 of the ADB loan would be built with resilience to climate change impacts.

In summary, the project will bring adaptation benefits at local, state and national levels. The project is considered highlight cost effective given the project's relatively small $1.8 million intervention will; (i) develop endorsed national guidelines for integrating climate resilience within costal planning and management; (ii) directly support pilot testing of community based adaptation at 6 sites; (ii) directly support the integration of climate change resilience measures into over $40million of major investments under the ADB/Government of India baseline project in two coastal states, and strengthening climate resilience over large parts of the coastline as well as investments in coastal infrastructure. The approaches will be applied /tested in two focal states and broader national uptake will be assisted through the capacity building, training of trainers and outreach activities.

B.7. Outline of the Coordination and Other Related Activities

The project will develop its main links with the ADB Sustainable Coastal Protection and Management Investment Program (SCPMIP) project has established offices in Karnataka (Mangalore) and Maharashtra (Mumbai) The GEF-SCCF project components correlate closely with the SCPMIP. In addition the GEF-SCCF projects incorporate with the following initiatives and linkages:

(i). Incorporation of ongoing climate change research related to the coastal zones through Focal Indian Research organizations. Three focal institutions have been identified as the Indian Institute of Tropical Meteorology (IITM), National Institute of Oceanography (NIO) and Indian Institute of Technology (IIT) Delhi (see Section B.2 for further details).

(ii). Maintain linkages with the MoEF Integrated Coastal Zone Management Project being implemented by MoEF with World Bank support. The project includes; (i) a national component which comprises mapping, delineation and demarcation of the hazard lines and delineation of coastal sediment cells all along the mainland coast of India (undertaken by the Survey of India); (ii) mapping, delineation and demarcation of Environmentally Sensitive Areas (ESAs); (iii) capacity building of the MoEF and the State Coastal Zone Management Authorities; (iv) a nation-wide training program for coastal zone management; and (v) Setting up of a National

Centre for Sustainable Coastal Management (NCSCM) at the Anna University, Chennai. At state level the project is working in three states Gujarat, Orissa and West Bengal, activities include ICZM planning, coastal management and investment projects. The GEF-SCCF project would consult with the MOEF-SICOM project for issues relating to integrated coastal planning to avoid duplication of efforts as well as better coordination between the two projects.

(iii). The GEF-SCCF project activities shall coordinate with the CRZ authorities and ensure that all project activities and outputs shall comply with the CRZ notification 2011.

(iv). State Action Plans for climate change (SAPCC) have been largely completed for all states. Of special relevance the plans for coastal states. The SAPCC have been prepared by different consultants for each state; the approaches and depth of analysis varies-for some states Indian Institutes linked with international climate organisations including the UK Meteorological Office. A number of follow on initiatives have now been funded. The GEF-SCCF project will analyze the outputs of the SAPCC related to maritime states and the coast line and apply the outputs of the SAPCC where appropriate into the climate change impact analysis and development of adaptation criteria and guidelines. The SAPCC outputs can potentially provide key state specific information on issues and adaptation responses which can be incorporated into the national level guidelines.

(v). ADB/DFID TA8089 Operational Research to Support Mainstreaming of Integrated Flood Management under Climate Change. The MoWR together with ADB and DFID will implement studies and research to define climate change impacts on flooding together with the development of appropriate integrated flood response measures. The study will start late 2012 and would implemented over two years. The GEF-SCCF project and the ADB/DFID integrated flood management project are complementary especially for climate change adaptation

(vi). ADB/Government of Tamil Nadu Climate Adaptation through Sub Basin Investment Programme in the Cauvery Delta proposed to start late 2012.

C. GEF AGENCY INFORMATION:

C.1 Confirm the co-financing amount the GEF agency brings to the project:

The GEF-SCCF will link to the Sustainable Coastal Protection and Management Project (SCPMIP). The project is being implemented through a $404 million Multi-tranche Financing Facility (MFF) established for the two state governments of Karnataka and Maharashtra. The GEF-SCCF grant will be linked to both the ongoing first tranche of the MFF $54.6 million (2012-2015). However it is expected that the outcomes of the project will result in mainstreaming of climate resilience measures within the design and implementation of infrastructure investments in the second and third tranches of the project which will continue to 2018.

The co-financing of the GEF-SCCF project has been taken as the Tranche 1 part (2012 to 2015) which is now firm loan to the States of Karnataka and Maharashtra and would be operational during the GEF-SCCF project implementation period. In addition the outputs of the GEF-SCCF project would be of direct benefit to Tranches 2 (estimated 2015 to 2018) and Tranche 3 (estimated 2016-2019); however as the actual values and scope of activities of these tranches remains provisional co-financing has been assessed based on Tranche 1

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

India's 12th Five Year National Plan (2012-2017) is drafted but not yet issued; the report of the Steering Committee on Water Resources for the Twelfth Five Year plan prepared by the Planning Commission; identifies the need for further studies and research for obtaining detailed, precise and area-specific information on the impact of climate change on water resources, and the vulnerabilities of coastal communities. The steering committee report recommends that participatory action for mitigation and adaptation shall be taken in hand immediately. The report also identifies that data improvement including a coastal management information system should be viewed as national effort of the centre and the states; with the central government taking the lead in working out protocols and procedures and creating appropriate institutional arrangements to ensure that all agencies follow prescribed protocols and transmit the data to the central pool. The TA will support follow on actions and mainstreaming of strategies developed under India's National and State action plans for climate change in relation coastal adaptation measures. The ADB 2012-2014 country operation business plan (COPB) includes mainstreaming of adaptation for climate change and supporting the enhancement of the states for coastal protection and coastal resources management.

The TA will link and build on ADB Loan 2679 India Sustainable Coastal Protection and Management Project (SCMPIP) which is baseline project designed to address immediate coastal protection needs and coastal instabilities using

environmentally and socially appropriate approaches. The TA will build on and develop appropriate complementary actions to support adaptation measures for coastal climate change.

ADB will provide appropriate supervision capacity during project implementation to ensure effective delivery of expected results and execution of funds in accordance to ADB procurement and financial management procedures. At the country level ADB's India Resident Mission, through its Climate Change Specialist will provide support for the project's implementation along with staff from ADB Headquarters in Manila. ADB's Resident Mission has been providing assistance to the Government of India on climate change adaptation through a TA on "Support for the National Action Plan on Climate Change", which supports action at the central and state levels to move the National Water Mission of the National Action Plan on Climate Change (NAPCC).

Guided by its Long Term Strategic Framework (Strategy 2020) ADB is supporting a comprehensive program of transformative actions on climate change covering both mitigation and adaptation measures, and mainstreaming climate change considerations into its operations. ADB's support to building climate change resilience involves a multi-faceted approach guided by regional, country and local priorities as defined in national strategies, action plans, sector plans and assessments and informed by up-to-date science and knowledge products. Key areas of ADB's support include: National Adaptation Planning; Increasing Sector Resilience; Climate-proofing Projects; Integrating Climate Change Adaptation with Disaster Risk Management; Ecosystem-based Adaptation; and Enhancing Regional Cooperation. To ensure that development project outcomes, including those financed by ADB, are not compromised by climate change and variability, or by natural hazards in general, ADB supports: (i) testing and implementation of tools and cost effective approaches to reducing disaster risks, (ii) climate-proofing vulnerable investments and development programs; and (iii) up-scaling and disseminating lessons from climate-proofing and disaster risk management projects and programs. To disseminate and share the lessons and experience from these programs, ADB is also an active partner in a number of global and regional adaptation networks including the UNDP Global Adaptation Network and the Asia-Pacific Climate Change Adaptation Network and its South Asia node. With ADB's substantial infrastructure portfolio, there are substantial opportunities for ADB to mainstream such climate-proofing actions for all projects at risk.

ADB's significant role in India to date enables the ADB to garner political and institutional support from participating state governments to implement the project in a positive and cooperative manner. Through current work in India, the ADB is engaged directly with various government institutions and the national adaptation strategy. ADB's major comparative advantage is its ability to link GEF support on policy, planning and institutional strengthening to pilot demonstration and mainstreaming through the SCPMIP project, including the institutional links with the state authorities involved in coastal protection and management. Furthermore, there are good opportunities for lessons learned to be applied through other ADB supported investments. In India ADB is also supporting a number of climate change adaptation projects, including a technical assistance project on "Support for the National Action Plan on Climate Change" with a focus on providing support to the National Water Mission. This includes the preparation of strategic frameworks for integrated water resource management (IWRM) to address climate uncertainty; the preparation of a climate change adaptation road map for IWRM and the completion of specialist training and awareness-raising. The experience gained from these projects will enable linkage through 'catchments to coasts' environmental system linkages and sharing of lessons learned.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. INSTITUTIONAL ARRANGEMENT:

The Executing Agency (EA) for the project will be the Ministry of Water Resources (MoWR); the nominated focal person will be Chief Engineer Flood Management of the Central Water Commission (CWC) supported by the Director of Coastal Erosion. The EA will supervise and coordinate project execution. The MoWR will also constitute a National Technical Committee to review and endorse the project outputs including the guidelines for climate change adaptation. The Ministry of Environment and Forest (MoEF) is the GEF Focal Point in India and will provide support and coordination and ensuring compliance of the project with GEF guidelines and will also participate in program monitoring and evaluation.

