

**United Nations Development Programme
Country: India**



PROJECT DOCUMENT

Project Title: Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the East Godavari River Estuarine Ecosystem

UNDAF Outcome(s)/ Indicator(s): UNDAF Outcome 4: By 2012, the most vulnerable, including women and girls, and government at all levels have enhanced abilities to prepare, respond, and adapt/recover from sudden and slow onset of disasters and environmental changes.
#4.1. Mainstreaming environment and energy

UNDP Strategic Plan Environment and Sustainable Development Primary Outcome:

Expected CPAP Outcome(s) /Output/Indicator(s): Outcome 4.3: Progress towards meeting national commitments under multilateral environmental agreements;
Output 4.3.2: National efforts supported towards conservation and management of natural resources (*Indicator:* Number of new joint initiatives undertaken for integrated biodiversity conservation)

Implementing Partner/Responsible Partner: Ministry of Environment & Forests (MoEF), Government of India / Wildlife Wing, Environment, Forests, Science & Technology Department, State Government of Andhra Pradesh.

Brief Description: The East Godavari River Estuarine Ecosystem (EGREE) encompassing the Godavari mangroves (321 km²) is the second largest area of mangroves along the east coast of India (after Sundarbans). The area is rich in floral and faunal diversity, and generates significant ecological and economic benefits such as shoreline protection, sustaining livelihoods and carbon sink services. There are 35 species of mangroves, of which 16 are true mangroves and the rest associated mangrove species. This includes one nearly threatened (IUCN) species (*Ceriops decandra*) and three rare species. There are important nesting sites for migratory turtle species, notably the endangered Olive Ridley turtle, the critically endangered Leatherback turtle and Green turtle. The area serves as spawning grounds and as a sanctuary for the growth and development of numerous fin and shell fish. It is an Important Bird Area (IBA) with a recorded population of 119 bird species, of which 50 are migratory. In recognition of its national and global biodiversity significance, a part of the EGREE area is gazetted as Coringa Wildlife Sanctuary (CWLS). In addition to the biodiversity significance of the area, it is also of enormous economic significance. The last few decades have witnessed rapid economic changes and emergence of large scale production activities in EGREE. Currently the main production sectors operating in the landscape/ seascape are fisheries, aquaculture, salt pans, manufacturing activities such as, oil and gas exploration, fertilizers, edible oil, rice products, tourism and ports. In addition, there is dependency on the mangroves and marine resources by local villagers. These activities are impacting the overall ecological integrity of the EGREE particularly the mangrove ecosystems in CWLS and adjoining areas, with associated impacts on the livelihoods of local people. The existing institutional arrangements in the EGREE are quite inadequate in addressing the biodiversity related issues from a landscape/ seascape perspective. The UNDP-GEF intervention aims to mainstream biodiversity conservation into the production sectors of EGREE through: (1) Cross-sectoral planning in the EGREE that mainstreams biodiversity conservation considerations, (2) Enhanced capacity of sector institutions for implementing biodiversity-friendly sector plans, (3) Improved community livelihoods and sustainable natural resource use. By project end, it is anticipated that production activities in at least 80,000 ha of the EGREE mainstream biodiversity conservation objectives, in turn improving the conservation prospects of several globally significant species apart from contributing to the socio-economic well being of the region.

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| | |
|--|-----------------|
| Total budget | US\$ 24,023,636 |
| Total allocated resources (cash): | |
| Partner-managed | |
| o Government | US\$ 18,000,000 |
| UNDP-managed | |
| o GEF | US\$ 6,023,636 |

Agreed by Implementing Partner (Government of India): P. Vinay Kumar "1/4"
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ACRONYMS AND ABBREVIATIONS

| | |
|--------|--|
| APCZMA | Andhra Pradesh Coastal Zone Management Authority |
| APPCB | Andhra Pradesh Pollution Control Board |
| APFD | Andhra Pradesh Forest Department |
| APR | Annual Project Review |
| ATLAS | UNDP's Enterprise Resources Platform |
| AWP | Annual Work Plan |
| BSAP | Biodiversity Strategy and Action Plan |
| CB | Conservation Biologist |
| CBD | Convention on Biological Diversity |
| CDR | Combined Delivery Report |
| CO | Country Office |
| COS | Communication and Outreach Specialist |
| CP | (UNDP) Country Programme |
| CPAP | (UNDP) Country Programme Action Plan |
| CPCB | Central Pollution Control Board |
| CRZ | Coastal Regulation Zone |
| CSR | Corporate Social Responsibility |
| CTCT | Community to Community Training |
| CWLS | Coringa Wildlife Sanctuary |
| CZMP | Coastal Zone Management Plan |
| EB | Executing Body |
| EDC | Eco-Development Committee |
| EGREE | East Godavari River Estuarine Ecosystem |
| EIA | Environmental Impact Assessment |
| EPA | Environmental (Protection) Act, 1986 |
| EqTAP | Development of Earthquake and Tsunami Disaster Mitigation Technologies and their Integration for the Asia-Pacific Region |
| FA | Financial Assistant |
| FAA | Financial and Administrative Assistant |
| FD | Forest Department |
| GB | Governing Body |
| GEF | Global Environment Facility |
| GF | Godavari Foundation |
| GoI | Government of India |
| Ha | Hectares |
| IBA | Important Bird Area |
| IC | Incremental cost |
| ICZM | Integrated Coastal Zone Management |
| IGCMP | India GEF Coastal and Marine Programme |
| IP | Implementing Partner |
| IR | Inception Report |
| IUCN | World Conservation Union |
| IW | Inception Workshop |
| JFM | Joint Forest Management |
| KMC | Kakinada Municipal Corporation |
| KSPL | Kakinada Sea Port Limited |
| LLPMU | Landscape-Level Project Management Unit |
| LPAC | Local Project Appraisal Committee |
| M&E | Monitoring and Evaluation |
| MMU | Mangrove Mangement Unit |
| MoEF | Ministry of Environment and Forests |
| MPEDA | Marine Products Export Development Authority |
| MSSRF | M. S. Swaminathan Research Foundation |
| NaCSA | National Centre for Sustainable Aquaculture |
| NBAP | National Biodiversity Action Plan |
| NGO | Non-government Organization |

| | |
|----------|---|
| NPD | National Project Director |
| NPMU | National Project Management Unit |
| PA | Project Associate |
| PAs | Protected Areas |
| PCCF | Principal Chief Conservator of Forests |
| PCPIRs | Petroleum, Chemicals and Petrochemical Investment Regions |
| PIMS | Project Information Management System |
| PIR | Project Implementation Review |
| PC | Project Coordinator |
| PM | Project Manager |
| PPG | Project Preparation Grant |
| PRIs | Panchayati Raj Institutions |
| PSC | Project Steering Committee |
| RCU | Regional Coordination Unit |
| SADA | Shore Area Development Authority |
| SBAA | Standard Basic Assistance Agreement |
| SE | Subject Expert |
| SELS | Socio-economic and Livelihoods Specialist |
| SEZ | Special Economic Zone |
| SHG | Self-Help Group |
| SO-2 | (GEF's) Strategic Objective 2 (under the Biodiversity Focal Area) |
| SPD | State Project Director |
| SPMU | State Project Management Unit |
| SPSC | State Project Steering Committee |
| SRF | Strategic Results Framework |
| TAG | Technical Advisory Group |
| TOR | Terms of Reference |
| TPR | Tri-partite Review |
| TTR | Terminal Tri-partite Review |
| UNDAF | United Nations Development Assistance Framework |
| UNDP | United Nations Development Programme |
| UNDP-CO | United Nations Development Programme – Country Office |
| UNDP-GEF | United Nations Development Programme – Global Environment Facility Unit |
| USD | United States Dollar |
| VLI | Village Level Institutions |
| VSS | Van Samrakshana Samiti |

1. SITUATION ANALYSIS

Part 1A: Context

1.1 *Geographic and biodiversity context*

1. India has a coastline of about 7,500 kilometers of which the mainland accounts for 5,400 kilometers, the Lakshadweep Islands account for 132 kilometers, and the Andaman & Nicobar Islands for 1,900 kilometers. The coastline is endowed with a wide range of ecosystems such as mangroves, coral reefs, sea grasses, salt marshes, sand dunes, estuaries, lagoons and natural habitats. The abundant coastal and offshore marine ecosystems include about 6,740 square kilometers of mangroves, including part of the Sundarbans, the Bhitarkanika, the Pichavaram, and the Coringa, which are among the largest mangroves in the world. These habitats and ecosystems store and cycle nutrients, filter pollutants, protect shorelines from erosion and storms, play a vital role in regulating hydrological functions and modulating climate as they are a major carbon sink and oxygen source, and, in addition, sustain livelihoods of coastal communities.

2. The coastal region that is a focus of the proposed project, namely the East Godavari River Estuarine Ecosystem (EGREE), is located on the eastern side of the Indian peninsula, in the State of Andhra Pradesh. The long coastline of Andhra Pradesh stretches over 973.7 kilometers (12% of India's total coastline), and covers 9 districts from Srikakulam to Nellore. A prominent feature of this coastline is its mangrove areas that extend over nearly 582 km² and are clustered in the estuarine areas of the Godavari River and Krishna River. The Godavari mangrove ecosystems alone constitute 321 km², making it the second largest area of mangroves along the east coast of India.

3. The Godavari mangrove wetlands are located between 16^o30'-17^oN and 82^o10'-80^o23'E in the East Godavari district of Andhra Pradesh. Apart from the Coringa Wildlife Sanctuary (CWLS), the area of the EGREE includes six Reserve Forests viz. Rathikalava, Masanitippa, Maltatippa, Balusutippa, Kothapalem and Kandikuppa. Godavari is the largest of the Indian peninsular rivers that originates in the Western Ghats, traverses a length of 1,446 km over a catchment area of 3,14,685 square kilometers, before draining into the Bay of Bengal. The EGREE falls in the deltaic region of Godavari river system. The landscape/ seascape of the EGREE is characterized by rivers and channels, flood plains, natural levees, mangrove forests, tidal channels, tidal flats, lagoon, Kakinada Bay, sand spits, mainland beaches, sand dunes and paleo sand ridges. Natural levees vary from 3 to 5 meters in width and are about 1 meter in height. This prevents free flow of tidal water in some of the mangrove areas. Kakinada bay is another important geographical feature, and consists of estuaries adjoining the lagoon. Sediments deposited at the confluence have resulted in the formation of a number of spits. The sand spits of Kakinada Bay, including Hope Island, are a unique feature of the area. The initial formation of a small sand spit dates back to 1864¹. The spit extended to a length of about 16 kilometers by 1968, and has grown to a length of about 17 kilometers now, with a head of about 5 kilometers and a tail of 12 kilometers. The sand spit protects the mangroves from the ocean currents and forms a sheltered coastline. In addition, accretion and natural establishment and growth of mangroves along Kakinada Bay are significant and contribute to a gradual increase in the mangrove area.

4. Kakinada Bay, the sand spits and mangrove waterways of Coringa are highly dynamic. Erosion of the coastline can be seen from the Godavari River mouth to the tip of Hope Island. Elongation and enlargement of Hope Island in the north and northwest directions is also visible. There has been a shift in the sand spit towards the west, which has resulted in the loss of mangrove vegetation. Survey charts from the period 1848 to 1971 show that until 1889 the river discharged a major portion of water directly into

¹ Reddy and Prasad, Indian Journal of Earth Science 1982 9: 167-173

Kakinada Bay. At present, the discharge is mainly through the mouth near Bhairavapalem on the northern side². The Corangi mangrove region, including the creeks and channels, is also found to be shallow near the Bay, with depths varying between 1 and 3 meters. During low tide, large areas of mud flats are exposed in Kakinada Bay.

5. The EGREE, the abutting coastal area, and its associated open sea ecosystems, including Kakinada bay, are rich in floral and faunal diversity (see Annex 1), and also generate other ecological and economic benefits such as shoreline protection, ecosystem based livelihoods, and carbon sink services (see Box A). Mangrove forests situated in these deltaic wetlands cover an area of 32,140 hectares (see Table 1 and Map 2). In total, there are 35 species of mangroves of which 16 are true mangroves and the rest are associated mangrove species. In the project area, there is one nearly threatened (IUCN) mangrove species (*Ceriops decandra*) which is not reported in other adjoining areas and there are three rare species (*Sonneratia alba*, *Scyphiphora hydrophyllacea* and *Xylocarpus moluccensis*). This is probably the only place in India where three species of *Avicennia*, i.e. *Avicennia officinalis*, *Avicennia marina*, and *Avicennia alba* are found together in mixed forests³.

