

## SUMMARY REPORT

### WORLD BANK ASSISTED INTEGRATED COASTAL ZONE MANAGEMENT PROJECT ENVIRONMENTAL AND SOCIAL ASSESSMENT



Submitted to  
**MINISTRY OF ENVIRONMENT AND FORESTS  
GOVERNMENT OF INDIA**

By



**CENTRE FOR ENVIRONMENT AND DEVELOPMENT  
THIRUVANANTHAPURAM**

**November 2009**

**pdfMachine - is a pdf writer that produces quality PDF files with ease!  
Get yours now!**

"Thank you very much! I can use Acrobat Distiller or the Acrobat PDFWriter but I consider your product a lot easier to use and much preferable to Adobe's" A.Sarras - USA

# 1 EXECUTIVE SUMMARY

---

## 1.1 INTRODUCTION

1. India has a coastline of about 7,500km, of which about 5,400km belong to peninsular India and the remaining to the Andaman, Nicobar and Lakshadweep Island. With less than 0.25% of the world coastline, India houses 63 million people, approximately 11% of global population living in low elevation coastal areas. The coastal districts (73 out of a total of 593 districts) have a share of 17% of the national population, and nearly 250 million people live within 50km of the coastline. The coast also includes 77 cities, including some of the largest and most dense urban agglomerations - Mumbai, Kolkata, Chennai, Kochi and Visakhapatnam.

2. **Sustainable management of coastal and marine resources is essential to India's economic growth.** India's coastal zone is endowed with a wide range of mangroves, coral reefs, sea grasses, salt marshes, sand dunes, estuaries, lagoons, and unique marine and terrestrial wildlife. The abundant coastal and offshore marine ecosystems include 6,740 km<sup>2</sup> of mangroves, including part of the Sundarbans and the Bhitarkanika, which are among the largest mangroves in the world. There are major stocks of corals, fish, marine mammals, reptiles and turtles, sea grass meadows, and abundant sea weeds. Most of the oil and gas reserves in India lie in the coastal and shallow offshore areas. Thirty-five per cent of the coastal stretch is laden with substantial placer mineral and heavy metal deposits. Offshore wind, tidal, wave and future ocean thermal energy potential is huge. Tourism, cultural and archaeological sites, some with national and international significance dot the coasts. A very significant share of India's economic infrastructure, including maritime facilities, petroleum industries, and import-based industries is located in the coastal zone, as are the 197 major or minor ports, 308 large-scale industrial units, and 77 coastal cities. Coastal fishing employs a million people full time, and the post-harvest fisheries sector employs another 1.2 million people in 3,638 fishing villages and 2,251 fish landing centers.

3. Despite the ecological richness and the contribution to national economy, the coastal and marine areas are under stress. Rapid urban-industrialization, maritime transport, marine fishing, tourism, coastal and sea bed mining, offshore oil and natural gas production, aquaculture, and the recent setting up of special economic zones have led to a very significant increase in demand for infrastructure, resulting in exploitation of natural resources. About 34% of mangroves of India were destroyed in the last 40 years; 66% of the coral areas are threatened; marine fish stocks are declining; and aquarium fish, sea cucumbers are fast disappearing. Such depletion and degradation, unless arrested, will impact the livelihood, health and well being of the coastal population; affecting in turn prospects for sustained economic growth.

4. **Threat of coastal hazards on economic and livelihood security is increasing.** Indian coast is subject to severe weather events, including the cases of 2004 tsunami, several super-cyclones, and an average of nine cyclones per year, inflicting severe damage to lives and property. Resilience of the rural coastal communities to extreme weather variability had been low, mostly because of impoverishment. In recent years accelerated erosion of coastal land is affecting coastal agriculture and built habitats, while return from traditional fishing is reducing due to environmental degradation and over-extraction. Climate change aggravates the risks to coastal communities and infrastructure. Studies already point out significant acceleration in sea level, increase in the frequency and intensity of extreme weather events,

mean climate variables, and changes in biophysical and human systems. A 1-meter sea level rise would flood nearly 6,000 km<sup>2</sup> in India, potentially triggering significant population movements among the 63 million people in low elevation areas, the low resilience poorer communities among them being the most vulnerable. Climate change will also impact the large infrastructure investments in the ports, industries and other facilities.

5. **Diverse stakes increasingly compete for coastal and marine resources.** Rapid economic growth in recent years has propelled newer and larger investments in coastal zones, with more ports set up to act as gateways to the hinterland economy. Together with real estate growth in larger urban areas and unplanned tourism activities, these necessitate considerable increase in basic infrastructure to support the fast-growing rural, semi-urban and urban population in coastal zones. Further, the numerous unplanned but competitive economic activities have resulted in conflicts among stakeholders; misuse, abuse and overuse of resources; and degradation of ecosystems with some pockets of coastal landscapes entirely destroyed by commercial aquaculture. With coastal hazards such as cyclones striking with increasing regularity, the key issue in coastal zone and marine management is how to accommodate such needs in a sustainable manner.

6. **Plethora of fragmented policies and incomplete institutional framework are unable to ensure balanced development.** The management regime for coastal and marine areas of the country suffers from the lack of an integrated and coordinated decision-making system. This is reflected in a multiplicity of institutional, legal and economic planning frameworks, all narrow and sector driven. Consequently, sectoral activities and interventions in coastal and marine areas work in isolation from each other, at times with conflicting objectives and outputs. At the same time stakeholder interests are diverse and competitive, partly due to the lack of participatory planning and management process. Investments in large and small economic infrastructure - all critical components of national goals for growth and poverty reduction - take place without systematic analyses of long term effects. The overall policy and plan responses are further crippled by lack of knowledge on coastal resources, processes, impact analyses and management options.

7. Up to now, the approach to managing India's coastal zone has been a purely regulatory one, as per the Coastal Regulation Zone (CRZ) Notification of 1991, promulgated under the Environment (Protection) Act of 1986. This approach does not provide room to balance coastal zone conservation and necessary economic growth in the area or seek convergence with other development activities. The 1991 notification prevents, restricts and controls development activities within a landward distance of up to 500m from the high tide line along the coasts. In the last decade, as the pressure of development has been growing, on one side there were large-scale reported violations of the provisions of the notification, and on the other demands from the various economic sectors to rationalize it.

8. Given the country and sector issues outlined above, the GoI has developed a vision for long-term management of the coastal and marine areas, as articulated in the National Environment Policy, 2005. GoI has already initiated steps to operationalize one part of the agenda, which is to create a suitable policy environment for integrated management of coastal and marine areas. The second part is to develop and finance institutional arrangements, capacity and adequate knowledge systems adequate for the country's long term needs. For initiating program for this second part, the **India Integrated Coastal Zone Management project** is formulated, with proposed assistance from the World Bank. The project will support capacity building for implementation of the integrated coastal zone management at the national level and in three pilot states. Once the initial demonstration is complete, the initiatives will be replicated for long-term gains and wider impacts, both at the national level and for the remaining nine coastal states and union territories. The replications will be supported by GOI own resources, and could be complemented by additional financing by other agencies. The lessons learnt from, and the

quality of capacity created by this project will be crucial for designing and implementing future coastal zone conservation and management projects and program in India.

9. Integrated management of the coastal and marine areas in general and the project in particular will have long lasting benefits. Development of economic infrastructure in the coastal zone, along with protection of ecological, cultural and traditional rights and landscape is crucial to India's growth and development. Balanced, sustainable and rapid economic growth is also the fulcrum for poverty reduction. The project, and the reforms it supports, will also play a vital role in reducing vulnerabilities of coastal population to current variability and disasters, both of which are expected to be increase due to climate change effects.

## **1.2 PROJECT DESCRIPTION**

10. The project's development objective (PDO) is to assist the Government of India in building national capacity for implementation of the new integrated management approach for India's coastal zones, and piloting the integrated coastal zone management approach in three states of Gujarat, Orissa and West Bengal. The project will have four components – one for the national level capacity and knowledge building; and three state components for state level capacity building which is in turn supported by a few local investments to facilitate cross-sectoral learning and joint implementation.