A.1. Implementing Agencies (IA): The project will be implemented through three Implementing Agencies as follows:

(i). At National Level the Central Water and Power Research Station (CWPRS) will be the IA. CWPRS will provide specialist technical support and guidance in the analysis and interpretation of climate change data as well in the implementation of training components. It is proposed that the GEF-SCCF consultants would be based at the CWPRS site in Pune. This location is easily accessible to the baseline project offices in Mangalore and Mumbai and also to CWC in Delhi.

(ii). At state level, the IAs will be the Ministry of Public Works and Inland Waterways in Karnataka and the Maharashtra Maritime Board in Maharashtra. Project management and coordination will be through the established Program Management Units of SCPMIP which are within the two state level IAs.

Coordination and Liaison with Maritime States and Union Territories. Coordination will be through the Coastal Protection and Development Advisory Committee (CPDAC). The Member River Management in CWC is the chairman of the CPDAC and will support this important liaison function

A.2. Institutional Responsibilities

The four components of the GEF-SCCF project support will work through very close linkages with ongoing initiatives and programs of the Indian research agencies and the SCPMIP. The overall project execution will be under the direction of the executing agency MOWR/CWC; with the program implementation through the three implementing agencies. The scope of work and the institutional linkages will be slightly different for each component; with each having slightly different implementation responsibilities as shown in
Table 9 below.

TABLE 9 INSTITUTIONAL RESPONSIBILITIES

Nr	Aspect/ Component	Primary Responsibility	Nodal Officer
Overall Coordination Liaison and monitoring		Ministry of Water Resources Central Water Commission	Chief Engineer Flood Management CWC
Component 1	Analysis of climate change impacts in coastal areas and preparation of guidelines for climate change adaptation for the Indian coast.	Ministry of Water Resources and Central Water and Power Research Station (CWPRS)	Joint Director Coastal Division of CWPRS
Component 2	Climate resilient shoreline planning and management in two focal states.	Program Management Units of Karnataka and Maharashtra SCPMIP	Project Director SCPMIP Karnataka and Maharashtra
Component 3	Climate resilient coastal protection investments in two focal states	Program Management Units of Karnataka and Maharashtra SCPMIP	Project Director SCPMIP Karnataka and Maharashtra
Component 4.	Institutional strengthening, capacity building and enhanced awareness for climate resilient coastal protection and management.	Central Water and Power Research Station (CWPRS) National Water Academy Pune (component 4 training)	Director for Coastal Erosion CWC

A.3 National Technical Committee

The **National Technical Committee** will be constituted for the duration of the project; the committee will comprise of officials responsible for the project at Central and State Government and officials concerned in the subject from other ministries including the Department of Economic Affairs, National experts in coastal engineering and management and climate change adaptation will be deputized to support the technical committee. The MoWR will be responsible for the constitution, organization and selection of the members of the technical committee. The technical committee will be tasked to review and approve the 'Guidelines for Climate Change Adaptation'. To assist and streamline the approval process the guidelines will be subject to comprehensive review by a 'panel of experts' as well as endorsement by a ' technical institute from each of the maritime states and union territories'. The suggested composition of the National Technical Committee would include Chairman: Member-River Management CWC, Convener: Chief Engineer River Management CWC, Director, CWPRS Members: Nominee of MoWR, Nominee of MoEF, Nominee of MoES, Nominee of Bureau of Indian Standards; Project Directors, SCPMIP Maharashtra and Karnataka, Project Director MoEF-SICOM, Nominees of the Environment Agencies from the two focal states.

B. **PROJECT IMPLEMENTATION ARRANGEMENT:**

B.1 Project Implementation Consultants

The project will be implemented with support from an interdisciplinary group of international consultants consisting of research scientists, coastal engineers and specialists in natural protection, community natural resources management and training. The consultants will work at national, state, district and community levels. An input of 22 person-months of international consultants and 44 person-months of national consultants is proposed. Consultants will be engaged by ADB through a firm in accordance with ADB's *Guidelines on the Use of Consultants* (2007), and other arrangements satisfactory to ADB for engaging consultants following the quality cost based selection procedure at a ratio of 90:10 based on a full technical proposal. The consultancy assignment will prepare the outputs as described in Annex C. The consultancy will in addition will incorporate specific requirements for (i) engagement of three focal research institutes through sub-contracts to support the provision of information, data and implementation of specific studies relating to definition and quantification of the coastal climate change and impacts; (ii) project management of the pilot community projects including contracting of local community organizations to implement pilot natural protection activities; (iii) to organize and manage training courses, workshops, preparation of awareness materials and report production; and (iv) engagement of an advisory panel of experts to review and endorse the climate change analysis and adaptation guidelines. The consultancy contract will include provisional sums to meet the costs of these additional activities.

B.2 Focal Research Institutes

The climate change analyses, studies, and preparation of adaptation guidelines under Component 1 will build on the significant quantity of data and material that is available within the Indian research institutes; including; historic climatic and coastal data, climate change analyses and down scaling of projections. The proposed approach is for the international consultants to work closely with the three focal research institutes which will allow for continuation and building onto existing research work as well as providing for continuity of future research initiatives. The combination of the consultant working in conjunction with lead national research institutes would provide a very wide base of national and international expertise to meet the key needs of; integrating international and national climate change analysis and interpretation and the development of coastal climate change adaptation guidelines and provide strengthening of the national research, The combined team will allow for a maximum level of outputs in a short time frame. Three focal research institutes have been identified as being uniquely and the most qualified organizations to support the analysis of climate change scenarios and impacts. The relevant areas of expertise of the three focal institutes are described below.

(i). **National Institute of Oceanography (NIO)** at Goa is engaged in basic and applied research in all the traditional areas of ocean research such as biological, physical, chemical and geological / geophysical by deploying a large team of scientists from these multidisciplinary areas. The studies related to sea level rise and storm surges have been recognized globally. It has established two-dimensional models for the prediction of sea levels and storm surges. The geological / geophysical studies of the coastal zone and the research on the tectonics of the eastern continental margin of India are examining the subsidence and emergence of the coastal land forms influencing the net sea level change estimates. NIO is also deeply involved in the study of sand dune / mangrove ecosystems.

(ii). **Indian Institute of Tropical Meteorology (IITM)** in Pune has expertise and facilities for theoretical and observational meteorology and oceanography with special reference to Asian monsoon variability and predictability. Prediction of seasonal mean monsoon rainfall and extreme events are one of the important research areas of IITM. The Centre for Climate Change Research established in 2008 is steadily evolving and has initiated efforts for developing an Earth System model for understanding the interactive feedbacks among the various components of the earth system and how they affect the global and regional climate. IITM can participate in the prediction of extreme events of rainfall, the resulting floods, temperature, wind patterns, etc.

(iii). **The Centre for Atmospheric Sciences (CAS) Indian Institute of Technology Delhi (IITD)** has all the traditional departments of engineering and many of them are involved in research related to climate change. The Centre is involved in research in several areas related to atmospheric sciences. The major areas are monsoon, general circulation and climate, coupled models, etc. The cyclones and storm surges have been one of the core areas of research of CAS and are of special relevance to the GEF-SCCF project. The CAS has highly qualified meteorologists, oceanographers, physicists and applied mathematicians in its faculty.