Box A: Ecological Services of Godavari Mangroves

There are scattered efforts to investigate the ecological importance of the Godavari mangroves both as resource repository and its regulatory role in environmental disasters (Raman, 1995; Satyanarayana, 1997; Chandra Mohan et. al. 1997; Rönnbäck et.al., 2003; Moberg and Rönnbäck 2003; Danielsen et.al., 2005; Guebas et.al., 2006).

Shoreline protection

A series of experiments carried out by the EqTAP project have shown that mangrove forests and certain other types of coastal vegetation can effectively reduce the impact of tsunamis on coastlines (Hiraishi and Harada, 2003; Danielsen et.al, 2005). Empirical and field based evidence is limited, but analytical models show that 30 trees per 100 m² in a 100m wide belt may reduce tsunami flow rate by as much as 90%. EqTAP recommend using a coastal green belt to protect homes, as it is sustainable, and much cheaper than artificial barriers. Studies in Vietnam also demonstrate the usefulness of mangrove forests in coastal protection. The value of Malaysian mangroves just for storm protection and flood control has been estimated at USD 300,000 per km of coastline, which is based on the cost of replacing the mangroves with rock walls (Ramsar Secretariat, 2001).

Goods and services to fisheries sector

The economic valuation of ecological services provided by mangroves as a support system for fisheries was done by Dehairs (2003). For the Godavari Estuary, this service was valued at US\$ 2,700 per ha, which extrapolates to approximately US\$ 90,000 annually for the entire area. Also, marine protected areas world wide have been found to double the abundance and triple the biomass of fish (30% increases in both size and diversity of fish species in as a little as 5 years). Further, the annual economic values of mangroves, estimated by the cost of the products and services they provide, have been estimated to be USD 200,000–900,000 per ha (Wells et al., 2006). The mangroves of Moreton Bay, Australia, were valued in 1988 at USD 4,850 per ha based only on the catch of marketable fish (Ramsar Secretariat, 2001).

Carbon sink

The importance of mangroves as a sink of atmospheric carbon dioxide, a major contributor to global warming, is a major area of study all over the world (Fujimoto, 2000; Yutaka, 2007; Pidgeon, 2009; Danone Fund for Nature. 2010). Mangroves fix greater amounts of CO₂ per unit area, than what the phytoplankton do in the tropical oceans (Kathiresan and Bingham, 2001). For example, a 20 year old plantation of mangroves stores 11.6 kg per m² of carbon with C burial rate of 580 g per m² per year (Fujimoto, 2000) and hence, mangroves provide great benefits to control global climate change by stabilizing atmospheric carbon. Because the mangroves fix and store significant amounts of carbon, their loss may have an impact on global carbon budgets.

² Ranga Rao and others, 2003, Proceedings of Andhra Pradesh Academy of Science 2003 7: 135-142

³ R. Rao, Climate change mitigation through reforestation in Godavari mangroves in India, IJCCSM 1,4, 2009

6. The area supports a wide range of other faunal elements that include amphibian, reptile, bird, and mammal species, including terrestrial species that depend on coastal ecosystems. Animals such as otter, fishing cat, jackal and sea turtle are found in the creeks. Birds such as snipes, ducks, sea gulls and flamingos are common. The area is an Important Bird Area⁴ (IBA) with a recorded population of 119 bird species, of which 50 are migratory from Eastern Europe, Central and North Asia. Some of the rare winter migrant species are Golden Plover (*Pluvialis apricaria*), Woodcock (*Scolopax rusticola*), Common Snipe (*Gallinago gallinago*), and Long-billed Ringed Plover (*Charadrius placidus*) (see Annex 1). Hope Island and the Sacramento region within the project area are important nesting sites for migratory turtle species, notably the endangered Olive Ridley turtle (*Lepidochelys olivacea*). The critically endangered Leatherback turtle (*Dermochelys coriacea*) and Green turtle (*Chelonia mydas*) also frequent the region. The area serves as spawning grounds and as a sanctuary for the growth and development of numerous fin and shell fish. So far, 137 species of phytoplankton, 81 species of zooplankton, 126 species of microbenthos, 37 groups of meiobenthos, and 114 species of macrobenthos have been documented from this region. In recognition of its national and global biodiversity significance, a part of the Coringa mangroves were declared and gazetted as Coringa Wildlife Sanctuary (CWLS) in 1978 with a total area of 235.70 square kilometers⁵ under the national Wildlife (Protection) Act, 1972. Apart from this, around 87 square km of mangroves in the EGREE is managed by the Forest Department (FD) as Reserve Forests. Further, the Coastal Regulation Zone Notification of 2010 has identified Coringa, East Godavari and Krishna as Critical Vulnerable Coastal Areas⁶.

Table 1. Mangrove forest area in EGREE

| | Name of Reserve Forest | Area in hectares (within CWLS limits) | Area in hectares (outside CWLS limits) |
|---|--|--|---|
| 1 | Corangi | 4,272 | |
| 2 | Corangi Extension | 18,808 | |
| 3 | Bhairavapalem | 1,015 | |
| 4 | Rathikaluva | | 1,762 |
| 5 | Balusitippa | | 1,300 |
| 6 | Matlatippa | | 389 |
| 7 | Masanitippa | | 546 |
| 8 | Kottapalem | | 66 |
| 9 | Kandikuppa | | 3,984 |
| | Sub totals | 24,095 | 8,047 |
| | Total area of Mangrove Reserve Forest in EGREE | | 32,142 |

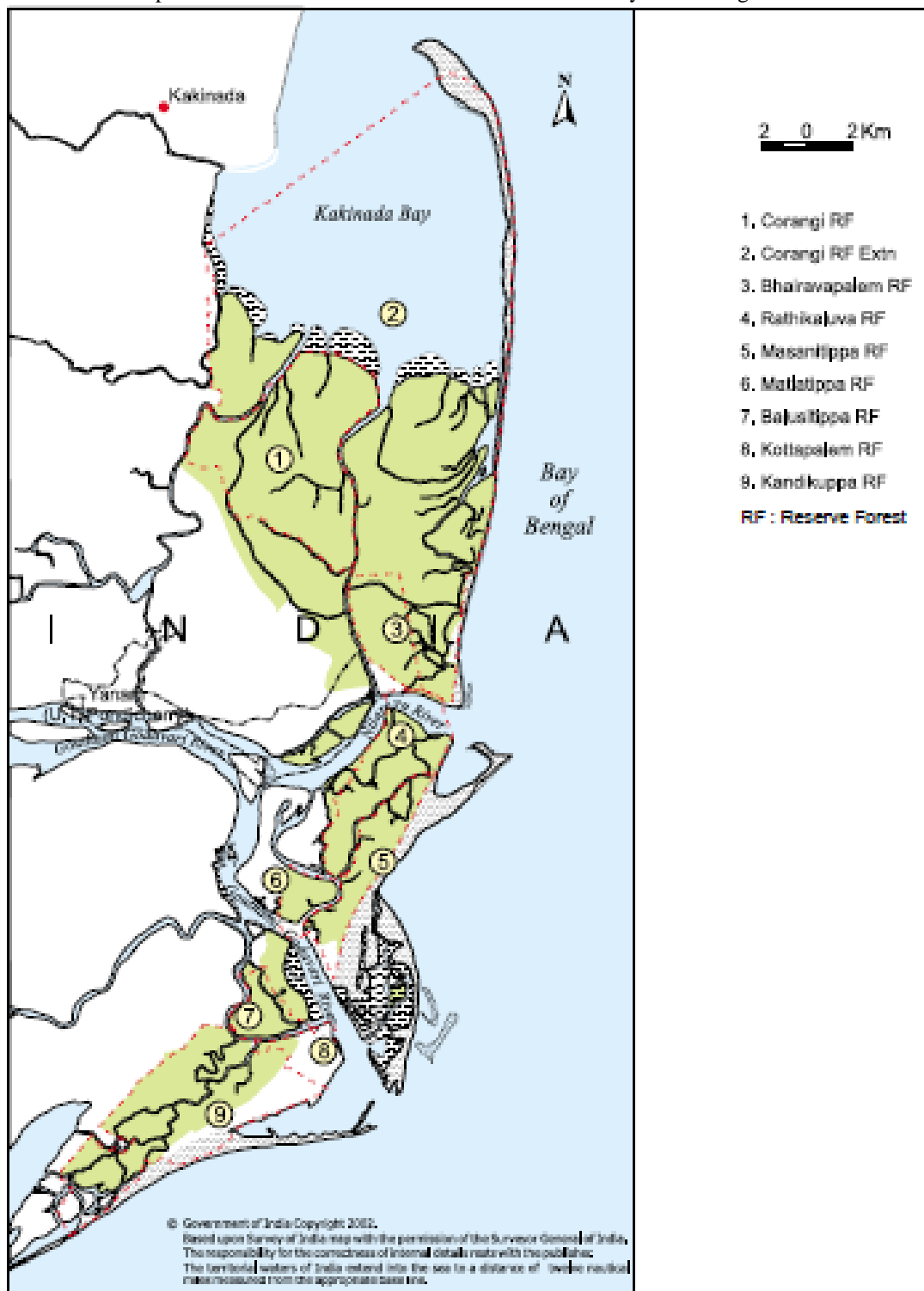
Source: Atlas of Mangrove Wetlands Of India: Part 2 Andhra Pradesh, T. Ravishankar and others, M. S. Swaminathan Research Foundation, Chennai, India, March 2004

⁴ An Important Bird Area (IBA) is an area recognized as being globally important habitat for the conservation of bird populations ([BirdLife International](http://www.birdlife.org)).

⁵The Andhra Pradesh Gazette Hyderabad, Tuesday, April 21, 1998,

⁶http://moef.nic.in/downloads/public-information/Concept%20Note_Final.pdf. Other areas declared as CVCA are Gulf of Khambat and Gulf of Kutchhh in Gujarat, Malvan, Vasasi- Manori in Maharashtra, Achra- Ratnagiri, Karwar and Coondapur in Karnataka, Vembanad in Kerala, Bhaitarkanika in Orissa

Map 2. Reserve Forests of East Godavari River Estuary and Coringa WLS



Source: Atlas of Mangrove Wetlands Of India: Part 2 Andhra Pradesh, T. Ravishankar and others, M. S. Swaminathan Research Foundation, Chennai, India, March 2004

1.2 Climate change context

7. The Godavari mangroves also play an important role as a carbon sink (see Box A). Maintaining the extent and ecosystem functionality of the mangrove forests and preventing any further retrogression is, therefore, important as a strategy to address climate change. While mangroves play an important role in mitigating climate change, they are also threatened by climate change. To date, non-climate related anthropogenic stressors have likely accounted for most of the global average annual rate of mangrove loss⁷. However, climate change-induced perturbations including relative sea level rise and change in salinity may constitute a substantial proportion of predicted future losses. Hence, attention needs to be given to augmenting the tolerance and resilience of mangroves to climate change.⁸

8. Climate change impacts on the mangrove ecosystems would be governed by factors such as sea-level changes, storm surges, fresh-water flows in rivers both from precipitation in their catchments as well as from snow melt in the mountains, local precipitation, salinity alterations and temperature changes that would influence evapo-transpiration. Sea-level rise would submerge the mangroves as well as increase the salinity of the wetland. This would favor mangrove plants that tolerate higher salinity. Changes in local temperature and precipitation would also influence the salinity of the mangrove wetlands and have a bearing on plant composition. It is therefore, necessary to model the specific scenarios for the various mangrove ecosystems using climate change projections, changes in freshwater and sediment flows, geomorphology, sea-level change and the land use of the coastal region. In addition, it is important to model and predict the impact of multiple stressors (climate change and other anthropogenic and natural stressors), and their compounded effects on the mangroves.

9. The impacts of climate change on EGREE are poorly understood. However, available literature⁹ suggests that the mangrove ecosystem of the east coast of India is one of the most vulnerable regional habitats to be exposed to sea-level rise. Increasing salinity and precipitation patterns also affect distribution of salt-tolerant mangroves such as *Avicennia* spp. and *Rhizophora* spp. The seedlings of all species require very low salinity for their growth; hence, a rise in salinity could affect their survival, growth and productivity. Rising sea-level brings in salts and sulphates; diminution of rainfall reduces mudflow and nutrient influxes. Increased frequency of tropical cyclones with inundation of low-lying areas and salt-water incursion is also not ruled out. These changes might ultimately result in changed biodiversity and species migration towards land. In short, it can be presumed that the condition of the mangroves of the EGREE, which are already under considerable stress, will become further worsened due to climate change.