### **(i) Component One: National ICZM Capacity Building**

11. The national component will include [i] mapping, delineation and demarcation of the hazard lines all along the mainland coast of India; [ii] mapping, delineation and demarcation, as required, of the ecological sensitive areas (ESAs), also all along the mainland coast of India; [iii] capacity building of the MoEF as the secretariat for the NCZMA, and nation-wide training program for integrated coastal zone management; and [iv] setting up and operationalization of the new National Centre for Sustainable Coastal Zone Management.

12. **Mapping, delineation and demarcation of hazard line:** Since the Swaminathan Committee recommendations, MoEF constituted an expert committee in 2006 to finalize the methodology of mapping and delineation of hazard line. The expert committee suggested a practical method of using topographic elevation, coastal flood heights including sea level rise effects, and coastal erosion data to determine the hazard line. The options and details were discussed at different forums through 2006-2008. During project preparation, several workshops were organized to reach a consensus among experts including scientists. The expert consensus was presented to stakeholders in each state, and the final methodologies were agreed. The hazard line for the mainland coast of India will be mapped and delineated as the landward composite of the coastal 100 year flood lines (which includes sea level rise impacts), and the 100 year predicted erosion lines. This will involve (i) surveys and preparation digital terrain model of 0.5m contour interval for the entire mainland coast; (ii) collection of historical tide gauge data and analyses to determine 100 year flood levels, (iii) analyses of maps and satellite imagery since 1967 to predict 100 year erosion line, (iv) preparation of composite maps, showing the hazard line on the digital terrain model, and (v) transfer of the hazard line to topographic maps for public dissemination. Once the hazard line is delineated, ground markers will be constructed. This is important as the revenue maps used for local planning purposes are not comparable to topographic maps. The publicly disseminated maps and the ground markers will obliterate the need for each developer and stakeholder to invest in physical surveys and interpretation each time a need for decision regarding applicability of coastal regulations arises. Once mapped and delineated, the hazard lines will be used to determine the landward boundary of the state/local ICZM plans.

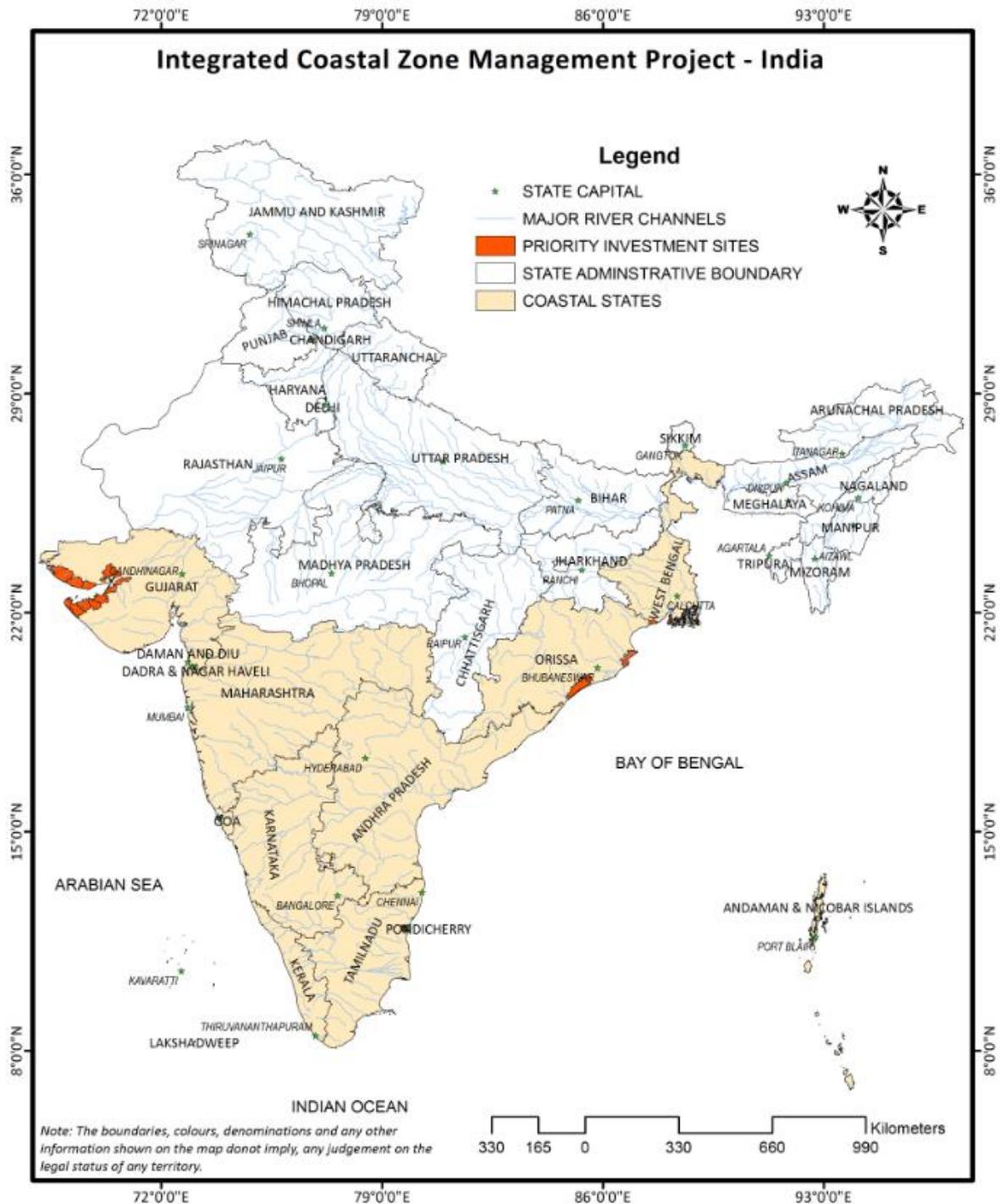
13. **Mapping, delineation and demarcation, as required, of the ESAs:** Based on the recommendations of the Swaminathan Committee, a consultation-based study was undertaken during project preparation to define the type, nature and characteristics of ESAs to be demarcated. After expert and stakeholder consensus, the study recommended 15 different types of ESAs to be identified, mapped and delineated. The ESAs include: the currently protected national parks, wildlife sanctuaries (for most of which maps exist), mangroves, coral reefs, sea grass and sea weed beds, littoral forests, sea beaches, sand dunes, rocky cliffs, mud flats, lagoons, salt marshes, estuaries, and habitats of critical species such as the olive ridley turtles and the horse-shoe crab. Detailed methods to determine the ecological richness of each of these had been defined. Following these methods, the ESAs will be identified and delineated. Once these are delineated, boundaries of ESAs will be transferred to topographical maps, prepared for hazard line delineation. Contiguous areas containing these ESAs within the coastal management zone will be designated as CRZ-I and MoEF will assume the management responsibilities for these areas.

14. **Setting up of the new national institute for coastal zone management:** During project preparation a study was undertaken for designing the program for the national institute. The study included analyses of ICZM skill gaps in the country. Scientific, legal and technological gaps and the skill requirements were identified for relevant areas such as physical, chemical and biological oceanography; coastal geology and geomorphology; coastal engineering; capture and culture fishery; coastal and seabed resources; coastal ecology and environment; regional planning; ecosystem management; strategic environmental analysis; environmental assessment; integrated coastal zone management; marine area management; traditional wisdom, social and cultural anthropology of the coastal communities; and the development need of coastal communities. This was followed by a capacity analysis which identified the needs for enhanced expertise and human resources; institutional framework and legal/policy climate to use the available skills; and enhancement in physical and financial resources, as the key gaps for knowledge and capacity building program. Based on the study results, stakeholder discussions, and as per recommendations of the Swaminathan Committee, the proposed National Centre for Sustainable Coastal Zone Management (NCSCZM) will develop and promote international best practices and approaches for integrated coastal zone management in India.