It is proposed that the project consultants would sub-contract the three focal research institutes to undertake specific analyses and studies. The studies require access to data and specialist analysis which is only available by the institutes directly or in cooperation with other institutes or individual specialists. The studies would primarily be to source and compile existing research which would not require significant levels of new research, each assignment would be

relatively small with a total cost of $180,000 USD. The unique expertise and access to data of the focal institutes is not available from other sources and 'single source selection' is proposed. Each institute would be required to prepare a technical and financial proposal based on the outline scope of work is presented the Table below. The final TOR for the institutes would be prepared by the implementing consultants during the inception stage of the project. The institutes are able to support the externally funded assignments and would be able to support the project in the following areas:

(i). National Institute of Oceanography (NIO): historic trends in sea levels, projections for sea level rise, changes in vertical land levels, projections for changes in predominant wave characteristics, projections for frequencies and intensities of storm waves.
(ii). Indian Institute of Tropical Meteorology (IITM): downscaled wind, rainfall and temperature projections including analysis of uncertainty.
(iii). Centre for Atmospheric Sciences IIT Delhi (CAS-IITD): analysis of historic and projected storm surges.

The international consultants will have the key responsibilities to prepare; (i) a briefing note for each climate study, the briefing note will build on the TOR and describe in more detail the approach to studies, relevant information sources and provision of research papers; (ii) support for the studies during the implementation and (iii) review of the draft study reports and (iii) compilation of the individual study outputs in an integrated analysis of the climate change impacts, preparation of GIS and preparation of the guidelines for climate change adaptation.

TABLE 10 EXPERTISE REQUIRED FOR THE STUDIES BY FOCAL RESEARCH INSTITUTES

Specific Climate Studies to be Contracted to National Research Institutes -Indicative scope of work	
Downscaled climate change projections of temperature, wind and rainfall	• Provision of downscaled projections for wind, extreme wind events, temperature and rainfall for the Indian coast. Through analysis of multiple models levels of uncertainty of the projections would also be prepared. • **Output:** Downscaled climate projection matrixes for the Indian coast.
Historic trends in sea levels	• Compilation of tidal monitoring, quality control, trend analysis. **Output**: preparation of a database of historic sea level changes for Indian Coast
Projections of sea level rise from climate change	• Review of research into global sea level change • Apply downscaling and provide corrections to the Indian coast and linkages to historic trends of sea level change. • Develop probability of different scenarios. • **Output:** Preparation of a downscaled database of projected sea level changes including probabilities.
Analysis of Vertical land movements	• Collect and compile latest information and research on isostatic and local land settlement changes with particular reference to tidal stations and areas with pronounced level changes. • **Output:** preparation of a database of showing future vertical changes in land
Analysis of changes in wave characteristics from climate change	• Analysis of changes in wave characteristics for the Indian coast based on the IITM wind projections. • Analysis of the changes in frequency and intensities of storms based on IITM wind projections • **Output**: A database and GIS of the Indian coast showing changes in predominant and storm wave characteristics.
Analysis of projected changes in storm surges	• Analysis of current and projected storm surges for the Indian Coast using the downscaled projections for extreme wind and pressure information. • Coastal vulnerabilities are being assessed by the MoEF CZM project and not proposed for the GEF-SCCF project.

B.3. Community Projects Implementation Arrangements

Up to six pilot community projects will be implemented through the provision of grants to communities to implement community initiatives with an emphasis on natural protection measures; each project would include training and awareness, recruitment of community facilitators/ supervisors and implementation of beach and dune natural protection measures, each project would have a value of about $70,000. Physical activities will be undertaken through small

village level contracts with registered community based organizations, NGOs or local contractors. Supervision and management would be at the village level through local stakeholders and officials. The design of each project and scope of work will be prepared by the GEF-SCCF consultants who would also provide training for potential bidders. Officially registered community organizations and other NGOs would be invited to present simple technical and financial proposals; the winning bidder would be selected by a small tender committee. The tender committee would be from local stakeholders, local forest officer and other local officials. Procurement will follow the Asian Development Bank Guidelines which require three quotes for small contracts below $100,000

B.4. Independent Advisory Panel of Experts

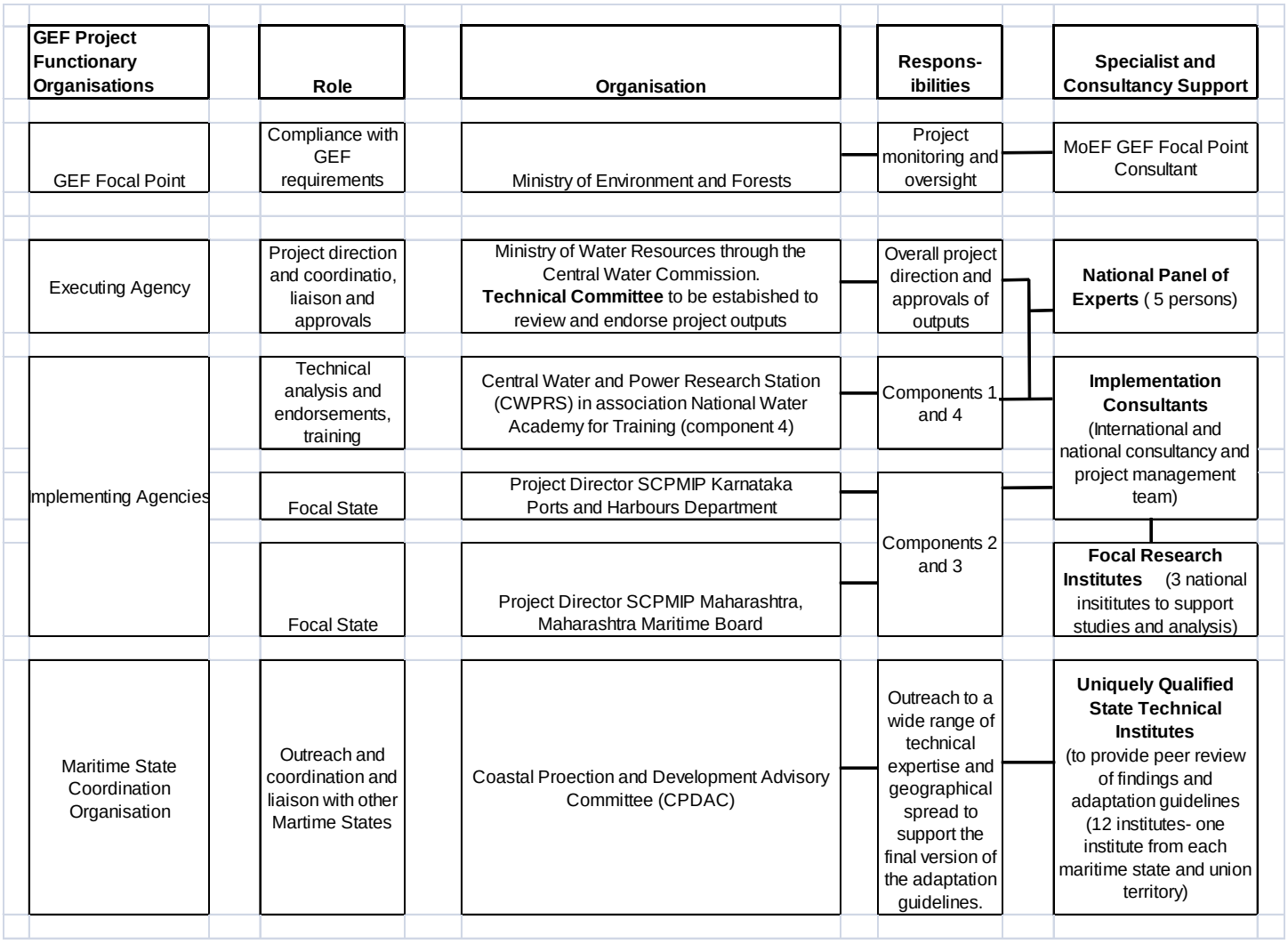
An independent advisory panel of experts will be appointed to review and endorse the project climate change analysis and guidelines for adaptation. To provide interaction of a wide geographical spread of expertise and stakeholders and incorporation of different coastal conditions each the twelve maritime state and union territories will be requested to nominate one institute or coastal specialist (12 representatives) in addition to four national level experts will be appointed to the panel. The panel will be chaired by one elected member.

The implementation consultants would be tasked to analyze and synthesize reviews into the final version of adaptation guidelines. The identification of the members of the independent panel of experts would be through the individual maritime states and union/island territories.

B.5. Institutional Matrix

The proposed institutional arrangements are shown in Figure 1 below.