1.3 Socio-economic context

10. India's coastal and marine areas are also of enormous economic significance. Production activities such as fishing, ports and shipping, agriculture, tourism, oil and mineral exploitation contribute about 10% of the national GDP. 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 mineral and heavy metal deposits. A very significant share of India's economic infrastructure, including maritime facilities,

⁷ [India's Initial National Communication](#) (INC, 2004) to the UNFCCC notes that with the exception of the mangroves of the Andaman and Nicobar Islands, the mangroves of the country are already considerably degraded. The development of agriculture in the deltas of the major rivers, the reclamation of the coastal wetland for settlement and the use of mangroves to supply products such as fuel wood have resulted in considerable shrinkage of the mangrove areas. According to one estimate the mangrove cover of the country reduced by 35 per cent during the period 1987-1995 alone (estimate made by Sustainable Wetlands, Environmental Governance-2 in 1999).

⁸ Gilman, Eric and Ellison, JC and Duke, NC and Field, C, Threats to mangroves from climate change and adaptation options: a review, *Aquatic Botany*, 89, (2) pp. 237-250. ISSN 0304-3770 (2008)

⁹ R. Rao, Climate change mitigation through reforestation in Godavari mangroves in India, *IJCCSM* 1,4, 2009

petroleum industries, and import-based industries are located in the coastal zone; there are 197 major or minor ports and 308 large-scale industrial units in the coastal zone. 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.

11. The coastal zone of the country is under increasing stress due to industrial development, trade and commerce, tourism and resultant human population growth and migration. The Indian Coast has 77 cities, including some of the largest and most dense urban agglomerations such as Mumbai, Kolkata, Chennai, Kochi and Visakhapatnam. With less than 0.25% of the world's coastline, India houses 63 million people or approximately 11% of global population in its low elevation coastal areas. India's coastal districts (73 out of a total of 593 districts) account for 17% of the national population, and nearly 250 million people live within 50 kilometers of the coastline. Coastal population is projected to rise to almost three quarters of the national population by 2020 (Anon, 1992). The constantly increasing anthropogenic pressures in coastal areas make coastal and marine ecosystems more vulnerable to global climatic changes, especially global warming and its consequences such as changes in rainfall patterns, storm frequency, salinity changes and sea level rise.

12. The coastline of Andhra Pradesh too is pivotal to the State's economic development. Coastal and marine resources contribute significantly to the state's economy. The landscape/ seascape where the project is going to be implemented is the East Godavari River Estuarine Ecosystem (EGREE). Specifically, the direct area of influence of the project, where most of the project activities will take place will be 46,450 hectares that include the Coringa Wildlife Sanctuary and the area immediately surrounding it along with the abutting villages (see Map in Annex 2). The project is also expected to indirectly influence another 33,550 ha in the EGREE mostly through awareness generation, outreach and capacity development. Thus, the total area intended to be covered under the project comes to around 80,000 hectares. This includes 17,486 hectares of water body, and 32,142 hectares of mangroves, of which 21,600 hectares is within the CWLS. The coordinates for the project area are 82° 8' 27" and 82° 21' 50" E and 16° 30' 47" and 17° 0' 33" N. The entire area falls in the East Godavari District and revenue divisions of Kakinada (Mandal – Tallarevu, Karapa, Kakinda Urban, and Kakinada Rural) and Amalapuram (Mandal – I. Polavaram and Katrenikona). The project area excludes Yanam, which is part of the Union Territory of Pondicherry. The total population of the project area is around 1 million.

13. The main economic/ production activities in the target project area are fisheries, aquaculture, salt pans, tourism, manufacturing activities (e.g., oil and natural gas, fertilizers, edible oil, rice products), and ports. In addition, there is dependency on the mangroves by local villagers. Each of these activities that impact the EGREE in the target landscape/ seascape is described below.

Dependency on mangroves by local communities

14. There are 44 villages abutting the mangrove forests of the project area. These villages fall in the mandals of Tallarevu, I. Polavaram, Katrenikona, and Kakinada (Rural) with a population of around 0.11 million (see Annex 3 for demographic details of these villages)¹⁰. The local population depends on the mangrove ecosystem for meeting subsistence needs such as traditional fishing, firewood, materials for house construction, and fodder for livestock. About 40 percent of the population is actively engaged in fishing; except for 3-4 villages, most villages are engaged in fishing activity¹¹. The five fish landing centers in and around Coringa Wildlife Sanctuary alone recorded about 4,480 tonnes of fish catch during 2001-2002. Nearly 2,000 feral cattle remain in the mangrove area for most part of the year. The rest of the population is involved as labor force in agriculture fields, aquaculture farms, construction activities, etc. Shell collection and burning for lime production is also observed.

¹⁰ While the project area also includes the Kakinada Urban mandal, this mandal does not exhibit the type of village-level dependency on mangrove forest as the other mandals. Kakinada Urban mandal has been included due to the existence of large scale production sectors such as fertilizers and chemicals.

¹¹ The fishing population in this district is highest in Andhra Pradesh, when compared to other districts

Landscape/ seascape use around mangroves

15. Fisheries sector: About 6,950 traditional crafts (500 motorized and 6,450 non-motorized) are engaged in fishing activities in and around EGREE. In the East Godavari district, around 3,000 mechanized crafts are engaged in fishing, of which around 1,000 are trawlers and the others include beach landing crafts, gill-netters, liners, seines, etc. Pelagic resources are exploited using hook and lines for sharks, seer fish, tuna, etc, and boat seines for sardines, mackerels, etc. Shore seines are also operated for near shore fishery resources. Cast nets, gill nets, drag nets and trawl nets are the major fishing gear used in this region. During 1996-2006, fish landings ranged from 151,435 to 233,276 tonnes and contributed to 7.2 per cent of total fish landings of the country. Smoking, salting and sun drying of fish and shrimp are the major fish processing activities. Around Kakinada alone, fish catch has fluctuated over the last three years with an annual low of 1,925 tonnes and an annual high of 3,500 tonnes.

16. Aquaculture is being practiced in the EGREE since the late 1980s as an important livelihood/ economic activity. Near the Godavari Estuarine region alone, the area of aquaculture farms increased from 2,006 hectares in 1989 to 19,239 hectares in 1999¹². The increase in shrimp farming area led to an increase in shrimp production from 30,000 tones in 1990 to 102,000 tones in 1999. In the Godavari delta, about 14% of the aquaculture farms have been established on mangrove lands.

17. Salt pans: The salt pan area spread is about 1,000 acres of land which is controlled by a few individuals around Coringa area. These are the erstwhile mangrove wetlands and have been in existence for more than 50 years. Salt pans attract a large number of migratory birds during winter. The salt harvest is done 6 times a year, one cycle lasting for 30 days; employing around 500 workers throughout the year. However, the salt pans in the EGREE are not economically promising and as such are not likely to expand in future.

18. Many medium and large-scale manufacturing units/ industries are also located in the EGREE including natural gas & oil, fertilizers, power generation, edible oil, rice products, automobile components, biodiesel, cotton yarn, Liquid Petroleum Gas Bottling, Carbon Dioxide Bottling, Iron Ore fines, Quartz Crystals, and Steel Re rolling (see Annex 4 for a full listing). Most of these manufacturing units are located in and around the towns of Kakinada and Yanam and derive benefits directly or indirectly from the mangrove estuary. These activities also impact the ecological health of the mangrove ecosystems in the EGREE.

19. Special Economic Zones (SEZs) and Integrated Petroleum, Chemicals and Petrochemical Investment Regions (PCPIRs): Andhra Pradesh has 68 of the notified 320 SEZs in India, making that the highest number of notified SEZs in any state¹³. In order to further augment the investment buoyancy witnessed in SEZs, GoI is planning to set-up a transparent and investment friendly facility popularly known as PCPIRs. The proposed PCPIR extending from Visakhapatnam in the North to Kakinada in the South (Kakinada lies within the project area) would be a specifically delineated investment region with an area of around 25,000 hectares for the establishment of manufacturing facilities for domestic and export led production in petroleum, chemical and petrochemicals along with the associated services and infrastructure. Establishment of such zones would have serious impact on coastal and marine biodiversity unless adequate environmentally-friendly production practices and safeguards are built-in right from the inception. Based on the earlier intervention experiences in the area, we may infer that the development of infrastructure and other amenities may not always take into account biodiversity concerns. While finalizing the baselines in EGREE, the potential impacts of SEZ and their impacts on biodiversity shall be further ascertained.

¹² Andhra Pradesh Remote Sensing Centre, 1999

¹³ SEZs are specifically delineated duty-free enclaves treated as exclusive territory for the purpose of industrial service and trade operations (except re-exporting of imported goods).

20. Ports and shipping are another important locus of economic activity in the project area, with the Kakinada Intermediate Port being located in the East Godavari District¹⁴. In 2004, the Kakinada Anchorage port handled 140 ships and 1.3 million tonnes of cargo and in 2005 the Kakinada Deep Water Port handled 618 ships and 10.5 million tonnes of cargo¹⁵. Further development of port (and associated industrial expansion) is being planned in Andhra Pradesh and in the Kakinada region.

21. Tourism is a rapidly expanding sector across India, including Andhra Pradesh, and there is need for greater capacity within this sector for managing potential adverse environmental impacts, for example, waste and sewage disposal. Tourism development in the project area is in its initial stages and the developmental impacts of it on the Godavari mangrove ecosystem are not yet documented.

1.4 Legislative, policy, and institutional context

22. To promote conservation and sustainable use of biodiversity, India has an extensive body of laws and policies (see Annex 5 for a comprehensive listing of legislations and policies). The most relevant policies and legislation from this project's perspective are the Biological Diversity Act of 2002, National Forest Policy of 1988, Indian Forest Act of 1927 and related state legislation, Forest (Conservation) Act of 1980, Wildlife (Protection) Act of 1972, Environmental (Protection) Act of 1986, Marine Fishing Policy of 2004, and the Joint Forest Management orders and rules promulgated by both the Government of India and the States.

23. Other state legislation relevant to coastal and marine biodiversity includes the Andhra Pradesh Marine Fishing Regulation Act of 1994, adopted under the national Marine Fishing Regulation Act of 1978, which provides for protection, conservation and development of fisheries in Andhra Pradesh. The Act also regulates mesh size, gear and reservation of zones for different fishing sectors, and aims to protect the interest of traditional fishermen and their crafts. The Andhra Pradesh Pollution Control Board Norms ensure compliance with the Environmental (Protection) Act, 1986 (EPA) regarding standards for controlling water and other forms of pollution. Given the situation wherein more ports are coming up, the establishment of an Andhra Pradesh Maritime Board is also envisaged.

24. Further, the production sectors operating in the coastal zone are regulated by a number of laws, of which the most significant is the Coastal Regulation Zone (CRZ) Notification of 1991 and 2010, promulgated under the EPA. The 1991 notification restricts and controls development activities within a landward distance of up to 500 meters from the high tide line along India's coasts. Also under the CRZ Notification, all states are required to prepare a Coastal Zone Management Plan (CZMP) and establish a Coastal Zone Management Authority. Accordingly, the CZMP for Andhra Pradesh was developed in 1996. The CRZ Notification of 2010 has identified Coringa, East Godavari and Krishna as Critical Vulnerable Coastal Areas and stipulated that an integrated management plan shall be drawn up within a period of one year keeping in view conservation and management of the mangroves and needs of local communities. The Environmental Impact Assessment Notification of 2006 aims to protect and conserve the environment through regulation of new developments taking place by ensuring environmental compliance causing least/ negligible adverse impacts on the environment. Environment Impact Assessment (EIA) has been made mandatory for all the investment and development projects in the coasts.

Institutional framework

25. The Ministry of Environment & Forests (MoEF) is the nodal agency in the administrative structure of the Central Government for planning, promoting, coordinating and overseeing implementation of

¹⁴ Andhra Pradesh is the second highest cargo handling state in India. It has one major port at Visakhapatnam and two intermediate ports at Kakinada and Machilipatnam. The State also has minor ports at Krishnapatnam, Gangavaram, Mutyalampalem, Bhavanapadu, Kalingapatnam, Bhimunipatnam, Narsapur, Nizamapatnam, and Vodarevu.