15. The institution will develop a central repository of information and knowledge on ICZM practices in India and elsewhere; analyze the successes and failures in ICZM and develop suitable applications in Indian contexts; promote technically sound and practical management approaches to ICZM; evaluate and monitor implementation of the ICZM approaches, programs and projects; advise governments and other stakeholders on policy, legal and scientific matters related to ICZM; serve as an interface between coastal communities, experts and governments; and promote applied research, education and awareness with respect to ICZM including ecological literacy. To achieve these objectives, the proposed NCSCZM will be established as an autonomous institution, with an aim to become a world-class institution for coastal and marine area management.

16. **Capacity building of MoEF:** An analysis of the current capacity constraints of MoEF was undertaken to assess the extent to which it can play a role as the secretariat to NCZMA. A further analysis was undertaken to identify capacity building needs necessitated by the proposed shift to ICZM approach and consequent change in the responsibilities of MoEF. Based on this analysis, and consultation with NCZMA and the coastal states, a capacity building plan was prepared. The following are scheduled to be completed by December 2009 - (1) Proposals on staffing (skills mix, job descriptions including setting up of functional units within), equipment, office space and such other operational needs and other operational and implementation arrangements. (2) Investment and operating budget

needs and timetable for implementing the institutional changes. Note that a part of the capacity building needs will be fulfilled by the implementation of the project itself.



**pdfMachine** - is a pdf writer that produces quality PDF files with ease!  
**Get yours now!**

"Thank you very much! I can use Acrobat Distiller or the Acrobat PDFWriter but I consider your product a lot easier to use and much preferable to Adobe's" A.Sarras - USA

17. **Project Management:** This will support staffing and operation of the national project management unit (NPMU); establishing adequate financial management and procurement management systems; implementation of communication plan and RTI related activities; implementation of governance and accountability actions; M&E and third party audits; coordination meetings with states and other stakeholder engagement; and special evaluation studies. It is expected that the PMU, which is being set up as an autonomous society will be transformed during the project implementation period into the coastal zone management division of MoEF, as per the MoEF capacity building plan. Most of the systems set up for project management, such as the financial management and procurement systems and the M&E systems will therefore be incorporated into the medium term capacity building plan.

**(ii) Component Two: Piloting ICZM approaches in Gujarat**

18. This component will include [i] capacity building of the state level agencies and institutions, including preparation of ICZM plan for the coastal sediment cell which includes the Gulf of Kachchh, and [ii] priority investments.

19. **ICZM Plan for the Gulf of Kachchh:** International experiences suggest that it is important to use natural, and not administrative, boundaries as the boundary of coastal zone plans. The landward boundary of the coastal zone plans will be dependent on the hazard line (to be delineated under the national component), and the longitudinal boundary will be the coastal sediment cell. The plan is designed as a process of regular stakeholder dialogue, where the government creates a platform for all stakeholders to voice their concern and engage in integrated decision making. The stakeholder dialogue will be supported by technical and data inputs. At the initial stage of plan preparation, a stakeholder analysis will be carried out based on a socio-economic profile of the population and sub groups, who are dependent on the coastal zone with varying needs and absorptive capacities. The identified stakeholder groups will participate through the process of planning. Specific consultant support will be required to understand the natural coastal and marine processes, resource endowments, potential coastal hazards and risks to coastal communities, assessment of the current and cumulative pressures on the coastal and marine resources, and valuation of the traditional and current resource use and dependence among the stakeholders. Stakeholder analyses and consultations will be used to identify stakeholder's requirements, priorities, concern and conflicts, development risks and opportunities. The plan process will undertake a detailed analysis of legal and institutional issues related to ICZM plan including resource development, regional planning, social equity and environmental protection. Stakeholder agreements on ICZM plan strategy will also be widely disseminated. Based on the strategy accepted by all stakeholder groups, an ICZM plan will be prepared. It is expected that the ICZM plan will have the character of a regional plan or a structure plan (and not a master plan or area development action plan) with a 20-30 year horizon. The content of the plan will depend upon stakeholder agreements, subject to the limitation that any plan proposal will not affect directly or indirectly the ESAs (as determined by the ESA mapping under the national component), or violate the guiding principles set out in the Swaminathan Committee Report. The ICZM plan will include the implementation arrangements, M&E and plan review mechanisms, detailed proposals for financing implementation of the ICZM plan including resource generation by implementation of the plan itself, and all relevant social and environmental mitigation measures (with financing plan and conditionality on the impact inducing activity).

20. **Gujarat state ICZM capacity building:** The capacity-building sub-component in Gujarat will include capacity building of the Forest and Environment Department (which is the secretariat for the Gujarat SCZMA), Gujarat State Pollution Control Board (for monitoring and enforcing pollution control in the coastal areas), Gujarat Environment and Ecology Research Foundation (for developing relevant

research capacity in coastal ecology, and for developing suitable techniques for transplantation regeneration of coral reefs), and the Bhaskaracharya Institute of Space Applications and Geo-Informatics (for preparing GIS-enabled mapping and decision support tools for the coastal areas). As in the case of other components, the project management (see below in paragraph 22) support is designed to contribute to the medium term capacity building plan.

21. **Priority investments:** The priority investments in Gujarat, all located in the gulf of Kachchh, will include the following:

- (a) Conservation and protection of the coastal resources – (i) mangrove plantation by Gujarat Ecology Commission, (ii) coral reef regeneration by the Forest and Environment Department, (iii) mangrove and shelterbelt plantation by the marine National Park, and (iv) a marine research and conservation information centre at Dwarka, by the Forest and Environment Department through a private-public-partnership model.
- (b) Environment and pollution management – (i) completing the environmental sanitation of Jamnagar city, by the Jamnagar Municipal Corporation.
- (c) Livelihood security of coastal communities – (i) livelihood improvement activities by the Gujarat Ecology Commission in the non-forest villages of the coast, and (ii) ecotourism and related livelihood improvement activities by the Marine National Park for villages within the protected areas.

22. The priority investments and the capacity building support are complementary to each other, and serve common objectives. Together with the ICZM plan, they address the major coastal zone management issues in the Gulf of Kachchh in particular and the entire coastal and marine areas of the state in general.

23. **Project Management:** This sub-component will support staffing and operation of the state project management unit (SPMU); establishment of adequate financial management and procurement management systems; implementation of communication plan and RTI related activities; implementation of governance & accountability actions, including establishment of a grievance registration and redressal system; M&E, quality assurance consultancies, and third party audits, including social audits; coordination meetings with a wider range of state agencies and other stakeholder engagement; and special evaluation studies and specific expert input. It is expected that the SPMU, which is being set up within the Gujarat Ecology Commission (which is an autonomous society) will be transformed during the project implementation period into the coastal zone management division of the DoE, as per the state capacity building plan. Most of the systems set up for project management, such as the financial management and procurement systems, and the M&E systems will be incorporated into the medium term capacity building plan.

### ***(iii) Component Three: Piloting ICZM approaches in Orissa***

24. This component will include [i] capacity building of the state level agencies and institutions, including preparation of ICZM plan for the coastal sediment cells which include the stretches of Paradip-Dhamra and Gopalpur-Chilika, including a regional coastal process study, and [ii] priority investments.

25. **ICZM Plan for the Paradip-Dhamra and Gopalpur-Chilika:** The content of the plan and the plan process that will be supported will be similar to those described under component two. The differences are that, depending on coastal geomorphology, two plans will be prepared in the event that it is determined that the two targeted coastal stretches are not located within one coastal sediment cell/sub-cell.

26. **Orissa state ICZM capacity building:** This sub-component will support capacity building of the Forest and Environment Department (which is the secretariat for the Orissa SCZMA), Orissa State Pollution Control Board (for monitoring and enforcing pollution control in the coastal areas), and the Chilika Development Authority (for species and wetland research). As in the case of other state components, the project management (see below in paragraph 28) support is designed to contribute to Orissa's medium term ICZM capacity building plan.