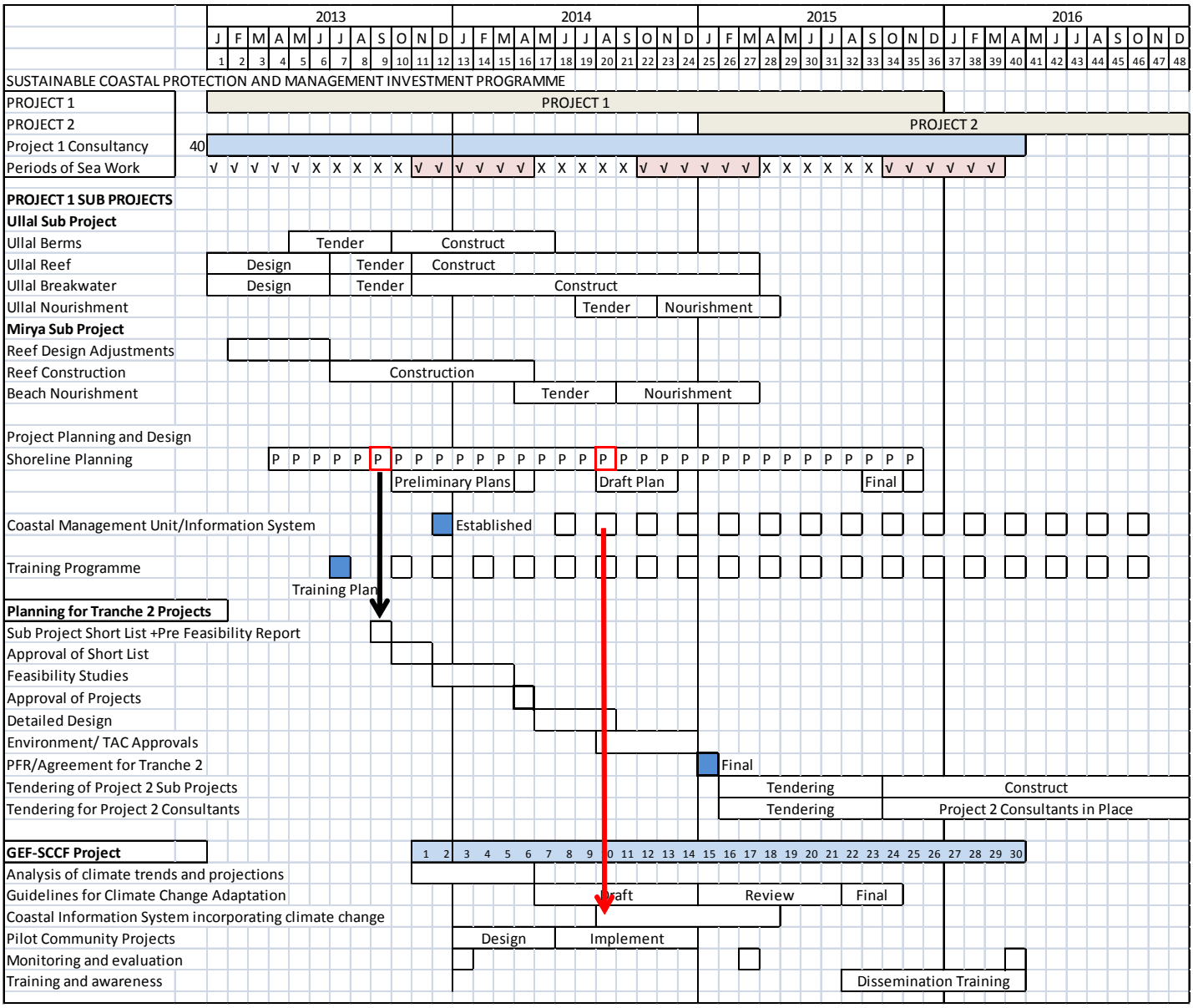
FIGURE 1 INSTITUTIONAL ARRANGEMENTS



B.6. Implementation Program

The linked implementation plan for the SCPMIP and the GEF-SCCF support program is shown in **Figure 2** below.

Figure 2 Baseline and GEF-SCCF Program



PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF

The project is consistent with the design proposed in the agreed PIF. Some adjustment to the project objectives have been made to strengthen the emphasis on developing strategies and mainstreaming.

Comments were received from various agencies including government of India, ADB and from the GEF Council. A key recommendation was that the that the GEF-SCCF project should go beyond the two coastal states; this was also requested by MoWR during the inception phase. To simplify the scope of activities and to reinforce the actions for the whole Indian coast the project design has been adjusted to four proposed components as shown below:

(i). Component 1: Analysis of Climate Change Impacts in Coastal Areas and Preparation of Guidelines for Climate Change Adaptation for the **Indian Coast**
(ii). Component 2: Climate Resilient Shoreline Management and Planning in **Two Focal States**
(iii). Component 3: Climate Resilient Coastal Protection Investments in **Two Focal States**
(iv). Component 4 Institutional Strengthening, Capacity Building and Enhanced Awareness for Climate Resilient Coastal Protection and Management in India.

Slight adjustments in the values of co-financing have been incorporated to take into account changes in the agreed value of the baseline project.

Although the project would support new initiatives and to some extent new technologies including those being developed by the baseline project. it has been agreed that the focal area strategies would be directed primarily at CCA-1 Reducing Vulnerabilities and CCA-2 Increasing Adaptive Capacity.

CCA-3 Adaptive Technology Transfer was included as a project outcome for the SCCF funded activities in the PIF. The feasibility of using GEF/SCCF funds for this activity was assessed during the PPG phase and it concluded that this outcome would be best addressed through the baseline project.

The baseline project will support economically viable protection works, using environmentally and socially appropriate solutions. With respect to new technologies, the baseline project will focus on techniques for the effective and unobtrusive shoreline and near shore control. This includes the replacement or modification of hard rock protection with softer options such as beach nourishments, dune management or submerged reefs. Work on coastal reefs will involve sand filled geotextiles, which aim to influence sand movement and retention in erosion prone areas. In the first tranche of the baseline project, reefs will be constructed at Mirya Bay and Ullal. A third reef is being considered at Coco Beach for Tranche 2 (subject to feasibility assessment). The design of these interventions has already included some climate dimensions, including the influence of sea level rise.

Output 3 of the baseline project will also (i) support enhanced capacity within districts and states to design, and implement shoreline protection and management projects, (ii) enhanced capacity of national private consultants and government institutes to provide specialist support for designing and reviewing coastal protection and management projects. Some degree of technology transfer can thus be supported by the baseline project; however the extent to which transfer will occur will depend on the results of the first demonstrations and overall perceptions of stakeholders on suitability for future use.

Given this, it was felt that the use of GEF/SCCF resources would be better targeted towards CCA 1 and CCA 2, which when taken together will already provide a very important outcome – that of mainstreaming climate change consideration in the shoreline planning process and plans for the 2 coastal states; and the preparation and testing of guidelines for coastal climate change management for the whole country.

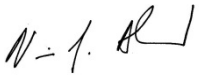
PART V: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

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)*
Mr Hem Pande	GEF Operational Focal Point	MINISTRY OF ENVIRONMENT AND FORESTS	05/03/2011

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

Agency Coordinator, Agency Name	Signature	Date *(Month, day, year)*	Project Contact Person	Telephone	Email Address
Nessim Ahmad Director, Environment and Safeguards concurrently Practice Leader (Environment) Asian Development Bank		February 5, 2014	Arnaud Cauchois	+977 1 422 7779	acauchois@adb.org

ANNEX A: PROJECT RESULTS FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Strengthened resilience of the Indian coast to impacts of climate change	• By the end of the baseline project 2019. • 50% of new and rehabilitated coastal protection and infrastructure projects in the two focal states incorporate climate resilience • 20% of major new and rehabilitated coastal protection and infrastructures outside the focal states incorporate climate resilience according to the SCCF supported guidelines • 20% of vulnerable shorelines in the two focal states incorporate low cost natural protection measures • Damage to coastal infrastructure and communities is 30% lower in locations where climate change resilience has been incorporated..	Detailed Project Reports (DPR) submitted for approval by State Government and CWC and CWPRS	Assumption Maritime states accept the climate change adaptation guidelines and agree to pay for additional costs. Risk The political capacity for incorporation of climate resilience measures proves inadequate.
Outcome Climate change impacts are systematically incorporated into coastal protection and management interventions in India.	At the end of the Technical assistance (2016) • Climate change adaptation guidelines are endorsed by MOWR and officially communicated to all maritime states and • SCPMIP Tranche 2 investments incorporate climate resilience measures • Proposals are prepared to support the incorporation of climate resilience for SCPMIP Tranche 3 investments union territories • Pilot community protection projects are successful and provide a workable model for upscaling. • Project clearances at State and Central levels require climate resilience to be incorporated into design of coastal infrastructure	Advisory notice from MOWR to maritime states/union territories to apply the adaptation guidelines and to ensure climate resilience is incorporated in coastal planning and design Data source: Detailed Project Reports (DPRs) for Tranche 2 subprojects TOR for tranche 3 design consultants to incorporate climate change resilience Monitoring and evaluation of the pilot community projects Questionnaires survey to communities	Assumption MOWR officially endorses climate change guidelines. Risk Delays in the start of the TA may limit the potential to incorporate climate resilience into Tranche 2 subproject designs.
Outputs		Data sources:	Assumption