¹⁵ Source: <http://www.andhraports.com/in/content/view/19/32/>

India's environmental, forestry and wildlife policies and programmes. MoEF's work is guided by the set of legislative and regulatory measures aimed at the preservation, conservation and protection of the environment, as well as by the National Conservation Strategy and Policy Statement on Environment and Development, 1992; National Forest Policy, 1988; Policy Statement on Abatement of Pollution, 1992; National Environment Policy, 2006, National Biodiversity Action Plan, 2008, National Wildlife Action Plan (2002-2016) and the National Action Plan on Climate Change, 2008. The primary mandates of the Ministry are implementation of policies and programmes relating to conservation of the country's natural resources including its lakes and rivers, its biodiversity, forests and wildlife, ensuring the welfare of animals, and the prevention and abatement of pollution. While implementing these policies and programmes, the Ministry is guided by the principle of sustainable development and enhancement of human well-being.¹⁶

26. Andhra Pradesh Forest Department (APFD) is mandated to protect, conserve and manage the state's forests (including mangrove forests) and wildlife resources. The main functions of the Department are to manage forest resources, implement Joint Forest Management (JFM) programmes by involving the local villagers in managing and protecting forests, undertake forestry research, and conserve wildlife. APFD is responsible for management of the CWLS.¹⁷

27. Andhra Pradesh Pollution Control Board (APPCB) is a statutory authority entrusted to implement environmental laws and rules within the jurisdiction of the state. National pollution control norms are set by the Central Pollution Control Board (CPCB). APPCB ensures proper implementation of the statutes, judicial and legislative pronouncements related to environmental protection within the State. Initially set up to implement the provisions of the first major environmental legislation of the country namely, the Water (Prevention and Control of Pollution) Act of 1974, APPCB was subsequently given the responsibility of implementing the following environmental Acts and Rules, either directly or indirectly:¹⁸

- Water (Prevention & Control of Pollution) Cess Act, 1977
- Air (Prevention & Control of Pollution) Act, 1981
- Environment (Protection) Act, 1986 and Rules and notifications made there under (including EIA notifications)
- Hazardous Waste (Management & Handling) Rules, 1989
- Manufacture, storage and Import of Hazardous Chemicals Rules, 1989
- Bio-medical Waste (Management & Handling) Rules, 1998
- Municipal Solid Waste (Management & Handling) Rules, 2000
- Plastics Wastes Rules, 1999
- Coastal Regulation Zone Rules, 1991
- Public Liability Insurance Act, 1991

28. Andhra Pradesh Coastal Zone Management Authority (APCZMA) was constituted on 9 July 2009. The Chairperson is the Principal Secretary, Environment, Forests, Science, and Technology of the State government. There are 9 additional members representing the state Revenue Departments, National Remote Sensing Agency, Coastal Ocean Monitoring and Prediction System, Department of Zoology and Marine Biology of Andhra Pradesh University, APPCB, Integrated Coastal and Marine Area Management unit of the Department of Ocean Development, Environment Center, Department of Meteorology and Oceanography of Andhra Pradesh University, and the Shore Area Development Authority. Among other things, the APCZMA is mandated to (i) identify ecologically sensitive areas in the Coastal Regulation Zone (CRZ) and formulate Area-Specific Management Plans for these areas; and (ii) identify economically important stretches in the CRZ and formulate ICZMPs for the same.

¹⁶ More information at <http://moef.nic.in/index.php>

¹⁷ More information at <http://forest.ap.nic.in/APFD%20Index.htm>

¹⁸ More information at http://www.appcb.ap.nic.in/main/index_flat1.php

29. There are a number of State Government Departments that regulate/ facilitate consumptive resource uses in the landscape. The Animal Husbandry Department plays a major role in providing veterinary health care and improving the genetic production potentialities of livestock and poultry reared in the State. The Fisheries Department aims to develop the fisheries sector (including aquaculture) within the State. The Department of Industries and Commerce is primarily responsible for the development of industries in general and small-scale industries in particular (including salt pans). The Department also plans and implements various schemes for industrial development in the State. The Department of Transport covers issues related to the management and development of ports.

30. Local government institutions in the project area include the Kakinada Municipal Corporation (KMC), and Panchayati Raj Institutions (PRIs). KMC is the democratically elected body that manages the urban conglomeration of Kakinada. PRIs are local-level institutions for self-governance in rural areas that are recognized by the Constitution of India. These are elected bodies and operate at three levels, at village, at the block (a cluster of villages) and at the district level. PRIs are responsible for the preparation of plans for economic development and social justice and also for the implementation of schemes as entrusted to them by the respective state governments and also by the GOI.

31. There are also several Village Level Institutions (VLIs) in the project area supported by the government as well as non-governmental organizations. These are community or user-group based organizations such as Self Help Groups (SHGs), Mahila Samkhyas, Dairy Cooperatives, Fishermen's Associations, Youth Groups, and local-level JFM Committees, Ecodevelopment Committees (EDCs), Vana Samrakshana Samities (VSS), etc.

Part 1B: Baseline analysis

1.5 Threats to biodiversity and ecosystem services of the EGREE

32. In spite of the above-described legal, policy and institutional framework, mangrove and coastal ecosystems of Andhra Pradesh in general, and the EGREE in particular, are under increasing threat. The Godavari Delta, like many other deltaic systems in India, has been highly altered by human activity. Since at least 1893, mangroves in the area have been subjected to heavy exploitation for fuel wood. Mangrove forests were exploited for wood and fuel wood under various Working Plans of the FD until 1978, when the CWLS was created in the northern part of the Godavari estuarine system. Local people used the mangroves for agriculture, salt production and aquaculture. The CWLS and other areas in the Godavari Estuary Area were subjected to heavy cattle grazing, resulting in large scale depletion of mangrove forests.

33. The mangrove ecosystem in the EGREE is still under degradation due to increasing anthropogenic pressure from rural and urban areas and its proximity to a growing industrial area. Causes for the degradation include conversion to aquaculture, pollution, eutrophication and siltation of Kakinada Bay and its rivers, anthropogenically induced river flow change and erosion, seasonal hydrological changes, and overexploitation of mangrove forests by villagers¹⁹. It is estimated that 30% to 40% of the degradation of mangrove forests has taken place in the last decade due to agriculture, aquaculture and tree-felling activities, and oil and pesticide pollution.

34. The direct drivers of ecosystem degradation in the EGREE are (i) habitat destruction, (ii) excessive harvesting and consumption of coastal and marine resources, and (iii) pollution from industries, aquaculture, and urban agglomerations (Kakinada and Yanam). Each of these is described below.

35. Habitat destruction is the most serious threat to the long term conservation of EGREE's globally significant coastal and marine resources. Large scale conversion of mangrove areas for non-forestry

¹⁹ Ravishanker and others, 2001; Hema and Rao, 2004; Tripathy and others, 2005

purposes²⁰ such as edible oil refineries, ceramic factories, and fertilizer factories and a number of small-scale industries have led to considerable damage of the coastal and marine ecosystem. The rapid growth in shrimp farming has resulted in conversion of agricultural fields and mangrove vegetation into aquaculture (shrimp) farms. These shrimp farms are located in revenue and private lands abutting the mangrove forests. About 14% of the aquaculture farms have been constructed on mangrove lands. Aquaculture farms are responsible for approximately 80% of mangrove conversion to other land uses in the 1990s (Rönnbäck et.al., 2003). Aqua farms result in the increase of salinity of ground water, among other adverse environmental impacts. Erstwhile mangrove wetlands converted to salt pans are also leading to increased salinity of ground water and other nearby water sources. Ports and shipping activity also contribute to habitat degradation. Direct impacts include habitat conversion for their construction along with associated industrial estates, which affects the health of the Godavari estuarine ecosystem. Maritime traffic is also known to have direct impacts on marine biodiversity, although these have not been studied in the proposed project area. Indirect impacts arise from increased sedimentation due to periodic dredging of navigational channels and other port-related activities, which impact marine and other biodiversity in the region.

36. Excessive harvesting and resource consumption: Over-exploitation of resources is another major concern causing ecological imbalance in the mangrove ecosystem. Subsistence and low intensity fisheries face decreasing fish catch and increasing cost of operation. This often forces the local fisher folk to adopt unsound and unsustainable fishing practices such as non-adherence to the seasonal ban on fishing and resorting to destructive fishing practices (such as use of improper mesh size, etc). The commercial fishing sector that operates mechanized crafts has an even greater adverse impact on the fisheries resource base, and the increasingly significant decline in the fisheries resource base is disproportionately affecting local communities. Over-harvesting of juveniles is affecting the production cycle. Approximately 3,600 tonnes of mollusks are removed annually from Kakinada Bay and Coringa mud flats for lime production. Species of bivalves (*Placuna placenta*, *Anadara granosa*, *Macoma sp.* *Meretrix sp*) and gastropodes (*Cerithedia cingulata*, *Telescopium telesopicum*) are regularly collected. Collection of seeds of tiger shrimp (*Penaeus monodon*) for the aquaculture industry is another major activity in the EGREE which is adversely impacting coastal and marine resources²¹. Though grazing of cattle is not legally permitted in the CWLS, there are a large number of cattle in the fringe villages (approximately 2,200 in Coringa village alone) and grazing herds have been noted in the periphery of the mangrove forests. Further, mangroves are being cut by locals for firewood and wood for construction. As many as 16 adjacent villages depend on mangroves as a source of firewood. Some of the locations close to these villages show denuded mangrove vegetation.

37. Pollutants from industry, aquaculture, and urban agglomerations: Effluents from major industries in and around Kakinada are discharged into the EGREE and Kakinada Bay. Paper industries alone produce effluents of about 6,500 KL/day. Spillage of offshore oil exploration and oil production and shipping result in pollution and bioaccumulation of heavy metals and synthetic compounds. Ships landing in the port and fishing boats in Kakinada harbor are the primary sources of oil spill into the water body. In the case of Coringa mangroves, because they are located close to the Kakinada port (an intermediate port), the biodiversity risks associated with oil spill is high. The impact of oil spills on biodiversity in the bay, however, has not been analyzed. Further, the impact of dredging, oil drilling, and large scale fertilizer companies on coastal and marine natural resources are yet to be ascertained. Chemical run off from aquaculture farms (aqua farms use pesticides like Endosulfan and Nuvan) also contribute to the pollution of the estuarine and creek habitat.

38. As described above, the EGREE faces a multiplicity of threats from a number of sectors. A rapid analysis was, therefore, undertaken to obtain a better understanding of the ranking of the various threats.

²⁰ Critical Habitat Information System for Coringa mangroves, Andhra Pradesh, India. Department of Ocean Development, ICMAM Project Directorate, Chennai, Government of India, 2001.

²¹ However, with the establishment of modern hatcheries, this pressure is somewhat reduced.

The analysis suggests that threats from production sectors and fishing are the major ones that need to be given priority under the project. Conversions of land to other uses (such as aquaculture and industrial establishments/ estates), unsustainable fishing, and pollution from manufacturing units are the three highest ranked threats. The criteria used for ranking threats include geographical spread of the impact, potential of occurrence, severity of impact, importance of sector production to economy, and responsiveness of sector. Sectors have been given a threat-ranking (from highest threat to least) as follows: Manufacturing Sector, Fisheries, Aquaculture, Livelihoods/ subsistence, Tourism, Ports and Shipping, Salt pans (see Annex 12 for details).

39. The indirect drivers of ecosystem change relate to demographic pressures that are exacerbated by governance challenges and economic constraints faced by the local population. Key governance issues include the fact that management of the CWLS is not integrated with that of the wider land/seascape of the EGREE, enforcement of regulations is weak, the information base for driving good management decisions is lacking, and community support for promoting better stewardship of the EGREE is not effectively organized. Economic factors include the lack of alternative sustainable livelihood options, and adequate and fair credit arrangements.

40. Potential future threats: Notable among the potential future threats to the EGREE is further tourism development and climate change. At present, tourism is not placing significant pressures on the EGREE, but it has the potential to do so. The clearing of mangrove forests for tourism developments is a major factor behind mangrove loss around the world. For example, mangrove forests and sea grass meadows have been removed to create open beaches, and nesting sites for endangered marine turtles have been destroyed and disturbed by large numbers of tourists on the beaches. Climate change, particularly sea-level rise and change in salinity too poses a threat to mangroves as described earlier on in this document under the section on Climate Change Context. Finally, the rapidly growing urban agglomerations in the EGREE particularly Kakinada, also pose the issue of generation of large quantity of waste and sewage that may ultimately find their way into the Godavari Estuary in the business-as-usual scenario and exacerbate the degradation of the mangrove ecosystem.

1.6 Management of the CWLS

41. Establishment of the CWLS in 1978 was a major step in improving the conservation prospects of the unique mangrove ecosystem of the EGREE. Whereas until 1978, the mangrove forests were clear felled by Government agencies for revenue generation, establishment of the sanctuary marked a clear change in course towards conservation and sustainable use of biodiversity. The sanctuary was established to rehabilitate the salt water crocodile which was at the verge of extinction and other endangered species such as Olive Ridley turtle and Indian Otter. It consists of 3 Reserve Forest areas, Coringa Reserve Forest, Coringa Extension Reserve Forest and Bhairavapalem Reserve Forest. (See Map 2 above for location of the CWLS and Reserve Mangrove Forests in the project area).