27. The **priority investments** in Orissa are concentrated in the two reaches of (i) Gopalpur-Chilika and (ii) Paradip-Dhamra - and will include the following:

- (a) Conservation and protection of coastal resources – (i) protection of olive ridley turtle and other aquatic wildlife by the Wild Life (Department of Forest & Environment), (ii) mangrove plantation by the Wild Life (Forest and Environment Department), (iii) Strengthening wetland research center & species research by Chilika Development Authority (iv) conservation of archaeological heritage, which serve as cyclone shelters at times of distress by the Culture Department, and (iv) a pilot work in shoreline protection for village Pentha by the Water Resources Department.
- (b) Environment and pollution management – (i) environmental sanitation (solid waste management) of coastal town of Paradip by Housing and Urban Development Department; (ii) Establishment of coastal monitoring laboratory at Paradeep by State Pollution Control Board (OSPCB)
- (c) Livelihood security of the coastal communities – (i) livelihood improvement support in 60 fishing villages in the periphery of the Chilika lake and the Gahirmatha Wildlife Sanctuary to develop allied farming activities by the Fisheries Department, (ii) support to fisher-people groups in developing small-scale tourism activities by the Tourism Department, (iii) support to fishing communities in developing small-scale industrial and marketing activities, such as coir-making, by the Industries Department, and (iv) provision of cyclone shelters in the 14 remaining coastal villages, where cyclone shelters were not constructed from earlier programs, by the Disaster management Authority (v) Ecotourism based livelihood security in restricted areas by Wild Life (Department of Forest & Environment, Government of Orissa)

28. Similar to Gujarat, the priority investments and the capacity building support are complementary to each other, and serve common objectives. Together with the ICZM plan, they address the major coastal zone management issues in the two targeted coastal stretches in particular and the entire coastal and marine areas of the state in general.

29. **Project Management:** This will support staffing and operation of the state project management unit (SPMU); establishment of adequate financial management and procurement management systems; implementation of communication plan and RTI related activities; implementation of governance and accountability actions, including establishment of a grievance registration and redress system; M&E, quality assurance consultancies, and third party audits, including social audits; coordination meetings with a wider range of state agencies and other stakeholder engagement; and special evaluation studies and specific expert inputs. It is expected that the SPMU, which is being set up as an autonomous society will be transformed during the project implementation period into the coastal zone management division of the DoE, as per the state ICZM capacity building plan. Most of the systems set up for project management, such as the financial management and procurement systems, and the M&E systems will be incorporated into the medium term capacity building plan.

**(iv) Component Four: Piloting ICZM approaches in West Bengal**

30. This component will support [i] capacity building of the state level agencies and institutions, including preparation of ICZM plan for the coastal sediment cells which include the coastal areas of West Bengal, and [ii] priority investments.

31. **ICZM Plan for the West Bengal Coast:** The contents of the plan and the plan process that will be supported will be similar to those described under component two for Gujarat. The differences are that, depending on coastal geomorphology, all three coastal sectors in West Bengal (Sundarban sector, Haldia sector, and Digha-Shankarpur sector) will be covered in the plan, provided all of them are located within one coastal sediment cell.

32. **West Bengal state ICZM capacity building:** The capacity-building sub-component will support the Forest and Environment Department (which is the secretariat for the West Bengal SCZMA), Kolkata University (in biochemistry, Environment Science, Atmospheric Science and Biotechnology department), and the Institute of Environmental Studies and Wetland Management (for geomorphologic and wetland research, and for supporting completion of a Sundarban resources interpretation centre through an NGO). As in the case of Gujarat and Orissa, the project management (see below in paragraph 34) support is designed to contribute to the medium term ICZM capacity building plan of West Bengal.

33. The **priority investments** in West Bengal will take place in two limited areas – (i) Digha-Shankarpur, and (ii) Sagar Island in the Sundarban – and will include the following:

- (a) Conservation and protection of coastal resources – (i) mangrove plantation by the Forest Department, (ii) a pilot work in shoreline protection for Digha beach, based on the learning from previous protection works, by the Irrigation Department, (iii) a pilot work in shoreline protection for the southern end of Sagar Island by the Sundarban Development Corporation, (iii) multi-purpose cyclone shelters and (iv) rehabilitation of the marine aquarium at Digha by the Zoological Survey of India.
- (b) Environment and pollution management – (i) completing the sewerage system and environmental sanitation of Digha by the Public Health Department, (ii) cleaning and environmental improvement of the Digha beach, and solid waste management in Digha by the Digha-Shankarpur Development Authority, (iii) improvement of the fish auction centre at Digha by the Fisheries Development Corporation, and (iv) distribution of grid electricity in Sagar Island by the State Electricity Distribution Company Limited to replace diesel generation and prevent serious soil and water pollution.
- (c) Livelihood security of the coastal communities – These activities will be implemented in Sagar Island and will include (i) improvement in fishery based livelihood systems by the Fisheries Department, and (ii) support to CBO coordinated livelihood improvement and market access, afforestation-based livelihood improvement, as well as promotion of local small-scale tourism and ecotourism activities – all by the Sundarban Development Corporation.

34. Similar to Gujarat and Orissa, the priority investments and the capacity building support are complementary to each other, and serve common objectives. Together with the ICZM plan, they address the major coastal zone management issues in the two targeted coastal stretches in particular and the entire coastal and marine areas of the state in general.

35. **Project Management:** This sub-component will support staffing and operation of the state project management unit (SPMU); establishment of adequate financial management and procurement management systems; implementation of communication plan and RTI related activities;

implementation of governance & accountability actions, including establishment of a grievance registration and redress system; M&E, quality assurance consultancies, and third party audits, including social audits; coordination meetings with a wider range of state agencies and other stakeholder engagement; and special evaluation studies and specific expert input. It is expected that the SPMU, which is being set up within the Institute for Environmental Studies and Wetland management (which is as an autonomous society) will be transformed during the project implementation period into the coastal zone management division of the DoE, as per the state ICZM capacity building plan. Most of the systems set up for project management, such as the financial management and procurement systems, and the M&E systems will be incorporated into the medium term capacity building plan.

### 1.3 ENVIRONMENT AND SOCIAL ASSESSMENT PROCESS

36. **Related studies to complement the Environment and Social Assessment:** MoEF commissioned the following relevant studies, results of which have influenced the project design in addition to the Environment and Social Assessment. (i) Study to determine the methodology of identification and mapping of the ecologically sensitive areas (ESAs). This study also identified the capacity of the relevant institutions in the country to identify and map the ESAs in the proposed coastal management zones; (ii) Management effectiveness study to appraise and examine the different investments and projects in conservation of the coastal environment in India in last 10 years. This study summarized the lessons learnt in such projects/investment for the benefit of improved design of the project; (iii) A communication needs assessment and development of communication strategy for the project; (iv) A report describing the methods and tools for mapping and demarcation of hazard lines.

37. Additionally, the states of Gujarat, Orissa and West Bengal have prepared the following studies/reports: (i) State reports describing the status of coastal zone management, the need for interventions, implementation arrangements, etc.; (ii) Draft terms of reference for preparing integrated coastal zone management plans (ICZM Plans) for the selected coastal stretches; (iii) Detailed project reports for each of the priority investments. Each DPR contains sections on environmental and social assessments.; (iv) States are also undertaking studies to value the coastal ecosystems (coral reefs in Gujarat, mangroves in West Bengal, both in Orissa) to supplement the valuation studies already available.