1.Climate change adaptation guidelines for the Indian coast are prepared and officially endorsed.	• Climate change trends and projections for the Indian coast analyzed and interpreted • Planning and design guidelines prepared and endorsed by panel of experts and national level Technical Committee • Coastal climate change parameters are incorporated into information systems being developed by central agencies	• Analysis of reviews by panel of experts and state technical institutes • Minutes of national level technical committee meetings • Independent assessment of status and progress of the CWC coastal information system Progress reports of the Baseline project • Evaluation of coastal information system being developed by MOWR	Climate change projections are sufficiently robust to base decisions for climate change resilience measures. Risk There may be limited readiness and/or ability of central and state ministries to revise ordinance/regulations for the integration of climate change into design and investments.
2.Climate Resilient Shoreline Management and Plans in two focal states	• Shoreline management plans in two focal states incorporate climate change impacts • Coastal information system in two focal states incorporate climate change parameters • Subproject designs for Tranche 2 in two focal states incorporate climate change resilience • Planning and design for six pilot projects are prepared and community organizations are established and engaged • Recommendations are prepared to incorporate climate resilience in the Tranche 3 sub-project designs	Data sources: • Independent review of shoreline management plans in two focal states • Independent review of subproject design reports • Independent review of subproject designs and minutes of consultation meetings. Progress reports of the Baseline project	
3. Coastal Investment in two focal states incorporate climate resilience	• Subproject Investments under Tranche 2 of the baseline project incorporate climate change resilience. • Up to six pilot community project in the two focal states are implemented with 50% of activities involving women. • Communities/ local stakeholders in pilot projects source funds and implement follow on maintenance activities	Data sources: • Independent inspection of tranche 2 sub-projects after construction. • Evaluation of community pilot projects 2 years after completion of TA intervention. • Questionnaires to communities • Progress reports of the Baseline project	
4. Relevant institutions have strengthened capacity and enhanced awareness of coastal climate change and adaptation measures.	• Training programs by the baseline project in two focal states incorporate climate change adaptation. • A cadre of 25 experienced trainers from various states and national institutions are given a	Data sources: • Review of training reports including post training questionnaires • Questionnaires to cadre of trainers. • Progress reports of the Baseline project	Assumptions Trainees selected for training are actively involved in coastal protection and management activities and will not be transferred to other tasks. Risks Future follow on training is not conducted due to limited commitment or

	one-week training in the guidelines for climate change adaptation. • Two senior level training courses for selected central level and maritime state officials and stakeholders are implemented • Awareness materials based on the climate adaptation guidelines are prepared and distributed.		financial constraints.

Activities with Milestones

Preparatory Activities
Funding approval by GEF (Q3/2013)
Engagement of TA Consultants (Q4/2013)
Engagement of Three Focal Research Institutes by TA Consultants (Q4/2013)

1. Output 1: Analysis of climate change impacts in coastal areas and preparation of guidelines for climate change adaptation
1.1 Climate change trends and projections for the Indian coast analyzed and interpreted (Q2/2014).
1.2 Planning and design adaptation guidelines prepared and endorsed by panel of experts and national level Technical Committee (draft Q3/2015, final endorsed Q4/2015).
1.3 Recommendations for incorporation of climate change parameters national coastal information systems (Q3/2014).

2. Output 2: Climate Resilient Shoreline Management and Plans in two focal states
2.1 Shoreline management plans and coastal information systems in two focal states incorporate climate change parameters and potential impacts (Q/2014)
2.2 Subproject design in two focal states incorporate climate change resilience (Tranche 2 Q4/2013)
2.3 Planning and designs for six community pilot protection projects are prepared and community organizations are established and engaged. (Q4/2013)
2.4 Proposals for incorporation of climate resilience for Tranche 3 designs (Q3/2015)

3. Climate Resilient Coastal Investment in two focal states
3.1 Tranche 2 investments under the baseline project incorporate climate change (Tranche 2 Q2/2015)
3.2 Pilot community project in the two focal states are implemented with 50% of activities involving women (Q4/2014)
3.3 Communities/ local stakeholders source funds and implement follow on maintenance activities (Q3/2015)

4. Institutional strengthening, capacity building and enhanced awareness for climate resilient coastal protection and management
4.1 Training programs by the baseline project in two focal states incorporate climate change adaptation(Q3/2015)
4.2 A cadre of 25 experienced trainers from various states and national institutions are given a one week training in the guidelines for climate change adaptation (Q1/2015)
4.3 Two senior level training courses for selected central level and maritime state officials and stakeholders are implemented (Q3/2015)
4.4 Awareness materials based on the climate adaptation guidelines are prepared and distributed (Q3/2015)

Inputs
Global Environment Facility Special Climate Change Fund $2,000,000

Government of India:
(i) Counterpart staff, office space, support to source data and facilitate linkages with research institutes.
(ii) Co-financing of the baseline project with ADB Sustainable Coastal Protection and Management Project (SCPMIP) whole MFF $404 million, tranche 1 $62.5 million.

ANNEX B: RESPONSES TO PROJECT REVIEWS

Comment	Response
GEF Council (PIF stage)	
1/ Germany approves the strong focus on soft measures, community participation and joint planning, climate proofing and integration into policy at all levels.	The project will continue to support soft protection measures including the implementation of pilot community protection projects.
2/ Germany kindly asks to clarify why the vulnerability assessment is limited to investments supported by another ADB project ("Climate change vulnerability assessments undertaken for selected coastal zones in the target states linked to investments supported by the ADB Sustainable Coastal Protection and Management Investment Program (SCPMIP)", p. 3). This project seems to go beyond the SCPMIP ADB project with the expected outcome "increased awareness and capacity of sector agencies at National and State levels regarding the assessment of climate change impacts and adaptation options for coastal protection interventions". However, SCPMIP seems to be the baseline project for this. Specification on eventual criteria for selecting certain sites would be helpful.	The scope of the project has been discussed with stakeholders and there is strong feedback of the need to address the needs of the whole Indian coast as well as the two focal states under the ADB SCPMIP. Based on this the project has been divided into four components as below. Component 1: Climate Change and Analysis and preparation of guidelines- will be directed at the whole Indian Coast. Component 2: Climate Resistant Shoreline Planning and Management will focus on the two focal states of the baseline project. Component 3: Climate Resilient Coastal Protection will focus on the two focal states. Component 4: Institutional Strengthening will support directed at the national level as well as other maritime states and union territories. The baseline project will undertake the preparation of shoreline management plans for the whole coast and these will be the basis of selection of sub projects under the baseline project. The GEF-SCCF project will implement pilot community protection projects and criteria for selection are described in section.
3/ As to the PIF, GEF/SCCF support will align closely with State Action Plans on Climate Change where they have been completed and support their finalization (p. 7). (GIZ) GmbH supported the development of State Action plans in 16 other states. Options for up-scaling should be considered. GIZ recently started a small scale demonstration project to test stabilization of embankments. Exchanges would be fruitful regarding the GEF/SCCF project's focus on designing coastal erosion protection infrastructure (p. 15), particularly on soft measures.	The outputs of the State Action Plans for Climate Change with reference to the maritime states and coastal adaptation planning will form an important input to the study as described in section A.6. Analysis of the State Action Plans and follow on actions forms a key part of the development of the climate adaptation guidelines; coordination and liaison with GIZ will be taken up.
Ministry of Water Resources India	
Suggested that training components should be taken up in collaboration with the National Training Academy Pune (a key training arm of MoWR)	Agreed-the training would be developed through CWPRS in association with the National Training Academy
Ministry of Environment and Forest India	
Implementation period of 24 months is too short	Implementation period increased to 30 months
Clarification that assessments will be for whole Indian coast	Confirmed and clarified.
Training should be sustainable and linked to a Nodal Agency	Agreed-the National Water Academy an arm of the Ministry of Water Resources has been proposed as the Nodal Agency for training
The linkages with the State Action Plans for Climate change should be strengthened	Agreed this has been incorporated.
Climate resilience actions must be compliant with the notifications of the coastal resilience zones.	Agreed this has been incorporated.