42. Until 1985, the management of CWLS was carried out as part of a Working Plan (P.S. Rao & C.V. Konda Reddy, Working Plan for Kakinada Territorial Division, 1970-1985). During this period heavy exploitation took place to meet local demands for fuel wood from this area. All the Reserve Forests of the CWLS, which are in a different felling series, were worked as per the Working Plan prescriptions. The first Management Plan for the CWLS was prepared for the period 1985-86 to 1995-96. The current Management Plan, prepared by Sri Tata Rao, is for the period 2003-04 to 2012-13. The Management Plan focuses on activities such as mangrove afforestation both in the newly accreted areas and areas which are inundated daily and on periodic interventions, protection of wildlife from poaching, conduct of awareness programmes, infrastructure development, arranging vaccination programme for cattle and other livestock.

43. The existing staff strength, capacity and infrastructure are inadequate for the effective management of the CWLS. The sanctioned staff strength for the Sanctuary include: Wildlife Warden (1); Range Officer (1); Forest Section Officer (2); Forest Beat Officer (7), and Assistant Beat Officer (6). However,

at present the CWLS is under-staffed with no Range Officer, only one Section Officer, 5 Beat Officers and 1 Assistant Beat Officer. This makes the average jurisdiction of the Beat Officer around 47 square km, much higher than the desired optimal level. This has adverse implications on the effectiveness of overall management and enforcement functions performed by park staff. Apart from this, the staff is also inadequately capacitated/ trained in specific aspects of Sanctuary management such as the conservation of mangrove forests, participatory resource management, environmental law, etc. There are only a few equipments (binoculars, camera, and one boat) available with park staff for the protection and management of the sanctuary. The budgetary allocation for the sanctuary comes from both central and state funds. On an average, roughly 200,000 USD is provisioned for the management of the CWLS every year. However, quite often, the actual quantum of funds received would be much less due fiscal constraints. This coupled with the untimely release of funds create major constraints in management effectiveness of the Sanctuary.

44. M. S. Swaminathan Research Foundation (MSSRF) has also undertaken measures for mangrove reforestation in degraded patches. Supported under the India-Canada Environment Facility (ICEF), this work was undertaken in the CWLS and in collaboration with the APFD. Micro plans were prepared in the respective villages for the restoration of degraded mangroves. The Mangrove Management Units (MMU), which included both degraded area for restoration and the pristine mangroves for management were identified for each VLI. The restoration activity was carried out with the VLI, namely Eco-Development Committees (EDCs) and Vana Samrakshana Samitis²² (VSSs). The VLIs were trained in nursery raising and digging canals. However, in the absence of sustained efforts, most of these institutions are defunct and non-functional at present.

1.7. Trajectory of production activities in the landscape surrounding the CWLS

45. However, while the CWLS anchors conservation efforts in the EGREE, it cannot provide security to the mangrove ecosystem that lies outside the boundaries of the sanctuary. Furthermore, the CWLS is impacted by development models and growth strategies in the wider landscape. The main industries operating in the landscape outside the CWLS that have an impact on the EGREE are – fishing (commercial and subsistence sectors), aquaculture, salt pans, manufacturing units, and ports and shipping. In the baseline scenario, development of these sectors, while observing some environmental safeguards, will not effectively take into account the special conservation needs of the EGREE.

46. Among the 44 mangrove-abutting villages in the EGREE, 20 villages show high dependency on mangroves for fuel wood and 16 villages show medium dependency. In case of housing materials, 17 villages show high and 15 villages show medium dependency²³. There are three villages, Rayameraka, Mallavaram, and Kotturu, dominated by cattle herders who graze their cattle in the mangrove area. There are five villages with medium-level dependency for grazing and fodder. The current management of the mangrove forests does not have adequate strategies to reduce dependency on mangrove forests. The only programme that addressed this issue earlier was the Indo-Canada Forestry Programme, jointly done by MSSRF and Forest Department.

47. Fishing (commercial and subsistence sectors). Various regulations are in place to regulate fishing activity in the EGREE under the auspices of the Marine Fishing Regulation Act of 1978 (this regulates mesh size and gear, reserves zones for various fishing sectors and also declares closed seasons) and the Marine Fishing Policy of 2004 (this seeks to bring together traditional and coastal fishermen with stakeholders in the deep-sea sector to achieve harmonized and sustainable development of marine fishery). For instance, there is a ban on prawn seed collection and fishing curbs during the breeding season. However, there is need to not only strengthen regulations (for example, better regulation to account for the turtle nesting season as noted in the DOD ICMAM report) and improve enforcement.

²² Translation: Forest Protection Committees

²³ AP Atlas, M.S. Swaminathan Research Foundation, Chennai

48. Aquaculture: As noted earlier, around 10,000 ha of land in the landscape of the EGREE was converted to aquaculture. The conversion was maximum in the beginning of the last decade but not much conversion has taken place since, due to the non-profitability of the business. Nearly 50% of this area has been abandoned, mainly due to viral diseases, and this offers the opportunity for reclaiming some of this area for mangrove restoration and conversion to sustainable agriculture and aquaculture. Even if more mangrove areas are not converted to aquaculture farms, the system of aquaculture being practiced in already converted areas is impacting the EGREE. After the harvesting the crop, the aqua farms are 'disinfected' and one of the easiest methods of disinfection (i.e., removal of other undesirable species (weeds) including crab) is through applying chemicals/ pesticides such as endosulfan. After the treatment, the water is flushed out to the natural creeks and streams which drain to the estuarine system. The impact of effluents discharged from the aqua farms into mangrove wetlands, however, has not been systematically studied. A study by Rangarao and others (2003) indicates that pollutants are not flushed out completely due to the existing water circulation pattern and tend to accumulate in the southern part of the bay where mangroves are located. The Marine Products Export Development Authority (MPEDA) and National Centre for Sustainable Aquaculture (NaCSA) have initiated organic or chemical free aqua farm activities in the area but these have not, as yet, attained much popularity among farmers.

49. Salt pans: The only legislation pertaining to salt manufacturing in the country is the Salt Cess Act of 1953 which deals with collection of money from the producers as cess/ tax and no environmental safeguards are mentioned. As stated earlier, the salt pans spread over an area of 1,000 ha and employ around 500 people in the EGREE throughout the year. However due to economic reasons (poor returns and non-profitable nature), the salt pans in the EGREE are not likely to expand in future. Salt pans are also known for attracting large number of migratory birds during winter.

50. Manufacturing units: A listing of small, medium and large scale manufacturing units operating in the project area is provided in Annex 4. Items of manufacture are primarily edible oil and rice products. The two largest units (in terms of scale) are a fertilizer unit and a natural gas production unit. In the baseline scenario, these manufacturing units are subject to the national and state environmental regulatory framework in terms of pollution control. However, very limited biodiversity conservation considerations are being explicitly considered or factored into the operation of these units. Some measures have been taken such as, choosing a longer route for a pipeline in order to avoid destruction of mangrove areas, and promoting various socio-economic initiatives as part of the CSR programmes of the companies²⁴. There is a need to build knowledge of and systematically include the avoid-reduce-remedy-offset mitigation hierarchy²⁵ in the development strategies of these manufacturing units.

51. Ports and Shipping: Kakinada Sea Port Limited (KSPL) saw a growth of 33.5 per cent in cargo handling in 2009-10, compared with the preceding year, and aims to handle 13 million tonnes by the end of 2010-11 and 20 million tonnes by 2012-13. Expansion of KSPL, worth approximately USD 172 million, including the construction of six new berths, is in different stages of completion. The focus is on seashore infrastructure, ship/ cargo handling equipment, channel deepening, draft maintenance and related super structure facilities. Development of new yards and warehouses were also a priority. Regarding offshore activities within 3 to 5 years, it becomes a one-stop integrated offshore service facility offering repairs, servicing and new-building of offshore vessels and ships, riser/ equipment repairs. All these expansions will likely to have an impact on wetlands and mangroves in the area. These effects would go unabated with little serious attention being given to avoid, reduce, remedy and/ or offset impacts.

52. Proposed SEZs: The projected growth of economic activities in this area through SEZs and the proposed PCPIR would delineate an area of around 250 km² in the coastal stretch (Visakhapatnam to Kakinada). Establishment of such zones would have serious impact on the coastal and marine biodiversity since the PCPIR would be a combination of production units, public utilities, logistics, environmental

²⁴ Personal communication (Lead CSR for Reliance Industries)

²⁵ As outlined under the Business and Biodiversity Offsets Program (BBOP) (<http://bbop.forest-trends.org/offsets.php>)

protection mechanisms, residential areas and administrative services. Based on the earlier intervention experiences in the area, we may infer that the development of infrastructure and other amenities would not always take into account biodiversity impacts.

53. Tourism: There is a likely increase in tourist inflow in the future – mostly domestic tourists. Mangroves are the prime attraction from tourism perspective. Developing infrastructure for tourism through state-owned agencies and also by private partners may not always integrate biodiversity considerations. This may have serious deleterious direct and indirect impacts on the mangroves. Currently there are some rudimentary facilities for tourism created by the Forest Department. But they are of low key operations due to the limited internal capacities with the FD. On the other hand, tourism is also a significant opportunity for enhancing livelihoods if undertaken in a responsible manner. So planning of responsible community based ecotourism programmes could be one of the key strategies in the EGREE. Recently, Andhra Pradesh State unveiled a new Tourism Policy (2010) that lays special thrust on preserving biodiversity of the State while focusing on attracting investments in untapped parts of the State, including some rural areas, having tourism potential. While at present there is no comprehensive Tourism Plan for the EGREE, the Tourism Department is proposing to develop one and invest in tourism promotion.

54. Thus, in the baseline scenario, there is very little active attention being given to addressing threats to biodiversity outside the Protected Area (CWLS) from production activities. While there are national and state legislation and policies related to conservation and sustainable use of biodiversity and environmental regulation of production activities, there is neither adequate documentation nor analysis of the adverse impacts of production activities on biodiversity of the EGREE, nor is there a system for involving and holding production sectors accountable for these impacts. There are State institutions with the mandate to implement the environmental policy and legal framework, but experience and capacities for effectively integrating ecological considerations in the conduct of economic activities is clearly lacking. As a result, coastal and marine biodiversity is still threatened by habitat destruction and conversion, over-exploitation and effluent discharge in the wider land/seascape outside the CWLS. Potential impacts of climate change exacerbate this scenario.

1.8. Desired long-term solution and barriers to achieving it

55. To restore and maintain the ecological integrity of Andhra Pradesh's coastal and marine ecosystems, will require a significant change in the governance approach that is currently being pursued with regard to production activities in the wider land/seascape surrounding ecologically sensitive areas. The proposed project aims to demonstrate this in the East Godavari River Estuarine Ecosystem (including the entire mangrove belt and production landscapes outside the mangrove area in the estuary and the coastal zone), by promoting multi-sectoral assessment, planning and management of activities such that biodiversity and ecosystem services can be restored and maintained at the landscape level, in turn benefiting the local population and production sectors over the long run. The aim is to mainstream the maintenance of biodiversity (and associated ecosystem services) as an integral consideration in production activities by focusing on minimizing adverse impacts and capitalizing on win-win opportunities. The principal barriers to realizing this change in governance are as follows.

Systemic and knowledge-related barriers

56. 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. There is weak inter-sectoral communication

and coordination on sectoral growth objectives and strategies among and across the key economic sectors, and sometimes different line agencies may have overlapping, unclear or incompatible mandates but currently have no mechanisms and often insufficient capacity for addressing such inconsistencies. There is weak representation of the interests of coastal communities in the planning and decision-making process although they are important actors and stakeholders in the coastal and marine zones.

57. In general, the policies and laws governing the conservation sector (e.g. Forest Policy, Forest Conservation Act, Wildlife Act, etc) have strong provisions for biodiversity conservation. However, they have been crippled by weak focus on issues specific to the management of coastal and marine biodiversity. For instance, the management of the CWLS is regulated as per the provisions of the Wildlife Act that largely follows a terrestrial approach to Protected Area management. Such design issues, often leads to conflict between the management objectives of CWLS and stakeholder interests particularly on sustainable resource use. So dovetailing the peculiarities of coastal and marine resource management into the legal and policy framework of conservation sector is a priority.

58. Despite the strong focus on individual sector targets and growth objectives, several of the production sector laws and policies also have at least some provisions for environmental safeguards (e.g. Fishery sector laws and policies mention about using the correct fishing gear and zonation; industrial establishments are covered under EIA Notification, CRZ regulations, etc). However, the challenges here are three fold: a) weak enforcement of the existing provisions related to environmental management, b) integrating more focused biodiversity conservation principles into the production sector laws and policies, and 3) ensuring harmony among the various sectoral laws and policies and capacities to implement the same in a landscape perspective.