38. **Stand-alone Environment and Social Assessment** (by the Centre for Environment and Development, Thiruvananthapuram): The Environment and Social Assessment (EA/SA) process adopted for the project took a holistic approach, assessed environmental and social issues at a macro and micro level, identified associated risks, potential impacts and recommended management measures. At a more macro level, the Gol proposed (as per the national Environmental Policy, 2005) a program to shift to adopting ICZM approaches from the current partially effective regulatory regime. Although the project has not in itself caused a change in the policy or regulation, it does support implementation of any changed policy and regulation. Therefore, at a macro level, the EA/ SA carried out a regulatory impact assessment. The assessment clearly delineated the areas (management processes and issues) that would be strengthened due to the projects interventions, possible risks from the change in regulation, and whether the risks will be adequately mitigated and managed by the proposed changes in policy and regulations. Key issues are highlighted as follows – (i) the major issue of the exposure of the currently protected ecologically sensitive areas to exploitation if decentralized planning and management of coastal zones is accepted. However, the proposed changes in policy and regulations do not dilute the current protection regime, but strengthen it; (ii) further strengthening is envisaged through the project's support for the identification and delineation of all ecologically sensitive areas (many of which are not protected currently), and zoning these for protection by MoEF. The ICZM

approach will also facilitate investment in financing conservation of the ecologically sensitive areas, a major benefit over the current state of regulatory protection only; (iii) Another apparent issue is whether integrated management will result in loss of traditional and customary access to coastal and marine resources for the vulnerable coastal communities that are dependent on such resources (or whether these communities or their access will be displaced/ captured by the elite). As per the Gol policy, one of the three prime objectives of ICZM plans will be to ensure that livelihood of the coastal communities is secured. This project, as part of its support for the preparation of ICZM plans as (sustainable management processes) for – Gulf of Kachchh, Gopalpur-Chilika, Paradip-Dhamra, and West Bengal coast, will ensure that the ICZM plan processes are fully participatory, with identification and involvement of all stakeholder groups, especially vulnerable communities dependent on coastal and marine resources. This would further ensure that the concerns related to equitable share and protection of traditional access to coastal and marine resources will be adequately incorporated in the ICZM plans and decision-making processes. At a micro level, the project design and the E and SA examined the project's potential adverse impacts at local and site levels, and proposed avoidance, mitigation and management measures.

39. The EA/SA was based on a detailed survey (primary and secondary) and review of study reports from various institutions relating to coastal zone management studies conducted in India; Detailed Project Reports (DPRs) of priority investments to be financed by the project; State Project Reports (SPRs) providing overviews of state coastal issues and their relevance in the development context; and field visits to the participating states and sites of the priority investments. Additionally, consultations were held with key stakeholders, including senior officials of the State CZM Project authorities, and other relevant departments and line agencies and experts including MoEF officials. Further, considering the major beneficiary of the ICZM project are coastal communities including traditional dwellers and vulnerable communities such as tribals, consultations included an assessment of the process of benefit sharing from the ICZM project within the local coastal community.

#### **1.4 POLICY, REGULATORY FRAMEWORK AND COMPLIANCE**

40. **Constitutional provisions:** India has three tiers of government, within a structure of cooperative federalism. The first tier is the central government, the second is the state government, and the third is the village level, known as the Panchayat system. A key feature of India's Constitution is the existence of lists that demarcate the responsibilities between the central and state governments. Part XI of the Indian Constitution governs the administrative and legislative relation between the centre and the states. Article 246 divides all subject areas of legislation into three lists – Union/Center, State and Concurrent. When a central law conflicts with a state law in a concurrent subject, the former prevails. Environment Policies and Regulations in India, attempt to address coastal issues through the use of coastal zoning in order to spatially separate incompatible uses and protect fragile environment / ecosystems. The most significant Indian policies that would apply to the coastal development-environment interface are those contained in the Indian Constitution and the international agreements that India is a party. Additionally, there are policies and plans for sectoral development, and environmental policies and legislation to protect the environment from such development.

41. **International conventions and treaties signed by India:** India is signatory to various international conventions and treaties related to environmental protection and has also taken numerous initiatives towards implementation. This project is conformity with each of the relevant conventions and treaties signed by India.

42. **National Policies related to Coastal Areas and Marine Areas:** There are many National state level policies related to Coastal and Marine areas framed time to time and the major ones like National Water Policy, 1987, 2002; National Forest Policy, 1988; Deep Sea Fishing Policy, 1991; Policy Statement on Abatement of Pollution, 1992; Tourism Policy, 1998, National Agricultural Policy, 2000; Marine Fishing Policy 2004; National Environment Policy 2006 (NEP); National Rehabilitation and Resettlement Policy, 2007 were examined during preparation of the EA/SA, and no conflict with any of the policies were found in the project.

43. **Legal and Regulatory Framework:** Key legislative provisions applicable to the coastal areas in India include Land Acquisition Act, 1894; Indian Fisheries Act, 1897; Indian Ports Act, 1908; Coast Guard Act, 1950; Merchant Shipping Act, 1958; The Model Town and Country Planning Act, 1960; Major Port Trust Act, 1963; Wildlife Protection Act, 1972 (amended in 2001); Water (Prevention and Control of Pollution) Act, 1974; Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1976; Marine Fishing Regulation Act, 1978; Forest Conservation Act, 1980 (amended in 1988); Air (Prevention and Control of Pollution) Act, 1981; Environment (Protection) Act, 1986; Hazardous Wastes (Management and Handling) Rules, 1989; Coastal Regulation Zone Notification 1991; National Environment Tribunal Act, 1995; The National Environmental Appellate Authority Act, 1995; Biological Diversity Act 2002; Environment Impact Assessment Notification, 2006; Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; National Resettlement and Rehabilitation Policy, 2007; and the Proposed Land Acquisition and Rehabilitation & Resettlement Bills. The State specific Acts / Regulations in the three project states include Gujarat Fisheries Act, 2003; Orissa Marine Fishing Regulations Act (OMFRA) and Rules 1982; the Orissa State R & R Policy; West Bengal Marine Fishing Regulations Act, 1993 and Rules 1995. The project is conformity to each of these above laws and regulations, where applicable.

44. **Regulatory Clearance Requirements for Project Activities.** The project activities have been carefully planned as such each of these activities are permitted under the Coastal Regulation Zone Notification, 1991. Additionally each of the state level project components will be endorsed by the State Coastal Zone Management Authorities by December 2009. For the entire project an endorsement from the National Coastal Zone Management Authority will be available in January 2010. One of the project activities – the establishment of solid waste landfill and treatment facility at Paradeep in Orissa will require a separate clearance under the Environmental Impact Assessment Notification, 2006 from the Orissa State Environmental Impact Assessment Authority, which will be obtained in January 2010 much before this activity is implemented.

45. **Applicable World Bank Policies:** The following World Bank's Environmental and Social safeguard policies are applicable for the project, and the project has been designed according to the principles and requirements of these policies – (i) Environmental Assessment, OP 4.01, (ii) Natural Habitat, OP 4.04, (iii) Indigenous Peoples, OP 4.10, (iv) Cultural Property, OP 4.11, (v) Involuntary Resettlement, OP 4.12, and (vi) Forests, OP 4.36.

## 1.5 STAKEHOLDERS CONSULTATION PROCESS

46. This project benefits from inputs derived from wide spectrum stakeholder consultations carried out over a period of time. These included consultations conducted by the EA/SA consultants; those initiated by MOEF, and their appointed organizations, other formulated committees, both at the State and National levels. Inputs were also derived from policy level consultations conducted specifically for the Draft CMZ Notification 2008.

47. **Stakeholder consultations for priority investments in the States** were designed such that: (i) a wide cross section of people / communities/ including all categories specifically vulnerable groups were included in the decision making process; (ii) links between communities and their natural resource base, especially adjacent to project locations were explored; (iii) public awareness and information sharing on the overall project components and priority investments, alternatives, benefits and entitlements where applicable were promoted; and (iv) views on designs and solutions from the communities were solicited. Outputs from this process were integrated into the design where technically feasible.

48. **Consultations undertaken for revision of CRZ and formulation of CMZ Notification** – As documented in the Swaminathan Committee report which primarily evolved from widespread consultations with various stakeholders and in-depth discussions with NGOs. The NGO's consulted were primarily of the opinion that CRZ Notification has been repeatedly "relaxed and amended, ( about 25 times) and each time amendments/ relaxations have been made for taking up developmental activities, contrary to the principle of Environment (Protection) Act, 1986 and the objective of the CRZ Notification. Key suggestions included the need for stringent enforcement mechanisms, with greater transparency and accountability in implementation of the notification. Further, the notification should be strengthened by protecting the rights of the fishermen communities and others, who are dependent upon coastal resources.