Questions	Secretariat Comment At CEO Endorsement(FSP)	Response
GEF ID: **4536**		
Country/Region: **India**		
Project Title: **Climate Resilient Coastal Protection and Management**		
GEF Agency: **ADB** GEF Agency Project ID:		
Type of Trust Fund: **Special Climate Change Fund (SCCF)**		
GEF Focal Area (s): **Climate Change**		
GEF-5 Focal Area/ LDCF/SCCF Objective (s): **CCA-1; CCA-1; CCA-1; CCA-2; CCA-2; CCA-3; CCA-3; Project Management;**		
Anticipated Financing PPG: **$0** Project Grant: **$1,818,182**		
Co-financing: **$54,334,000** Total Project Cost: **$56,152,182**		
PIF Approval: **September 19, 2011** Council Approval/Expected: **November 10, 2011**		
CEO Endorsement/Approval Expected Project Start Date:		
Program Manager: **Saliha Dobardzic** Agency Contact Person: **Arnaud Cauchois**		
7. Is the project aligned with the focal /multifocal areas/ LDCF/SCCF/NPIF results framework?	Not yet clear. While the project is aligned with CCA-1 and CCA-2 of the SCCF Framework, please include in document, more justification to why CCA-3 (Technology Transfer) was no longer appropriate for project. Recommended Action: Please provide justification for the removal of CCA-3.	CCA-3 Adaptive Technology Transfer was included as a project outcome for the SCCF funded activities in the PIF. The feasibility of using GEF/SCCF funds for this activity was assessed during the PPG phase and it concluded that this outcome would be best addressed through the baseline project. The baseline project will support economically viable protection works, using environmentally and socially appropriate solutions. With respect to new technologies, the baseline project will focus on techniques for the effective and unobtrusive shoreline and near shore control. This includes the replacement or modification of hard rock protection with softer options such as beach nourishments, dune management or submerged reefs. Work on coastal reefs will involve sand filled geotextiles, which aim to influence sand movement and retention in erosion prone areas. In the first tranche of the baseline project, reefs will be constructed at Mirya Bay and Ullal. The design of these interventions has already included some climate dimensions, including the influence of sea level rise. Output 3 of the baseline project will also (i) support enhanced capacity within districts and states to design, and implement shoreline protection and management projects, (ii) enhanced capacity of national private consultants and government institutes to provide specialist support for designing and reviewing coastal protection and management projects. Some degree of technology transfer can thus be supported by the baseline project; however the extent to which transfer will occur will depend on the results of the first demonstrations and overall perceptions of stakeholders on suitability for future use. Given this, it was felt that the use of GEF/SCCF resources would be better targeted towards CCA 1 and CCA 2, which when taken together will already provide a very important outcome – that of mainstreaming climate change consideration in the shoreline planning process and plans for the 2 coastal states; and the preparation and testing of guidelines for coastal climate change management for the whole country.

11. Is (are) the baseline project(s), including problem (s) that the baseline project(s) seek/s to address, sufficiently described and based on sound data and assumptions?	Not yet clear. While the project is supported through a three tranche program of ADB investments, it is unclear to what extent the three tranches contribute to the baseline project outputs described in section B.1.3. Furthermore, it is indicative from the document that the SCCF project cofinancing will be supported through Tranche 1; and as such, outputs from activities implemented Tranche 1 activities need to be more clearly described, including specific descriptions to how these activities will contribute to the SCCF project components, in alignment with project framework table B. Recommended Action: 1) Please provide more detailed description on activities/milestones to be completed across the three baseline project Tranches, and 2) indicate alignment of Tranche 1 activities with project components identified.	A draft implementation schedule has been provided in Section B.6 (Figure 2) of the CEO Document. This will be updated at the commencement of the project. As there has been some serious slippage in the baseline project implementation, it is still feasible to link the SCCF funded activities with the tranches of the baseline project. The key links are described below: • Tranche 1 will support integrated coastal planning processes and shoreline management information systems. These actions will be ongoing through to the end of 2015. Climate considerations will be integrated in the process. Even after the completion of the process, plans can still be updated in the future. • Tranche 1 investments (sub-projects) will be implemented till mid-2015. Lessons from this process can inform the design of subsequent GEF activities. • Tranche 2 investments (sub-projects) will be implemented from 2015. GEF support for climate change assessment will support the design process. • Tranche 3 investments are expected to be implemented after 2016. The outcomes of GEF supported activities (assessment, climate sensitive shoreline planning and initial lessons from demonstration projects will be fully mainstreamed in the baseline project investments. With respect to financing – ADB has committed to a $250 million funding envelope for the 3-tranches baseline project, out a total estimated cost of $404.6 million. Of this, a loan of $51.6 million has been provided under the first periodic financing request for the first tranche. This provides the main base for the SCCF, particularly the work around planning, management and capacity development for the management of coastal zones. Subsequent tranches (2-3) will be funded through the initial $250 million funding envelope, which will be drawn down through periodic financing requests. The subsequent tranches will essentially focus on investment activities, the design of which will be informed by the SCCF funded activities. Over the life of the SCCF implementation, co-finance is therefore likely to be larger than the amount currently estimated.
12. Has the cost-effectiveness been sufficiently demonstrated, including the cost-effectiveness of the project design approach as compared to alternative approaches to achieve similar benefits?	Not yet clear. While the project supports numerous ongoing initiatives at the national and local level, providing significant opportunities for scaling up, a more comprehensive cost comparison with alternative approaches can be provided in section B.7. Recommended Action: please provide a more comprehensive cost-assessment, including comparison with alternative scenarios.	Participatory shoreline management plans will be prepared to meet long-term shoreline management needs in the participating coastal states. Shoreline plans will address key issues of the coastal processes, shoreline land use, and present proposals for the long-term sustainable management and protection of the shoreline. The plans will also identify potential economic development opportunities. The investment program will support management and supervision of subproject implementation, and planning and design of subprojects for future tranches of the baseline project, as well as the GEF supported demonstration projects. Planning and design of these subprojects will be based on the shoreline management plans prepared under tranche 1. The planning process is a three stage approach which

		includes prefeasibility study, feasibility study and detail designs. Study of the potential alternative design to each sub-project is undertaken essentially during the pre-feasibility study and the best option is retained for feasibility study and if proven viable for detail design.d...
14. Is the project framework sound and sufficiently clear?	Not yet clear. See comments in 11, 12 and 13. Recommended Action: Please address comments in 11 and 13, and provide a clear indication of how activities in Tranche 1 link to the SCCF project components and co-financing amounts provided in project framework Table B.	Please see responses to 11, 12 and 13 above.
15. Are the applied methodology and assumptions for the description of the incremental/additional benefits sound and appropriate?	Not yet clear. Recommended Action: Please address comments in 11, 13, and 14.	Please see responses to 11, 12 and 13 above.
19. Is the project consistent and properly coordinated with other related initiatives in the country or in the region?	Not yet clear. While the project identifies linkages with the baseline project (SCPMIP), more information can be provided on coordination with other external initiatives. Recommended Action: Please provide more information on coordination with other external initiatives.	**Baseline project**: There has been limited external assistance for coastal protection and management in India. Nearly all investment funding has been from the states, central government, and the private sector. The lack of external assistance has resulted in a lack of exposure to new ideas and practices. The World Bank has approved the Integrated Coastal Zone Management Project (ICZMP) and ADB has worked closely to harmonize interventions for coastal protection in India. The focus of the World Bank's project is on coastal zone management, mapping, and planning; and piloting integrated coastal zone management in the states of Gujarat, Orissa, and West Bengal. The focus of the proposed ADB-supported investment program is on designing innovative coastal erosion protection infrastructure and other soft measures in the states of Karnataka, and Maharashtra. For the GEF/SCCF supported activities, the project preparation process identified that coordination with the World Bank supported Coastal Zone Management Project; and coordination with national focal point institutions for coastal zone climate research would be most important for the projects' success. Further clarifications are provided below: • Component 1 will focus on the analysis of climate change impacts in coastal areas and preparation of guidelines for climate change adaptation. This work will be undertaken in close cooperation and building on existing / ongoing research related to the climate change and coastal zones by 3 focal institutions: the Indian Institute of Tropical Meteorology (IITM), National Institute of Oceanography (NIO) and Indian Institute of Technology (IIT) Delhi. Case studies from the WB Coastal Zone Management Project will also be reviewed as a basis for planning and design criteria and guidelines for coastal climate change adaptation. • Component 2 will be guided by State Action Plans for Climate Change and will be linked to coastal planning support provided by the baseline project. Shoreline plans under the baseline project are being developed in close