59. 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. Production sector development plans do not always take into account long-term impacts on the environmental health and integrity of the EGREE. Sectoral plan responses are further crippled by lack of knowledge on coastal resources, processes, impact analyses and management options. Existing sectoral plans have been independently formulated by different sectoral agencies at both the state and central level and/or at different points in time, and thus the planning framework is not sufficiently integrated or consistent making implementation a challenge.

60. The planners and decision-makers from relevant departments and agencies at the State level have inadequate access to appropriate scientific information and associated economic implications for analyzing trade-offs when making choices about the use of coastal land and marine areas in the Godavari River Estuarine area. As a result, adequate consideration is not given to the full range of impacts on either the environment or on different production sectors, including possibly their own, in the long run. It was further noticed that there are limited attempts to document or utilize traditional knowledge about sustainable utilization of coastal and marine ecosystems and resources.

61. Further, policies and guidelines governing the operation of the different production sectors do not provide effective guidance on minimizing adverse impacts on the ecologically sensitive coastal and marine environment in which they operate. For instance, the focus of the fisheries policy is on maximizing the fish production and it fails to look critically at the sustainability issues and the ecological reasons for decline of resources.

Institutional capacity barriers

62. The lack of adequate capacity for effective integrated management within different institutions that have a mandate and jurisdiction over different aspects of the coastal and marine areas adversely impact the coastal and marine resources. For instance, production sector staff has limited technical capacity and skills to effectively incorporate and implement biodiversity management considerations in plans and activities (e.g., adequate capacity within Ports Authorities to integrate ecological concerns into plans for

development of ports, or within departments of industrial development to green industrial development plans). This in turn means having the necessary tools and internal monitoring systems in place for better coastal and marine management related functions. Similarly, even in the conservation sector, capacities for effective management of the CWLS are very weak – characterized by limited staff, equipment and funding.

Community-level barriers

63. At the community level, the principal barriers to motivating a change from unsustainable (extraction of fuel wood and fodder from mangrove forests, and excessive fishing) to sustainable resources use practices is the lack of community-based resource governance systems and lack of alternatives. While the Marine Fishing Regulation Act regulates mesh size, gear and reservation of zones for different fishing sectors, and also aims to protect the interest of traditional fishermen, the gap seems to be in terms of effective, and appropriate community-based management systems that can work within the unique socio-economic fabric of the fishing communities living in the Godavari River Estuarine area, as well as the need for improving fishing gear to address unsustainable fishing practices. Although there are sector-based interventions and schemes to help such disadvantaged communities, there is a need for better engaging affected and marginalized communities in the project area to address their livelihood needs and options through self-help groups, committees and federations. Finally, the inability of local communities to tap into other sustainable resource use practices (such as tourism) that can also generate income for them, is also a barrier to restoring a balance between ecological and livelihood needs.

64. The project will focus specifically on removing the above mentioned barriers and threats to mainstreaming environmental management considerations into major production activities that are impacting the Godavari mangroves, with a special focus on the Coringa Wildlife Sanctuary.

65. In the past two decades, India has implemented several programmes/ projects that specifically looked at strengthening institutional structures at different levels (national and sub-national) to bring in behavioral changes for managing natural resources in a holistic and sustainable manner. The most closely related is the GEF-UNDP-Gulf of Mannar Biosphere Reserve project wherein an integrated, multi-sectoral approach was adopted that demonstrated the critical linkage between improved coastal and marine biological resources and the livelihood security of local people. As result of the project's efforts that largely focus on inter-sectoral coordination for improving biodiversity and livelihood security, the coral cover in the Gulf of Mannar region has increased by about 7 per cent since 2006. One of the important lessons emerging from this project has been the need to establish a body with adequate powers to govern and manage the Biosphere Reserve, and the need to direct the actions of all line departments/ agencies in the Biosphere Reserve as a fully integrated program.

66. Another UNDP project – Community Based Natural Resource Management (CBNRM) – has developed models of viable and ecologically sustainable “community owned ecosystem based enterprises” with high replication potential in the national and sub-national context. Lessons from the CBNRM project will be applicable to this project's efforts to make livelihoods more sustainable, from a conservation and well-being point of view, for the local communities reliant on the natural resources of the EGREE. Further, a GEF-World Bank aided project – India Ecodevelopment Project (1996-2004) – has shown that involving local communities by providing alternate livelihoods is key to the conservation of biological diversity and the lessons from this project have resulted in upstream policy engagements and the amendment of the national wildlife legislation (e.g. the strategy of establishing Conservation Trusts/ Foundations for priority conservation areas in the country). The proposed project shall build on the lessons learned and experiences gained from these projects.

2. PROJECT STRATEGY

67. The Government of India is concerned about the extent and severity of coastal and marine resources degradation, and its effect on the economy at the regional, community and individual household levels, and is, therefore, requesting GEF assistance to support this project. (See Annex 6 for a description of key stakeholders and their participation in project design and implementation.)

68. The coastal and marine biodiversity of the EGREE, as already described under the Situation Analysis section, is not only globally significant for its biodiversity but also in terms of climate change. Land use and land use changes are key issues in global efforts to sequester more carbon in the face of critical climate change trends.

69. The EGREE also has national and local significance insofar as it supports human livelihoods, provides natural cycling of minerals, and acts as a potential resource for sustainable income generating activities such as ecotourism. Coastal and marine resources provide the direct basis of subsistence for more than 40 villages/ hamlets in the immediate vicinity of the CWLS. But there is growing evidence that the EGREE's natural resources have been increasingly subjected to over-exploitation, reducing their potential to sustain the present generation, let alone meet the needs of future generations. The poor and marginalized, with no alternative options, are exploiting the natural resources to survive and the degraded resources further impoverishes these communities making survival more difficult and uncertain. It is only through judicious use of these resources and through restoring the integrity of already degraded ecosystems that rural households will be able to increase their food security and social and economic welfare.

70. Taking into account the need to balance conservation, livelihood and development needs in the EGREE, and to utilize potential synergies and minimize negative trade-offs, project design is based on the following principles:

71. Cross-sectoral approach. The emphasis is on an integrated coastal management approach. Compared to conventional sectoral approaches, the aim is to ensure productive and healthy ecosystems by integrating all the relevant stakeholders i.e., not just the conservation sector, but also the livelihoods/ subsistence sector and other commercial production sectors. This will help to bring together knowledge and experience of the different sectors, and to reconcile different stakeholder interests and needs. Both the public and private sectors, including community based and non-governmental organizations (CBOs, NGOs) need to be engaged. There is also need for greater coordination and cooperation among government departments. Given the need to break down barriers between sectors and disciplines, the project focuses on building a cross-sectoral institutional mechanism for the integrated, sustainable management of coastal and marine resources in the EGREE so as to:

- build a platform to share knowledge and forge partnerships across sectors
- develop a common understanding of the coastal and marine biodiversity and consequences of the degradation of the natural resources
- promote the development and adoption of locally-appropriate, community-regulated sustainable resources management
- involve the productive sectors in actions to protect natural resources of the EGREE

72. Inter-disciplinary approach: Integration means an inter-disciplinary approach to understanding biodiversity and ecosystem services, as well as the social, economic and political factors that contribute to their existence. This leads to identification of appropriate technical, policy, legislative and institutional interventions required to overcome the barriers and to promote conservation and sustainable use of biodiversity.

73. This cross-sectoral and inter-disciplinary approach will help in (i) building a common diagnosis and shared vision (ii) sharing information about past, on-going and planned development interventions; (iii) better coordinating and harmonizing existing interventions and investments; (iv) improving the

design and alignment of future projects and programmes; and (v) identifying and addressing key barriers and bottlenecks to scaling up mainstreaming approaches.

74. In the context of the target landscape, getting production sectors to factor in biodiversity conservation into their operations is going to require a significant change in thinking and practice, which is why the IGCMP is timely and needed. It is partly about giving the appropriate “push” by enshrining this thinking in the legal framework, but it is equally about drawing the sectors in to the discussion, bringing individual actors to the table, changing mind-sets, providing training and tools, and providing technical and financial “hand-holding” to demonstrate the new paradigm, in turn, absorbing some of the perceived risks in changing current practices. A 2-step process is needed: step 1 is to begin a concrete dialogue with stakeholders through the vehicle of the Landscape-level Strategic Plan and the Sector Plans, and step 2 is to home in on specific changes in current practices. During consultations it was felt that doing the latter without the former would antagonize the key production sector stakeholders and the project would be yet another conservation sector-led initiative that fails to obtain ownership from the production sectors. The PPG was successful in opening up lines of communication at the national and state-level and the time and resources were used to collect more background information for the project strategy, forge working relationships with key stakeholders, and get buy-in for the broad project strategy.

2.1 Conformity with GEF Policy

75. The project is consistent with GEF BD Strategic Objective 2 ‘To mainstream biodiversity conservation and sustainable use into production landscapes/ seascapes and sectors’, and with GEF BD Strategic Priority 4 on ‘Strengthening the Policy and Regulatory Framework for Mainstreaming Biodiversity’.

76. The project focuses on internalizing the goals of biodiversity conservation and the sustainable use of biological resources into production sectors that are having an adverse impact on the globally significant East Godavari River Estuarine Ecosystem particularly the Coringa Wildlife Sanctuary (part of South India and Sri Lanka Ecoregion). The objective is to influence development models and growth strategies in this area to reduce the threats to biodiversity emanating in the wider landscape outside the CWLS.

77. This project is 1 of 2 that is being developed under the umbrella of the India GEF Coastal and Marine Program, which takes a programmatic approach to strengthening the enabling environment for conservation of India’s coastal and marine biodiversity through mainstreaming conservation considerations in production sectors that threaten these ecosystems. The Program seeks to identify priority demonstration sites on the west and east coast of India to demonstrate that in order to conserve biodiversity, protected areas must be supplemented by integrating the concerns and values of biodiversity conservation into the wider landscape. The Godavari River Estuary has been identified as an intervention area on the east coast because it is the 2nd largest mangrove area in India and due to the presence of globally significant species (see Annex 1). The largest (Sundarbans) is relatively better protected compared to Godavari where development pressures from fisheries, industry, ports, and subsistence actors are compromising biodiversity conservation prospects over the long-term. The target area therefore provides a good justification for dedicating GEF and GOI resources to piloting mainstreaming.

78. This project is consistent with the Convention on Biological Diversity (CBD) and its guidance from the Conference of Parties. This project is designed to support the primary objectives of the CBD; the conservation of biological diversity, sustainable use of its components and the equitable sharing of the benefits arising out of the utilization of these components. By mainstreaming biodiversity conservation with production sectors and sustainable livelihood, the project will fulfill the requirements of Article 6: General measures for Conservation and Sustainable use. Article 8: In-situ conservation will be supported through the strengthening of park management and the targeted species and habitat management, research and monitoring programme. Article 10; Sustainable use of components of biological diversity will be

furthered through development and demonstration of alternative, sustainable livelihood options that avoid or minimize adverse impacts on biological diversity. The project also support Article 12: Research on targeted priority issues related to biodiversity of Godavari River Estuary landscape/seascape and provide training in technical and managerial areas and linking exchange of information. Article 13 which stresses education and awareness will also be a key component in the project.

79. Further, the 10th Conference of the Parties (COP) to the CBD (held at Nagoya in 2010) emphasized the need for a balanced approach to the programme of work on marine and coastal biodiversity, as contained in annex I to decision VII/5. It invited the Global Environment Facility and other donors and funding agencies to extend support for capacity-building to developing countries and countries with economies in transition, in order to identify ecologically or biologically significant and/or vulnerable marine areas in need of protection, as called for in paragraph 18 of decision IX/20 and develop appropriate protection measures in these areas. It further stressed on the importance of marine and coastal biodiversity to the mitigation of and adaptation to climate change, invited Parties, other Governments, relevant organizations, and indigenous and local communities, to address climate-change adaptation and mitigation issues. COP 10 also reaffirmed the need for the strengthened and continued implementation of programme of work on marine and coastal biodiversity (contained in decisions VIII/21, VIII/22, VIII/24, and IX/20 of CBD). The proposed project in Godavari is in line with the above mentioned decisions of CBD COP and shall further strengthen the national efforts on the protection of coastal and marine biological resources.

2.2 Country Ownership: Country Eligibility and Country Driven-ness

2.2.1 Country Eligibility

80. India ratified the Convention on Biological Diversity on 18 February 1994. India is a recipient of UNDP technical assistance and notified its participation in the GEF on 12 May 1994. It is thus eligible according to Article 9 (b) of the GEF instrument to receive GEF funding.