49. Various other consultations were also conducted by different organizations in addition to the comments / suggestions received by MoEF on the draft notification. This was followed by an appointment of a specific high level review committee (again chaired by Prof. Swaminathan) to examine the comments received by MoEF on the draft CMZ notification, 2008 and to advise on the policy and legal framework for integrated coastal zone management. The expert committee concluded that the coastal zone management notification of 2008 be allowed to lapse. Thereafter, MoEF is advised to draft a revised notification maintaining the CRZ notification, 1991 as the basic framework, with suitable additions/ amendments taking into account the new challenges likely to arise from climate change induced sea level rise, and the growing pressure of population on coastal resources and biodiversity.

50. **Consultations with state officials on the Draft CMZ Notification:** The various state officials were positive towards the proposed approach for demarcation of the "hazard line" to be based on scientific data and principles. All the States agree that such a foundation for coastal management is necessary, although the return interval (on a 1 in a 100 years or lower) could be debatable. The concept of "Hazard Line" substituting the "Setback Line" was also welcomed by the State/ UT Governments, with general consensus that its basis should be re-visited after 5 to 10 years. Most of the coastal states preferred to retain the existing CRZ regulation with appropriate modifications. The States/ UTs insisted on a "Participatory Management", which is the essence of the Swaminathan Report – for the delineation of the Hazard Line and also the CMZ Notification before being implemented by the MoEF. The State Governments and the UTs opined that the local government must be vested with greater powers to implement coastal regulation and the ICZMP. The suggestion to strengthen the State Coastal Zone Management Authority was also made during the meeting. Suggestions and objections on the Draft CMZ Notification have been sent to the MoEF by all the State/ UT Governments and are awaiting a follow up by the Ministry.

51. **Consultations undertaken by an appointed NGO on behalf of MoEF regarding the proposed CMZ Notification:** Center for Environment Education (CEE) conducted 35 consultations across 13 coastal states and UTs (from July to August, 2008), with representatives of local communities and NGOs, and submitted a report to MoEF in September 2008. The key issues and concerns raised in the consultations held by the Centre for Environment Education are summarized as follows: (i) retention of the Coastal Regulation Zone with the incorporations of improvements; (ii) improving clarity regarding

the setback line, ecologically sensitive areas, integrated coastal zone management and the methodologies of management, etc.; (iii) improvements and penalties to existing violations regarding the CRZ Notification, 1991 which has enough scope to manage coastal zones efficiently if implemented effectively; (iv) involvement of stakeholder groups particularly from local communities for drafting the CMZ Notification, 2008 framework; (v) caution regarding the CMZ Notification, 2008 introducing new management methodologies which are open to subjective interpretation and can/ could be used to promote and legalize corporate activities, promote Special Economic Zones (SEZ), thus opening up the coastal space and resources to the industrial sector without considering the basic rights of the local community; (vi) adequate addressal of the roles of the local authorities and state governments in the proposed CMZ Notification, 2008 management methodology and structure, to ensure basic rights and opportunities for local communities and their representatives (Panchayat Members) to participate and plan the activities in their local environment and settlement areas; (vii) apprehensions of further dilution of the CRZ Notification, 1991 especially regarding interests of fisher folk; (viii) need for a legislation or an Act on coastal management to ensure protection of the coastal ecology and the basic rights of the traditional coastal communities. Elected members of the legislative assembly should discuss the coastal policies to initiate such an Act.

52. **Consultations undertaken for Project components by MOEF:** Consultations were held by MoEF pertaining to the National components of the project on mapping of hazard line (defining hazard line and parameters to be considered), Environmentally Sensitive Areas (criteria to be adopted for selection of ESA's) and capacity assessment to manage India's coastal zones in an integrated manner. This involved a national level workshop series of regional workshops, and brain storming sessions involving national and international technical experts. In addition to the above, various consultations were conducted by the three participating states i.e. Gujarat, Orissa and West Bengal in each of the states involving various stakeholder groups in the form of formal and informal discussions. The various issues raised by the stakeholders were addressed by the state implementing agencies and integrated into the project design where relevant and to the extent possible.

53. **Consultations undertaken for Project components by the Communication Consultants:** these consultants, appointed by MoEF for developing the communication strategy, aimed to use this forum to generate awareness about the ICZMP among various stakeholder groups, minimizing misconceptions and creating stakeholder buy-in for the Project and the ICZM approach; help create two-way channels of communications between stakeholder groups at various levels and the project authorities to help in the design and implementation of the ICZMP; help develop the strategic communication capabilities of agencies engaged in implementing the program at the national, state and local levels; help incorporate processes and mechanisms that enhance public disclosure and transparency within the ICZMP project design and implementation activities. The key outcome from these consultations is mentioned below: - (i) all print media reports are on the MOEF's draft CMZ notification, and very little on the ICZMP has been reported; (ii) confirmed perception that regulations were not understood by the common coastal dweller, in particular the addressal of fisher people's views and concerns; (ii) need for accurate information to counter belief that livelihoods are not really safeguarded by this project; (iii) confirmed confusion regarding the transformation of CRZ categories to CMZ zones; (iv) need for greater information sharing regarding concerns over lack of transparency in implementation, lack of mechanisms of monitoring and redressal of grievances. Further these consultations helped to identify communications gaps that needed to be addressed for various stakeholder groups.

54. **EA/SA Study Consultations covering all three states:** The Consultants (CED) project team held with officials of State departments like forest, environment, fisheries, water resources etc and some other stakeholders like fishermen, boat workers and other coastal inhabitants. The main objective was

to identify social and environmental issues in the project areas pertaining to the priority investments. The key issues identified are summarized as follows:

- a. **Gujarat** : (i) pollution of water bodies, land and ground water contamination in the surrounding areas of the proposed STP at Jamnagar for collection, treatment and safe disposal of urban sewage; (ii) various construction activities for STP, lab buildings etc may cause water, air and noise pollution in the vicinity, if not mitigated properly; (iii) the proposed site for STP was illegally used by local people for cultivation for one season and now voluntarily withdrawn; needs to be fully documented; (iv) selection of beneficiaries for planting and sustainable use of Mangroves, various ecotourism activities and socioeconomic development activities may create conflict among the stakeholders; (v) the Coral transplantation activity may have some consequences to the basic ecology of present reef systems (subsiding the growth of present reefs and loss of biodiversity due to one species dominance etc); (vi) if pollution is not checked properly, the survival of the transplanted species will be affected; (vii) the Eco-tourism Development activities, if not properly planned and managed will create issues like air, water and noise pollution and biodiversity loss; (viii) the Mangrove restoration activities, if not planned properly will cause loss of local species present in some areas; (ix) proper marketing and capacity building strategies needed for various economic activities associated with ecotourism.
- b. **Orissa**: (i) Adapting coastal protection measures in some areas and collection of sand for filling bags during the coastal protection activity may have some impact on coastal geomorphology and stability of beaches in the neighbouring unprotected areas; (ii) the construction activities proposed for various activities like protection measures, regional laboratory etc, if not mitigated properly may cause water, air and noise pollution in the vicinity during construction phase; (iii) construction activities may cause temporary obstruction to passage, if not properly managed ; (iv) selection of beneficiaries for various ecotourism and socioeconomic development activities may create conflict among stakeholders; (v) the Eco-tourism development activities, if not properly planned and managed will create issues like air, water (oil spill from boats) and noise pollution and biodiversity loss; (vi) proper marketing and capacity building strategies needed for various economic activities associated with ecotourism; (vii) the mangrove restoration activities, if not planned properly may cause loss of local species present in some areas; (viii) waste management in the ecotourism areas needs to be given high priority; (ix) the solid waste management unit may create pollution issues in nearby areas, during transportation and processing.

However, following mitigation measures have been suggested in the Environment Management Plan (EMP);

- i) Sands for geo-tube will be collected from sea
- ii) Essential mitigation measures for construction of Lab and other structures have been suggested during construction phase in their respective DPRs.
- iii) Mitigation measures have been suggested for not creating temporary obstruction during construction phase.