		coordination with the ICZM project which is developing national guidelines for shoreline planning • Component 3 will undertake pilot demonstration activities. These will be implemented in close coordination with the baseline project and linked to the states shoreline planning processes (and consistent with State Action Plans for climate change). Close reference will be made to the MoEF/World Bank ICZMP which is defining the coastal zone hazard line for the whole Indian Coast. Note also that coordination and awareness of other relevant initiative throughout the life of the project will be strengthened through a National Technical Committee, which will play a key role in reviewing adaptation guideline prepared by the project. Suggested composition includes MoEF, MOWR, the Central Water Commission, Bureau of Indian Standards; SCPMIP Maharashtra and Karnataka, and nominees of the Environment Agencies from the two focal states.
21. Is the project structure sufficiently close to what was presented at PIF, with clear justifications for changes?	Not yet clear. Recommended Action: Please include justification of removing CCA-3 from project framework.	Part IV of the CEO Endorsement Document "ALIGNMENT OF THE PROJECT DESIGN WITH THE ORIGINAL PIF" has been updated consistent with the response provide to Question 7 above.
24. Is the funding and co-financing per objective appropriate and adequate to achieve the expected outcomes and outputs?	Not yet clear. Recommended Action: Please address comments in 11, 13, and 14.	Please see responses above.
25. At PIF: comment on the indicated cofinancing; At CEO endorsement: indicate if confirmed co-financing is provided.	Not yet clear. Recommended Action: Please address comments in 11, 13, and 14.	Please see response above.

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT USING THE GEF-SCCF RESOURCES

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
For Project Management			
Local			
Finance and Administrative Assistant	1,100	20.73	• Ensure timely and efficient organization and project records • Assist with project communications, records and finances
Justification for travel, if any: Occasional domestic travel in India to visit focal states and central government in Delhi			
For Technical Assistance			
Local Consultants			
Co-Team Leader Coastal Engineer	5909	16	• To support the International Team leader in all tasks and to support coordination, liaison with government and stakeholder and maintain project direction and programming during the absence of the team leader from the project. • Coordinate and liaise with the baseline project activities including incorporation of climate resilience into shoreline planning and sub project designs. • To be responsible for monitoring project progress and ensuring outputs meet the project targets. • To prepare contracts and project manage the sub contracts including the three focal research institutes, pilot projects, training and monitoring and evaluation. • To assess design implications and estimated costs to incorporate climate change resilience for typical coastal protection works. • To support the preparation of climate change adaptation criteria and guidelines based on outputs from consultants and focal research institutes. • To support the incorporation of climate change parameters into the information systems. • To support the inputs by the panel of experts and ensure smooth liaison between the experts and other technical specialists. To synthesize and summarize the findings of the panel of experts. • In coordination with other consultants supervise the pilot community projects and the training and awareness programs • To ensure all project expenditures are properly documented according to Government and ADB requirements.
Coastal Management Specialist	5909	5	• Review the SCPMIP shoreline planning in the two focal states and prepare specific recommendations for incorporation of climate change resilience into the shoreline plans • In coordination with other consultants to interpret assess the potential impacts of the projected climate changes on the coast. • To review ongoing coastal climate change studies including the State Action Plans for Climate Change (SAPCC) and the MoEF ICZM program and extract key findings which can be used to support the TA outputs • Develop climate change scenarios and possible climate change adaptation measures that can be taken forward for detailed analysis. • To work with the engineers and climate economist to develop the cost benefit analysis of different adaptation strategies. • To support the preparation of the adaptation guidelines, modules for training and awareness materials
Coastal Morphologist Beach	5909	5	• To review outputs of shoreline management plans in the two focal states and other parts of the Indian Coast with special reference to morphological impacts of climate change on the equilibrium of beaches and coastal

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
Management Specialist			wetlands (mud flats). • To undertake more detailed analysis of not less than five case studies, to assess the current issues of instability and the potential future impacts of climate change. • Present proposals and outline designs and specification to support stabilization of beaches and coastal wetlands under scenarios of climate change • To prepare strategies and outline approaches for pilot community projects • To support selection of pilot sub projects locations • To support the preparation of the adaptation guidelines, modules for training and awareness materials. • To work with the community specialist in the selection, design and implementation of the community pilot projects. • To prepare awareness materials to provide increased understanding of vulnerabilities of the beaches and potentials to reduce degradation and erosion through beach management • To support the preparation of the adaptation guidelines, modules for training and awareness materials with special reference to beach management.
Institutional/Training Specialist	5909	5	• To review the institutional base for coastal protection and management and climate change adaptation • Identify the institutional and capacity constraints for adaptation to coastal climate change adaptation. • Develop strategies to support training and awareness for coastal climate change adaptation • To prepare the approach and details for an integrated program of training and awareness under the TA including the adaptation guidelines, training of trainers, modules for training courses and the design of the awareness campaign
Community Specialist	5909	5	• To support the identification, selection and design of the community pilot projects. • To lead the community engagement and awareness programs for community projects. • To work with the communities to identify appropriate models for community cooperation with special reference to co-financing and agreements to ensure long term sustainable finance after the end of the TA program. • To work in the communities to develop the terms of reference and contractual arrangements for the pilot community projects. • To develop appropriate mechanisms to guide and supervise the community projects. • To support the supervision of the community projects and to provide follow on support to ensure long term sustainability. • To support the preparation of the adaptation guidelines, modules for training and awareness materials with special reference to strategies and mechanisms for community based coastal protection programs.
Coastal Ecologist	5909	4	• To assess potential ecological effects of climate change on the coast with special reference to impacts of climate change on mangrove, dunes and coral reefs and the resulting effects on coastal erosion and instabilities. • To review ongoing mangrove research and propose strategies to increase the sustainability of mangrove under changing climatic conditions. • To work with data management specialist to source GIS mapping mangrove and coral reefs for the Indian coast • To advise on appropriate types of dune vegetation to be incorporated into the pilot projects • To support the development of adaptation guidelines in relation to

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
			ecological coastal protection
Data Management GIS Specialist	5909	4	• To work with the TA consultants and the research institutes to prepare the design of a coastal climate change information system. • To work with the SCPMIP consultants to assess how the outputs of the TA studies can be incorporated into the coastal data management system. • To liaise with CWC and the MoEF and other organisations who have established or proposed data management systems. Review the various systems and assess how a common data system could evolve. • Design the framework and metadata for a coastal climate change data system. • To work with a GIS technician to be recruited and prepare the GIS coastal climate change information system and prepare modules for training. • To support the preparation of the adaptation guidelines, modules for training and awareness materials.
Independent Advisory Panel of experts			
Independent Advisory Panel of Experts: 16 experts (1 from each of the 12 maritime states and union territories and 4 national experts).	7000	8 person months (each expert 2.2pw input)	• To undertake a peer review of guidelines for coastal climate change adaptation • To help define specific issues and adaptation measures relevant to each costal state union territory.
International Consultants			
Team Leader/Coastal Engineer/ Climate Change Specialist	25000	6	• To plan and coordinate all the inputs and outputs from the consultants. • In coordination with various consultants prepare briefing papers outlining the latest international research findings and proposed work plans for the focal research institutes and review outputs from the institutes. • To assess needs and implications and estimated costs to incorporate climate change resilience for typical coastal protection works and coastal infrastructure. • To coordinate the preparation of climate change adaptation criteria and guidelines based on outputs from consultants and focal research institutes. • To support the incorporation of climate change parameters into the information systems and support coordination with the other systems at state and central level. • To support the briefing of the technical committee and support the processes of endorsement of the guidelines and the establishment of coastal adaptation policy.
Meteorologist/Climate Change Specialist	25000	2	• Will carry out a comprehensive review of international and Indian climate prediction research with specific reference to the projected changes and on the Indian coast. • Work closely with the Indian climate research institute in the preparation of the downscaled climate projections. • Advise the various experts on the probabilities and uncertainties of climate change and the development of approaches to incorporate uncertainty into the climate change guidelines. • Support the preparation of the adaptation guidelines, modules for training and awareness materials.
Coastal Oceanography /Climate Change Specialist	25000	3	• To analyze and interpret latest research on historic and projected sea level changes and other coastal climate change effects both globally and with special reference to the Indian coast. • To analyze research on current and projected storm surges both globally and relating to India.