2.2.2 Country Driven-ness

81. The project is country driven and consistent with relevant National Policies and Strategies for the conservation and sustainable use of biological diversity (see Annex 8 for the official letter of endorsement from the GoI). The MoEF's National Environmental Action Programme (1993) specifically calls for conservation and sustainable utilization of coastal ecosystems as a top priority area. The proposed project is also in line with India's priorities for coastal and marine ecosystem management as articulated in the National Environment Policy (2006). The National Biodiversity Action Plan (NBAP, 2008) specifically notes several action items (see table below) that are closely related to the project objective:

Table 3. Relevant Actions from the Matrix for Implementation of Key Activities of the NBAP

| Action | | Activities |
|----------|---|--|
| Action 2 | Augmentation of Natural Resource Base and its Sustainable utilization: Ensuring Inter and Intra-generational equity | Promote sustainable use concept and best practices for sustainable use of biodiversity in relevant economic sectors Integrate biodiversity concerns into sectoral and inter-sectoral policies and programmes Adopt a comprehensive approach to Integrated Coastal Zone Management by strengthening linkages among coastal areas, wetlands and river systems Promote techniques for conservation and regeneration of coral reefs and mangroves |
| Action 5 | Integration of biodiversity concerns in economic and social development | Promote integrated approach to management of river basins, according priority to mitigating the impacts on river and estuarine flora and fauna |
| Action 6 | Impact of pollution | Strengthen monitoring and enforcement of emission standards, for point and non-point sources, minimizing adverse impacts on biodiversity. Treat and manage industrial effluents to minimize adverse impacts. |

| Action | | Activities |
|-----------|--|---|
| Action 10 | Use of economic instruments/ valuation in biodiversity related decision making processes | Develop valuation models and a system for natural resource accounting (reflecting ecological and economic values of biodiversity). Develop valuation models and validate through pilot studies |

Source: National Biodiversity Action Plan (2008), pages 56-61, <http://www.cbd.int/doc/world/in/in-nbsap-v2-p4-en.pdf>

82. The agenda for sustaining coastal and marine areas in India is to support participatory, integrated but decentralized planning and management. The Government of India has identified the CWLS located within the proposed site as a priority coastal and marine ecosystem for conservation. The Coringa mangrove ecosystem has been identified as 1 of 11 ecologically and economically critical habitats along the west and east coasts of India by the Department of Ocean Development (DOD), the designated national nodal agency dealing with Oceans and Seas under Agenda 21 (Chapter 17). Under its Integrated Coastal and Marine Area Management (ICMAM) programme, DOD has prepared a Model Plan for the Coringa mangroves, with a series of suggestions. The proposed project, which covers a larger landscape and seascape (the seascape in the project area would be around one fifth (174 km²) of the landscape), is closely aligned with these efforts of DOD. Further, it will serve as a major input to the national Integrated Coastal Zone Management Programme that is being developed in response to the recommendations of the Expert Committee (M. S. Swaminathan Committee) set up by Government of India to review the CRZ Notification and its implementation. In addition, by focusing on sustainable livelihoods of poor communities in the Godavari River Estuary, the project supports State government objectives on promoting human development among poor communities.

2.3 Project Goal, Objective, Outcomes and Outputs

83. The long-term goal to which the project will contribute is the sustainable management of the globally significant coastal and marine biodiversity of India by mainstreaming biodiversity conservation considerations into production activities in the coastal and marine zones, while also taking into account development imperatives, need for sustaining livelihoods and also addressing retrogressive factors including the anticipated impacts of climate change. The immediate objective of the project is to mainstream coastal and marine biodiversity conservation into production sectors in the East Godavari River Estuarine Ecosystem. The project objective will be achieved through the following outcomes and outputs.

- Outcome 1: Sectoral planning in the EGREE mainstreams biodiversity conservation considerations
- Outcome 2: Enhanced capacity of sector institutions for implementing biodiversity-friendly sector plans including monitoring and enforcement of regulations
- Outcome 3: Community livelihoods and natural resource use are sustainable in the EGREE

Outcome 1: Sectoral planning in the EGREE mainstreams biodiversity conservation considerations

84. This outcome focuses on changes that need to be made in terms of planning and policies to address existing anthropogenic pressure on biodiversity in the EGREE from different production and livelihood sectors. In general, 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, quite often, 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 adequate knowledge on coastal resources, processes, impact

analyses and management options. To address these issues, the following outputs are envisaged under this project component.

Output 1.1 A cross-sectoral institutional mechanism is in place

85. The success of the project will largely depend on the active involvement of all the sectors that exert pressure on the EGREE. The project proposes to establish an institutional mechanism in the form of a Trust or a Foundation to bring together all stakeholders to exchange information, discuss issues, plan and monitor their activities on agreed principles that ensure minimal adverse impact on the EGREE. India has some experience with the operation of such institutional mechanisms, particularly in terrestrial protected area management largely focusing on tigers. Similarly, an ongoing GEF Coastal and Marine Project in India (Gulf of Mannar in Tamil Nadu), has established a similar institutional mechanism for ensuring multi-sectoral coordination for the conservation of marine and coastal biodiversity. The lessons from Gulf of Mannar show that multi-stakeholder participation and the establishment of supportive institutions like the Gulf of Mannar Biosphere Reserve Trust can go a long way in supporting existing institutions in addressing current and new challenges facing the conservation sector.

86. The Foundation will involve relevant government agencies (Department of Forests, Pollution Control Board, Fisheries, Agriculture, Industries, Port, Tourism, Kakinada Municipal Corporation, etc); private sector (representatives of key production sectors); communities (functionaries of EDCs, fishermen's associations, animal husbandry associations, agriculture associations, commerce and trade organizations); research institutions (e.g. Andhra University, Andhra Pradesh State Remote Sensing Agency, M.S. Swaminathan Research Foundation, Jawaharlal Nehru Technological University (JNTU), etc) and representatives of NGOs. Its primary mandate will be to establish a formal institutional mechanism by which government policies, programs and resources, as well as non-government activities can be better mobilized/ harmonized to ensure conservation of the EGREE, while individual sectors continue to pursue own sector objectives.

87. The Foundation will facilitate and support mainstreaming of biodiversity conservation in the EGREE through multi-stakeholder participation that is consistent with national and state Policies, Acts, Rules and Legislations. The scope of the foundation is not the protected area alone but the land/seascape in which the protected area is embedded. One model to consider may be that of a Government owned Public Trust that combines the authority of the Government and flexibility of a good NGO.²⁶ It will not replace, duplicate or supersede existing institutions, but will act as a supporting/ coordinating institution. The Foundation is expected to take up a variety of roles for the sustainable management of the EGREE which require professional inputs and expertise. To that end, it will have a strong complement of technical subject specialists.

88. An assessment will be conducted of existing international and national experience with such Foundations to articulate issues such as mandate, operating principles, bye-laws, and rules. There are good examples of similar functional foundations in the country (e.g. Periyar Foundation in one of the Tiger Reserves in southern India set up under another GEF project – India Ecodevelopment Project; Gulf of Mannar Biosphere Reserve Trust, established under the GEF-UNDP-Gulf of Mannar Project, etc). The assessment will be followed by extensive consultations at various levels involving stakeholders (government, community, academia, civil society, etc). The Foundation will be established through Government Order and be headed by a Senior Official (Conservator of Forests in charge of Coringa Wildlife Sanctuary) of the Forest Department within the 1st year of the project. (In terms of how it will be sustained, the intention is to undertake a Financial Sustainability Strategy for the Foundation under Output 1.3.)

²⁶ The precise structure, composition and authority of the Foundation will be determined after extensive stakeholder consultations.

Output 1.2 Biodiversity-friendly Strategic Plan (SP) is prepared for the project area using a strategic environmental assessment approach

89. As a critical step in mainstreaming biodiversity conservation considerations in the activities of production sectors, a landscape-level, biodiversity-friendly Strategic Plan (SP) will be prepared. The SP will provide a broad, strategic vision for mainstreaming biodiversity conservation activities in production sectors operating in the EGREE, as well as how this vision can be achieved. The SP will look at current land use in the project area and will provide a plan for how existing practices of the different sectors can be made more compatible with the conservation needs of the EGREE. The SP will be developed for a longer time frame e.g., 10 to 15 years²⁷. Each major sector will form an integral part of the plan namely:

- Fisheries
- Aquaculture
- Salt pans
- Manufacturing units
- Ports and Shipping
- Tourism
- Livelihoods/ subsistence
- Conservation (i.e., management of the CWLS and adjoining forests)

90. Inclusion of the conservation sector along with the other sectors is for strategic purposes. This sector (headed by the APFD) already focuses on biodiversity conservation, through the management of the CWLS and other Reserve Forests in EGREE. Therefore, it is not a question of making the practices of the conservation sector more “biodiversity-friendly”. Rather, the purpose of including it under the SP is to ensure that management of the CWLS is seen as an integral part of the land/seascape-level SP, not as a separate sector, and is tightly woven into the SP. Conservation sector planning will also look at how mangrove patches/ biodiversity outside the sanctuary boundaries can be considered under the SP for enhancing the effectiveness of protection/ conservation of these areas.

91. For each sector, this will require a comprehensive ecological assessment of the impacts of the sector on the EGREE. Although general information about biodiversity and the physical environment are available, scientifically collected data on topics such as fish reproduction requirement, fish assemblage, impact of pollution on aquatic fauna, etc are not available. This scientific foundation is a pre-requisite for developing a sound SP.

92. It will also require a review of existing national and international “best management practices” for minimizing adverse impacts on biodiversity for each sector, and recommendations on which these can be adapted to the project area. The broad financial implications of such measures shall also be highlighted. Based on this analysis, the most ecologically viable, economically feasible and socially acceptable measures will be identified. A time line for implementation of these measures as well as a financial sustainability strategy will be identified. The financial strategy could include harmonizing/ re-directing of existing government budgetary resources, existing resources earmarked under CSR programs of large corporate institutions operating in the area, and/ or mobilizing new resources that will result in the sustainable management of the EGREE. The SP shall also contribute directly towards the fulfillment of the statutory requirement mentioned in the CRZ Notification of 2010 that an integrated management plan shall be drawn up for Critically Vulnerable Coastal Areas (EGREE is one of them) within a period of one year keeping in view conservation and management of the mangroves and needs of local communities.

93. Extensive consultation and participation is envisaged in the preparation of the SP. A system for regularly updating the SP in light of achievements will also be instituted. The Godavari Foundation will

²⁷ Based on discussions with stakeholders during the early stages of project implementation, the appropriate time frame will be determined.

play a lead role in guiding the process and ensuring that all stakeholders are not only informed but also actively engaged. After obtaining the concurrence of the Governing Body of the Godavari Foundation, the SP shall finally be placed before the State Project Steering Committee for its approval.

Output 1.3 System for knowledge management and exchange across the GEF programme

94. The first part of this output will focus on addressing key knowledge gaps that impede mainstreaming of biodiversity conservation considerations in the activities of production sectors. At present, there are several research gaps. While some studies have been conducted such as those by MSSRF on mangroves and some papers on carbon sequestration, most of these studies are about 10 years old or are based on data that is 10 years old. Further, most of the intensive anthropogenic interventions in the area have happened after the year 2000. Therefore, there is a need to undertake scientific assessments that are based on recent data. In the initial stages of the project a thorough assessment will be undertaken, with inputs from research institutions, on the key research gaps, based on which a research plan will be developed. It will build on the initial understanding that has emerged during the project preparation phase about the key research gaps²⁸.

95. An important gap is the lack of an economic assessment of ecosystem goods and services of the EGREE in general, and the CWLS in particular. By demonstrating the economic benefits that well-managed mangrove forests generate for some of the other production sectors operating in the EGREE, such as fisheries, aquaculture, and human settlements, it is hoped that a stronger constituency can be developed for its conservation. Some efforts have been made in this regard (see Box A under Situation Analysis section). There is one study that has been undertaken for the Godavari mangroves; however this focuses on a single service alone namely the ecological services provided by mangroves as a support system for fisheries. There remains a need for a comprehensive assessment of the full range of ecological services being provided. For example, a comprehensive understanding of shoreline protection functions and what this means in economic terms will be a powerful measure of the climate change adaptation value of the EGREE. Similarly, an understanding of its carbon sink services can help with accessing resources from the evolving carbon markets that offer new opportunities for developing countries to mobilize financing for preserving ecosystem services. Reduced Emissions from Deforestation and Degradation (REDD) is one such area. Understanding the economic values generated by a healthy EGREE and being able to realize these values through new market instruments can be a potent incentive to consider alternative development models in the EGREE.

96. Building on existing research, under this output a study will be undertaken to assess the economic values of ecosystem services. For carbon sink services, the study will not only assess carbon flux in the system, but will cover all aspects including the enabling environment that needs to be in place (public policies, institutions, human resource capacities) so that the State government is in a better position to leverage these new sources of environmental finance, as well as operational aspects such as how the payments should be made to ensure equity and efficiency. In addition, resources will be allocated under this output for discussion and dissemination of the findings at the appropriate levels to make an economic case for mainstreaming biodiversity and ecosystem conservation into national policies and development strategies.