- iv) To avoid this problem help of local NGOs will be considered (particularly during SHG formation).
  - v) To check noise pollution and waste disposal in eco-tourism activities, implementing agencies have asked to make appropriate mitigation steps.
  - vi) For marketing and capacity building implementing agencies have been suggested to keep appropriate provision for the purpose
  - vii) As the mangrove plantation is only planned in the already destructed/ uncovered areas, it is not expected to cause loss of local species. In case of evasion species, they will be removed time to time.
  - viii) Implementing agencies have been suggested to make necessary mitigation plan for waste disposal in the ecotourism areas.
  - ix) Necessary mitigation activities have been proposed for solid waste management during transportation and processing
- c. **West Bengal:** (i) pollution of water bodies, land and ground water contamination in the surrounding areas of STP proposed for collection, treatment and safe disposal of urban sewage; (ii) adapting coastal protection measures in some areas and collection of sand for filling bags during the coastal protection activity may have some impact on coastal geomorphology and stability of beaches in the neighboring unprotected areas; (iii) protection with RCC will adversely affect marine biodiversity and economic activities in nearby brackish water system; (iv) various construction activities for STP, sewerage lines, electrification, tourism facilities etc., may cause water, air and noise pollution in the vicinity, if not mitigated properly; (v) construction activities may cause temporary obstruction to passage, if not properly managed; (vi) selection of beneficiaries for shop rehabilitation, ecotourism and afforestation and other livelihood generation activities may create conflict among the stakeholders; (vii) proper marketing and capacity building strategies needed for various economic activities associated with ecotourism; (viii) the afforestation activities, if not planned properly will cause loss of locally important species ; (ix) chances of water body pollution from the fish auction centre, if not properly managed; (x) the Eco-tourism Development activities, if not properly planned and managed will create issues like air, water and noise pollution and biodiversity loss ; (xi) tourist accommodation and Waste disposal system during festival periods is not managed properly now creating pollution. Special effort is needed in this regard.

55. **Additional consultation with non-government organizations, community organizations and experts** by the MOEF and the states of Gujarat, Orissa and West Bengal: Each of the above agencies undertook substantial consultation at state capitals and at community level with several non-government agencies, community agencies and experts. Altogether 122 non-government agencies or community organizations were consulted (86 at national level, 22 in Gujarat, 14 in Orissa and 18 in West Bengal), and a total of 118 expert consultation sessions were organized during January 2008 to September 2009. Before finalization of the project, stakeholder consultations are proposed in New Delhi, Gandhinagar, Bhubaneswar and Kolkata (in December 2009 – January 2010). Consultations will continue throughout the project period.

## 1.6 ANALYSIS OF ALTERNATIVES

56. **Alternatives analyzed for overall project design included to:** (i) design the project as a narrow investment operation, concentrating on habitat protection and pollution control, in which the MoEF, has substantial experience. This would have been limited with respect to sustainable outcomes for coastal resources e.g., ( coral reefs cannot be protected unless sewage flow to the reefs stops); would not have responded to the request from Gol for supporting their reform agenda; and may have been limited, in addressing jurisdiction issues e.g., MoEF has no jurisdiction on urban sanitation or similar other sectors responsible for degradation of coastal ecology; (ii) to dedicate most of the project investment for coastal protection infrastructure, indirectly linking capacity building actions. This was rejected due to the lack of understanding of regional coastal sediment transport processes, the risk of creating larger impacts elsewhere in the coasts, and lack of institutional viability; (iii) to limit the project only to training, awareness campaigns and studies on coastal conservation - mainly at national level but with possible inclusion of modules for each coastal state. This was rejected as it would have had only marginal impact on sustainable development of the coastal zone; would not have helped adoption of ICZM approaches (as the global experiences point out); and as such was not requested by the Gol.

57. **Selection of three participating states, coastal stretches and priority investments:** these were determined by the intent, and importance placed by Gol on the decentralized management of coastal zones at state or local government levels. It was recognized that as both land and water are state subjects, no development or conservation plan can be prepared or implemented at the national level. While the national government may make policies and legislation (subject to state ratification, as far as jurisdiction apply), application of ICZM will be at the state/local levels. A project to support operationalization of ICZM approaches in India would not have had any impact unless such approaches are piloted at the state/local levels. International experiences also suggest that adoption of ICZM policies do not result in conservation or sustainable management of coastal zones, until the practical benefits of adopting the policies are demonstrated at the local level.

58. The selection of priority investments was evolved through a consultative process among relevant stakeholders. This offered the possibility of demonstrating investments in conservation of ecological and cultural heritage resources, livelihood improvement activities for coastal communities, including alternative livelihood for people where return from traditional livelihood is reducing; and pollution control or mitigation. In design of the priority investments, attention was focused on clear demonstration of inter-sectoral integration; community participation; mainstreaming gender, poverty and equity issues. As applicable, design of each priority investment concentrated on the need to demonstrate physical, environmental and financial sustainability; quality control; and clear allocation of financial and human resources for operation and maintenance. The alternatives to the project proposal were evaluated considering the following concerns:

- (a) The pilot states selected for project interventions are generally more complex in nature with relatively higher degree of contradictions thereby likely to have more adverse impacts.
- (b) Pilot investments were short listed where inter-sectoral coordination was the key to success of the proposed investments. The success of these interventions will assist in institutional arrangements & adequate knowledge systems to enable the desired shift to ICZM approaches.
- (c) The priority stretches were selected by the state governments based on the priority of environmental issues and problems associated with it.

## 1.7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

59. A **detailed environmental and social management plan (ESMP)** has been prepared along with the reporting responsibility and monitoring indicators for all project components. Each of the sub-components or activity has been designed to maximize long-term benefits and institutional sustainability, and to avoid the avoidable impacts. The ESMP includes (i) monitoring to ensure that the avoided issues does not recur; (ii) mitigation and management plans, (ii) Monitoring & Evaluation including social audit and third-party audits, (iv) grievance redress process, (v) adequate budget, (vi) adequate staffing to oversee project implementation.

60. **Integration of environmental issues into project design:** This project is essentially designed to address the aforementioned environmental and social issues, by supporting the Gol's program on conservation and sustainable management of coastal zone. Therefore, the overall environmental impacts of the project are expected to be positive, beneficial, and aimed towards long term sustainability. However, at a local and transient scale, the activities proposed under the project may result in damage to environmental resources, unless carefully planned. Therefore, during the design of the project, adequate attention was placed on avoidance and mitigation of any potentially damaging environmental affects. Each of the sub-components or activity has been designed to maximise long-term benefits and institutional sustainability. All investments are designed to preserve the natural heritage of the coastal areas. Environmental benefits of the project are associated with sound management of coastal habitats and protection of environmental resources and functions that provide services to coastal inhabitants.

61. **Natural Habitats, National Parks, Wildlife Sanctuaries:** No project activity will involve any (significant or insignificant) conversion or degradation of natural habitats (whether protected or not). No activity in the project will include anything to affect (i) the integrity of the natural habitats (by land use or water use).(ii) No land clearing;(iii) no replacement of natural vegetation; (iv) no permanent or temporary flooding of natural habitats; (v) no drainage, dredging, filling or channelization of wetlands;. The project does not promote any infrastructure to induce ribbon development at all. Possibilities, howsoever distant, of impacting the native vegetation has been carefully avoided. Activities within protected areas have been carefully designed to avoid even remote chances of impacts on micro-habitats. Project activities are designed to enhance capacities required to manage long-term conservation needs. Project will monitor the chances of third-party impacts on ecological resources of the coastal zone, and in the event of any such third party impacts, quick actions will be taken during project implementation period, including, for example, mobilizing resources from the undisbursed balances to facilitate and undertake, as and when necessary the requisite mitigation or impact reduction measures.