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
			• To compile best estimates of projected changes in sea level for Indian including local variations and effects of changes in land levels and where possible support the assignments of probabilities of different events • Support the preparation of coastal adaptation guidelines. • Support the preparation of the adaptation guidelines and modules for training and awareness materials
Coastal Engineering Design Specialist	25000	4	• To review the various climate change impacts and assess the likely implications on coastal protection and coastal infrastructure • To review current standards and norms for coastal engineering and present adjustments to meet the needs of climate resilience. • To work with the climate change economist to support the analysis of cost benefits of various adaptation strategies. • To work with other consultants to develop design guidelines for beach and mangrove consultants under climate change. • Prepare guidelines for designers to accommodate climate resilience into coastal infrastructure design including hard and soft technologies for coastal protection. • Support the SCPMIP designers to incorporate climate resilience for the tranche 2 designs and to prepare recommendations for climate resilience for the possible sub projects identified for Tranche 3 under the shoreline planning activities. • In consultation with CWPRS and other coastal design organizations prepare recommendations for long term strengthening of coastal engineering design to meet climate impacts including hard and soft solutions. • Support the preparation of the adaptation guidelines and modules for training and awareness materials.
Climate Change Economist	25000	2.5	• To prepare an analysis of risks of not incorporating climate change resilience into coastal protection and other infrastructure. The analysis should be based on case studies for typical coastal coastal protection and management situations. • Prepare a cost benefit analysis and sensitivity analysis of various approaches and scenarios for coastal protection including economic assessments of the approaches to incorporate climate resilience into coastal infrastructure. The analysis will be based on selected projects identified under the shoreline planning of SCPMIP. • Support the preparation of the adaptation guidelines, modules for training and awareness materials with special reference to the cost benefit of incorporation of climate resilience.
Coastal Morphologist/beach management specialist	25000	2.5	• To review outputs of shoreline management plans in the two focal states and other parts of the Indian Coast with special reference to morphological impacts of climate change on the equilibrium of beaches and coastal wetlands (mud flats). • To undertake more detailed analysis of not less than five case studies, to assess the current issues of instability and the potential future impacts of climate change. • Present proposals and outline designs and specification to support stabilization of beaches and coastal wetlands under scenarios of climate change • To prepare strategies and outline approaches for pilot community projects • To support selection of pilot sub projects locations • To support the preparation of the adaptation guidelines, modules for training and awareness materials.
Institutional/training specialist	25000	2	• To review the institutional base for coastal protection and management and climate change adaptation • Identify the institutional and capacity constraints for adaptation to coastal

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
			climate change adaptation. • Develop strategies to support training and awareness • To prepare the approach and details for an integrated program of training and awareness under the TA including the adaptation guidelines, training of trainers, modules for training courses and the design of the awareness campaign.

Project Management Costs	• Finance/Admin Specialist 83.6 person weeks @ $273/week • Office costs including rental electricity, maintenance 88 weeks @$160/week • International Travel for international consultants 14 return airfares @$3000 per return airfare • National Travel for national and international consultants within India 155 single trips @$120/trip • Land transport vehicle hire 94 weeks @ $100/week

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT USING GEF/LDCF/SCCF/NPIF RESOURCES

Position Titles	*$/ Person Week**	*Estimated Person Weeks***	*Tasks To Be Performed*
For Project Management			
Local			
International			
Justification for travel, if any:			
For Technical Assistance			
Local			
International			
Justification for travel, if any:			

* Provide dollar rate per person week. ** Total person weeks needed to carry out the tasks.

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.

NA

B. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

NA

C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:

Project Preparation Activities Approved	***Implementation Status***	***GEF/LDCF/SCCF/NPIF Amount ($)***				***Cofinancing ($)***
		Amount Approved	***Amount Spent Todate***	***Amount Committed***	***Uncommitted Amount****	
NA	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
	(Select)					
Total		0	0	0	0	0

* Any uncommitted amounts should be returned to the GEF Trust Fund. This is not a physical transfer of money, but achieved through reporting and netting out from disbursement request to Trustee. Please indicate expected date of refund transaction to Trustee.

ANNEX E: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used**)**

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

ANNEX C.2: ADDITIONAL CONSULTANTS TO BE HIRED FOR THE PROJECT USING THE GEF-SCCF RESOURCES

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
For Technical Assistance			
Local Consultants			
Coastal Ecologist	5909	4	• To assess potential ecological effects of climate change on the coast with special reference to impacts of climate change on mangrove, dunes and coral reefs and the resulting effects on coastal erosion and instabilities. • To review ongoing mangrove research and propose strategies to increase the sustainability of mangrove under changing climatic conditions. • To work with data management specialist to source GIS mapping mangrove and coral reefs for the Indian coast • To advise on appropriate types of dune vegetation to be incorporated into the pilot projects • To support the development of adaptation guidelines in relation to ecological coastal protection
Data Management GIS Specialist	5909	4	• To work with the TA consultants and the research institutes to prepare the design of a coastal climate change information system. • To work with the SCPMIP consultants to assess how the outputs of the TA studies can be incorporated into the coastal data management system. • To liaise with CWC and the MoEF and other organisations who have established or proposed data management systems. Review the various systems and assess how a common data system could evolve. • Design the framework and metadata for a coastal climate change data system. • To work with a GIS technician to be recruited and prepare the GIS coastal climate change information system and prepare modules for training. • To support the preparation of the adaptation guidelines, modules for training and awareness materials.
Specific Climate Studies to be Contracted to National Research Institutes -Indicative scope of work			
Downscaled climate change projections of temperature, wind and rainfall	5909	5	• Provision of downscaled projections for wind, extreme wind events, temperature and rainfall for the Indian coast. Through analysis of multiple models levels of uncertainty of the projections would also be prepared. • **Output:** Downscaled climate projection matrixes for the Indian coast.
Historic trends in sea levels	5909	2	• Compilation of tidal monitoring, quality control, trend analysis. **Output**: preparation of a database of historic sea level changes for Indian Coast
Projections of sea level rise from climate change	5909	3.32	• Review of research into global sea level change • Apply downscaling and provide corrections to the Indian coast and linkages to historic trends of sea level change. • Develop probability of different scenarios. • **Output:** Preparation of a downscaled database of projected sea level changes including probabilities.
Analysis of Vertical land movements	5909	5	• Collect and compile latest information and research on isostatic and local land settlement changes with particular reference to tidal stations and areas with pronounced level changes. • **Output:** preparation of a database of showing future vertical changes in land
Analysis of changes in wave characteristics	5909	5.15	• Analysis of changes in wave characteristics for the Indian coast based on the IITM wind projections. • Analysis of the changes in frequency and intensities of storms based on

Position Title	$ / Person Months	Estimated Person Months	Tasks to be Performed
from climate change			IITM wind projections • **Output**: A database and GIS of the Indian coast showing changes in predominant and storm wave characteristics.
Analysis of projected changes in storm surges	5909	10	• Analysis of current and projected storm surges for the Indian Coast using the downscaled projections for extreme wind and pressure information. • Coastal vulnerabilities are being assessed by the MoEF CZM project and not proposed for the GEF-SCCF project.
Independent Advisory Panel of experts			
Independent Advisory Panel of Experts: 16 experts (1 from each of the 12 maritime states and union territories and 4 national experts).	7000	8 person months (each expert 2.2pw input**)**	• To undertake a peer review of guidelines for coastal climate change adaptation • To help define specific issues and adaptation measures relevant to each costal state union territory.
International Consultants			
Coastal Morphologist/beach management specialist	25000	2.5	• To review outputs of shoreline management plans in the two focal states and other parts of the Indian Coast with special reference to morphological impacts of climate change on the equilibrium of beaches and coastal wetlands (mud flats). • To undertake more detailed analysis of not less than five case studies, to assess the current issues of instability and the potential future impacts of climate change. • Present proposals and outline designs and specification to support stabilization of beaches and coastal wetlands under scenarios of climate change • To prepare strategies and outline approaches for pilot community projects • To support selection of pilot sub projects locations • To support the preparation of the adaptation guidelines, modules for training and awareness materials.
Institutional/training specialist	25000	2	• To review the institutional base for coastal protection and management and climate change adaptation • Identify the institutional and capacity constraints for adaptation to coastal climate change adaptation. • Develop strategies to support training and awareness • To prepare the approach and details for an integrated program of training and awareness under the TA including the adaptation guidelines, training of trainers, modules for training courses and the design of the awareness campaign.

Project Management Costs	• Finance/Admin Specialist 83.6 person weeks @ $273/week • Office costs including rental electricity, maintenance 88 weeks @$160/week • International Travel for international consultants 14 return airfares @$3000 per return airfare • National Travel for national and international consultants within India 155 single trips @$120/trip • Land transport vehicle hire 94 weeks @ $100/week