62. **Forests, flora and fauna:** The project (i) does not include any logging, (ii) does not impact the health or quality of any forest, (iii) does not either increase or decrease access or rights of communities to forests or minor forest produce; (iv) does not propose to bring about any changes in management, protection and utilization of forests. All mangrove and shelterbelt plantations are proposed in areas which do not have any forest cover for a long time. No activity linked to the project is likely to (i) have impact on health or quality of the forests (including mangrove and shelterbelt); or (ii) adversely affect the rights and welfare of people and their dependence upon or interaction with the forests in the project area. All possibilities of edge deterioration have been carefully examined and avoided. All possibilities, however remote, of introducing invasive exotic species have been carefully avoided. For all mangrove and shelterbelt plantations, the project uses community management approaches, which is the established practice in India promoted by Bank projects. Mangrove plantation will take place on

"revenue land" and "forest land". No "forest" area, i.e., any land with forest cover will be used for mangrove or shelterbelt plantation (whether owned by the revenue department or the forest department). No regulatory clearance under the Forest (Protection) Act ("forestry clearance") will be required for the project activities including for mangrove and shelterbelt plantation. No synthetic or chemical pesticide or herbicide will be used in any plantation or during deweeding or clearing operations.

63. **Cultural Properties:** The project does not have any direct adverse impact on any known physical cultural property. The project does not involve excavation works, or polluting activities that might potentially impact. The project supports conservation, renovation and restoration of eight dilapidated cultural properties (although none of these are listed as national heritage). The project also supports renovation and restoration of a marine aquarium at Digha (West Bengal) and establish a oceanarium-cum-research centre at Dwarka (Gujarat). All architectural conservation and restoration works will be undertaken by specialized supervisors and craftsmen. The policy is triggered to ensure that the architectural conservation and restoration works are undertaken at the best professional standards, and are duly supervised. In addition to the activities listed here, the project will ensure that cultural values are preserved while planning and implementing all project financed activities through a variety of measures included in the design of these activities.

64. **Inclusion of poor, vulnerable groups living in coastal communities is a project priority.** Inclusion, participation of coastal communities, and issues and constraints faced by women were integrated in the design of the project since project reconnaissance. Each of the activities proposed by the state PEAs examines options for addressing these issues. These issues also formed the basis of stakeholder consultation at national, state and village levels. A number of priority investments target these groups, and support their options for improved livelihood, and involve CBOs for implementation of these investments. The agenda on inclusion is expected to continue in the design of ICZM plans. The project is also designed to provide livelihood security to local communities. Beneficiary selection will be guided by pre-determined criteria such as inclusion of vulnerable groups. To ensure transparency, the criteria used will be publicly disclosed using local vernacular media and other tools. Project will ensure that scheduled tribe population and their aspirations are represented adequately in village level planning related to local conservation and livelihood improvement activities in the project. Finally, gender mainstreaming is a focus area in the project. Based on borrower commitment, activities are being integrated under each proposed pilot investment to address women's needs. For instance, among the priority investments contemplated in West Bengal and Orissa, efforts are being made to advance opportunities for fisherwomen to market their wares (raw fish, more value added products like fish pickles or traditional handicrafts) in areas where relevant forward linkages for marketing exist.

65. Social analysis undertaken (as part of EA/SA) identified the different **scheduled tribe groups** who could be among the potential beneficiaries. Based on all relevant cultural anthropological studies, culturally appropriate benefits can be extended to a tribal community only when the scheduled tribe (ST) communities live in a tribal settlement in India. A screening of the 267 villages where the project activities will be implemented suggested that no separate plans for ensuring that the activities are culturally appropriate to the STs are required. As per result of the screening, no village contains any distinct IP settlement (or a distinct tribal habitat). Of the 267 villages in the project area, only one village in Gujarat has substantial tribal population (87%) and in itself a tribal settlement. The village plan prepared by villagers is itself will ensure cultural appropriateness. In all other villages, the ST population is too low - 1% or less in 205 villages; 1-5% in 36 villages; 5-10% in 9 villages; 10-25% in 12 villages; and 25-50% in 4 villages. In none of these villages the scheduled tribe population can live in a distinct tribal settlement that characterize the scheduled tribe community with respect to collective attachment to

distinct habitats, or with respect to distinct cultural, economic, social or political institutions. Naturally, no meaningful separate plan can be prepared in these villages to ensure that these plans are culturally distinct from what is culturally appropriate to these village communities as a whole. However, each village level plan will ensure that the ST people are distinctly represented in the planning exercises, and that the project activities are planned and implemented in full prior information and consultation with all sections of the vulnerable social groups including the scheduled tribe population.

66. **Involuntary Resettlement:** The project design has ensured that potential of involuntary resettlement is absolutely minimized. No land acquisition is involved. The project design has ensured that potential of involuntary resettlement is absolutely minimized, and all known possibilities have been avoided. The project will support mangrove and shelterbelt plantation forest or revenue land; or in the case of Orissa, shelterbelt plantations on 168 hectare of Government and village forest land with consent of Eco Development Committees (EDCs) and without any land acquisition. Site verification has been conducted for 15,500ha of revenue and forest land; and no squatter or encroachment has been identified. All cases of voluntary land donation will be clearly documented and disseminated in village *panchayat* offices. Therefore, all the potential impacts had been examined and not found. But experience suggests that unless all project activities are complete, the potential chance of squatter or encroachment cannot be totally ruled out. To take care of possible (even if unlikely) cases, the project has prepared a resettlement policy framework (RPF), consistent with the National Resettlement and Rehabilitation Policy (NRRP 2007) and the Bank's OP 4.12. Note that the RPF is made only for unidentified problems which cannot be absolutely ruled out; and not because such impacts have not been examined. The RPF consists of (i) a monitoring mechanism to identify potential, even if unlikely, cases of (non-building) squatters and encroachers; (ii) an entitlement framework to compensate and assist for possible types of losses; and (iii) a three-tier grievance mechanism to be widely publicized. As the number of attributable cases is not known, notional numbers were used to define a resettlement and rehabilitation budget of INR 134 million, which will be updated as these chance cases are discovered during the implementation period.

67. The project will also finance preparation of ICZM plans for the Gulf of Kachchh (Gujarat), Paradip-Dhamra and Gopalpur-Chilika coastal stretches in Orissa, and the entire West Bengal coast. The primary objective of ICZM plan is to protect of life and property of vulnerable coastal communities. Each of these plans will be prepared at a regional scale. It is unlikely that the planning exercise will be able to identify directly attributable cases of involuntary resettlement. However, the plan process will include an examination of the final plan for its consistency with the World Bank OP 4.12, the applicable national policy and legislation on displacement from or loss of access to traditional and customary rights and assets; as well as with the objective of ICZM plans.

68. The project also has the **social accountability mechanisms** within the implementation and monitoring processes of its priority investments across the components 2, 3 and 4. The key approaches that would be adopted for ensuring social accountability would be any or a combination of participatory processes guiding social audit, citizen score card and report card to acquire feedback on performance of the priority investments and record citizens' recommendations for improvement. The social accountability mandate will be further strengthened through a strong grievance redress mechanism. The grievance redressal cells will be established both at NPMU and SPMU level that will register user complaints using various mediums (e.g. a dedicated, toll free phone line, web based complaints, written complaints and open public days) and address them in a time bound system. The project will abide by the RTI Act of 2005 and under provisions of Section 4, it will commit itself for proactive disclosure and sharing of information with the key stakeholders, including the communities/beneficiaries. The project will have a communication strategy focusing on efficient and effective usage of print and electronic

media, bill boards, posters, wall writing, and adoption of any other method suiting local context, logistics, human and financial resources.

69. **Environment Monitoring and reporting plan:** A detailed component wise monitoring plan has been prepared for the project. Monitoring involves periodic assessment to ascertain whether activities are being undertaken according to the plan. It includes component wise activities, monitoring indicator, tool and frequency, responsibility for carrying out the monitoring and reporting mechanism.

## 1.8 BUDGET FOR ENVIRONMENTAL AND SOCIAL MANAGEMENT & MONITORING

70. The project has prepared a tentative budget considering the various components for implementation of the environmental and social management measures and associated monitoring costs. The estimated budget is INR 373 million.

Type of Activities	National	Gujarat	Orissa	West Bengal	Total
Capacity and Institution Building	12.90	8.80	10.42	0	<b>32.12</b>
ICZM Planning Process	0	3.52	5.21	19.93	<b>28.66</b>
Local Investments	0	49.19	73.62	189.77	<b>312.58</b>
Total	<b>12.90</b>	<b>61.51</b>	<b>89.25</b>	<b>209.70</b>	<b>373.36</b>