²⁸ Initial research gaps that have been identified include: study of the influence of tidal circulation on the diurnal distribution of nutrients in the estuary to find out how these nutrients influence productivity and biodiversity (study should be integrated with coastal/marine study), study on the primary productivity of the estuary, study on the role of tidal flushing on mangrove seedling dispersal and colonization that would help in flourishing fisheries (shrimp) productivity, study on the influence of catchment land use on Godavari Estuary dynamics, population studies of selected rare mangrove species, baseline data on the carbon sequestration of mangrove ecosystems and the avenues for enhancement of sequestration, floristic study on Hope Island, study of prey-predators in the CWLS, studies on nesting turtles and impact of fishing and other economic activities on nesting, study of the effects of heavy metal pollution on fish spawning, study on the impact of municipal waste water on the estuarine system, carrying capacity of estuary with respect to fisheries, mapping and assessment of livelihood dependency, study of zones suitable for cage aquaculture, etc.

97. Another important gap is the lack of understanding of the impacts of climate change, including variability, on the EGREE. As described in the section on Climate Change Context, mangroves in the EGREE are threatened by climate change. Further analysis is needed of how the different components of climate change – changes in sea-level, salinity, storms, precipitation, temperature, atmospheric CO₂ concentration, ocean circulation patterns, health of functionally linked neighboring ecosystems, as well as human responses to climate change – could affect the EGREE (impacts on human growth and population, agriculture, changes in ecosystems, etc). India's Initial National Communication to the UNFCCC also notes the need for better understanding the specific scenarios for the various mangrove ecosystems using climate change projections, changes in freshwater and sediment flows, geomorphology, sea-level change and the land use of the coastal region. Under this output a specific study will be undertaken to address this gap.

98. Under this output, an issues and options study will also be undertaken for the long term institutional and financial sustainability for the project strategy in general, and the Godavari Foundation in particular. Sustainability Strategy will explore resource options for sustaining the Foundation. Based on other examples of similar functional foundations in the country (e.g. Periyar Foundation in one of the Tiger Reserves in southern India set up under another GEF project – India Ecodevelopment Project), these could include: 1. Developmental assistance received from Government (central and state) 2. Gate receipts; 3. Project support from donors; 4. Other Governmental agencies; 5. Institutional fees generated through research, training and consultancies; 6. Payment for ecosystem services; and 7. CSR funds.

99. Research and technical institutions in both the public and private sectors will be engaged in these research efforts. Findings will be converted into various formats (such as print, audio and video documentation) and will be developed for different audiences. Materials will also be translated into local and regional languages. This will help in creating awareness among the different stakeholders directly or indirectly affecting the EGREE.

100. Knowledge Management system for the IGCMP: The second part of this output will focus on putting in place a knowledge management system for the overall India GEF Coastal and Marine Program (IGCMP)²⁹. The knowledge management system will improve national capacity to mobilize relevant information in support of decision-making by public and private sector actors in relation to economic activities and land uses that have an impact on coastal and marine biodiversity. The knowledge products will increase awareness within the public and private sector on the economic and social value of coastal and marine ecosystems and on win-win opportunities for balancing conservation of coastal and marine biodiversity and economic development. To this effect the project will work to with selected sectors to indicate the win win opportunities as forms of an incentive to adopting new practice. In doing so the approach will focus on intangible benefits such as habit-fishery linkages, coastline protection, shelter and habitat for wildlife, climate regulation and ecotourism to capture the full economic benefits of coastal conserving marine and coastal ecosystems. The project will not pursue certification programmes but in broadening the knowledge and identifying the intangible incentives it would provide a basis upon which the more market based instruments could be adopted in the future.

101. Resources will be dedicated under this output to establishing the first comprehensive national knowledge management system focused on the need for balancing economic and ecological considerations in sensitive coastal and marine ecosystems. It will bring together and manage new knowledge products generated under both the projects of IGCMP, as well as those generated under ongoing projects such as the Gulf of Mannar Biosphere Reserve project, in turn promoting greater cross-fertilization of experiences. The knowledge management system will create knowledge repositories, improve knowledge access and sharing as well as communication through collaboration, and enhance the

²⁹ This project is being developed as 1 of 2 projects under the IGCMP. The second project is in the Sindhudurgh district of Maharashtra. The motivation for taking a programme approach is outlined in the Programme Framework Document that is accessible at <http://gefonline.org/projectDetailsSQL.cfm?projID=3661>

knowledge environment. It will consist of Expert Referrals, Expertise Profiles and Databases, Electronic Discussion Forums, Document Repository, Data Warehousing, Intranets and Search Engine.

102. Further, towards the latter part of the project, efforts will be made to replicate the good practices evolved during the project implementation, in India's other coastal states. For this, stakeholders from other coastal States/Union Territories (Kerala, Tamil Nadu, Goa, Maharashtra, Karnataka, Orissa, West Bengal, Lakshadweep, Andaman & Nicobar islands, Dadra Nagar Haveli and Pondicherry) will be trained on various aspects of integrated coastal zone management with a view to encourage potential replication elsewhere. This 'hands-on-training' shall be undertaken by the Godavari Foundation with the help of relevant national institutes (National Institute of Oceanography, Wildlife Institute of India, etc) having adequate domain expertise.

103. Coordination across the 2 IGCMP projects will help ensure a joint database, and joint outreach and communication activities. This will facilitate sharing and dissemination of experiences from both the Godavari River Estuary and Sindhudurg Coast for replication of successful strategies in other coastal areas facing similar challenges.

Output 1.4 Strategies for incorporating coastal and marine biodiversity conservation considerations into sector policies and guidelines of production sectors

104. Existing policies and guidelines of each sector will be examined to determine how they can be more explicit on the special requirements of ecologically sensitive coastal and marine areas. Methodological recommendations/ strategies/ guidelines will be developed for each sector on the minimum standards that should be observed by different economic activities in order to maintain the integrity of ecologically sensitive areas along Andhra's coastline, such as the EGREE. To take the example of the manufacturing sector, data on industrial policies indicate that there is a large scale thrust towards industrialization of coastal area through creating SEZs and Petro Networks. To build on the existing national environmental regulatory framework that includes mandatory EIAs, the project will develop strategies on how to include a thorough assessment of biodiversity impacts. Sector policies and guidelines to be considered include:

- Fisheries Policy
- Agriculture Policy (to cover aquaculture and salt pans in coastal and marine ecosystems)
- Industrial Policy
- Guidelines on how to improve EIAs by using an integrated ecosystem approach and biodiversity impact assessment to account for the biodiversity risks in energy, aquaculture, and port development projects
- Shipping and Port Policy
- Tourism Policy
- Livelihoods/ subsistence (for example looking at poverty alleviation policies and strategies)
- Forest Policy/ Wildlife (Protection) Act (to ensure that it explicitly addresses the needs of coastal and marine ecosystems) ³⁰

105. The project will work closely with sector staff from the relevant line Departments and stakeholders. International best practices will also be reviewed. The analytical review will be followed by a consultative dialogue involving government, non-government, communities and research institutions, in order to facilitate policy engagement and change. The dialogue and follow-up process will be led by the Godavari Foundation.

³⁰ This will also include recommendations for modification of legislation to ensure community access and sustainable use of resources.

Outcome 2 Enhanced capacity of sector institutions for implementing biodiversity-friendly sector plans including monitoring and enforcement of regulations

106. This outcome will be mainly focused on imparting capacity building and training to sector agencies, including the APFD, so that each sector is able to effectively implement sector-specific biodiversity-compatible plans under the overall umbrella of the biodiversity-friendly, landscape-level Strategic Plan. This will require the identification of training needs, preparation of curriculum and materials and identification of target groups. Capacity building efforts will focus on both implementation, and monitoring and enforcement capacities. The outputs to be realized under this outcome are described below.

Output 2.1 Development of biodiversity-friendly sector plans for each key production sector

107. Under the umbrella of the landscape-level SP, each key production sector – namely Fisheries, Aquaculture, Manufacturing units (oil and gas, fertilizers, LPG bottling, iron ore fines, power generation)³¹ – will develop a sector plan that outlines sector specific biodiversity friendly production practices that if integrated into respective production sectors shall contribute towards the effective and sustainable environmental management of the EGREE. The Sector Plans individually as well as collectively shall contribute towards the overarching principles entailed in the landscape level SP. Sector Plans will be prepared by experts after extensive consultations with respective stakeholders. Identification of economically viable, cost effective, technologically feasible and pragmatic solutions shall be the key to the success of the Sector Plans. For example, in the fisheries sector these are likely to include identification and use of biodiversity friendly nets, other fishing gear and tools (e.g. turtle exclusion device), adherence to zoning and seasonal fishing regulations, assessment of carrying capacity and limits of sustainable fish catch, protection of fish nurseries and brooding stock and juveniles, value addition of raw fish products, etc; in the aquaculture sector, it involves promotion of organic aquaculture, reduced pesticide use, etc; in the manufacturing sector, it could include establishing and /or upgrading of effluent treatment plants by the industrial units, redirecting and allocating a part of CSR budgets for conservation programmes (mangrove planting, awareness generation, etc), putting in place disaster/ hazard reduction mechanisms, etc. After obtaining the concurrence of the Governing Body of the Godavari Foundation, the SP shall finally be placed before the State Project Steering Committee for its approval. Sectoral plans for more sectors can be supported conditional to the successful definition and implementation of the sectoral plans mentioned above during the fourth quarter of the project period. Notwithstanding this condition, technical assistance shall be extended to sectors (e.g. industrial) that may have own resources and are interested in developing similar biodiversity friendly plans.

Output 2.2 Training programs and associated tools are developed and implemented for the production sectors

108. Needs assessment: The entry point activity for capacity development will be an assessment of the needs of production sector institutions for minimizing the adverse impacts of their economic production activities on the EGREE. Production sectors to be covered include Fisheries, Aquaculture, Manufacturing units (oil and gas, fertilizers, LPG bottling, iron ore fines, power generation). Target groups within these sectors will be clearly identified and will range from government and quasi-government agencies (such as State Pollution Control Board, line Departments, Municipal Corporation) to private sector companies.

109. Training program: Based on the identified requirements, a training curriculum will be developed and resource persons identified. The presence of research institutions, universities, other educational and

³¹ These production sectors as well as industrial activities within the manufacturing sector have been prioritized based on the rapid “threat-scape” analysis (Annex 12).

training institutes in the State, and NGOs will be capitalized on. To ensure that training support can continue post-project, efforts will be made to associate the training curriculum and resource persons with an existing training institution. For instance, training content related to the production sectors could be associated with a recognized research/ training institute in India that looks at promoting greater environmental stewardship among the private sector (e.g. Wildlife Institute of India, Jawaharlal Nehru Technological University, MSSRF, etc). While the specific training needs to be met will be defined after the needs assessment is completed, it is expected that training content will relate to the following areas (a common yet differentiated approach will be needed for the different production sectors):

- Appreciation of global biodiversity significance of EGREE
- Strategic Planning for sustainable environmental management.
- Monitoring primary and secondary impacts on biodiversity (including accountability and reporting)
- Enforcing the existing environmental regulatory framework
- Principles of avoiding, reducing, remedying and offsetting adverse impacts on biodiversity
- EIA process in general
- Mainstreaming biodiversity in preparation of EIAs and their enforcement
- Options for investing in biodiversity conservation (especially for the large scale industrial units such as fertilizer and natural gas production units) for example, strengthening protected areas, support for scientific research and analysis, support for environmental education and awareness building, sharing information on biodiversity, support for capacity building, support for integrated conservation and development, technological innovations
- Application of biodiversity offsets (drawing on international experience)

Output 2.3 Implementation support to selected activities of the biodiversity-friendly sector plans

110. Once the sector-specific plans on how sector operations can be made more biodiversity-friendly are developed, the project will support implementation of selected activities of these plans. In selecting activities for initial implementation under the project, priority will be given (i) to activities/ sectors that pose the greatest adverse impact on the EGREE, and (ii) to activities/ sectors that are in greatest need of technical and financial support to modify current practices. GEF support will be used to catalyze cofinancing to implement these plans. Cofinancing mobilized from the government for the manufacturing sector will be directed towards implementation of the Sector Plans. Implementation will be initiated under the project but will continue over a much longer time frame than the project. Discussions will be held with sector Departments and Agencies representing the different production sectors at the state-level to better align their budgets with mainstreaming objectives. In addition, resources will also be allocated to mobilizing funding from different sources, as necessary. In the case of private sector stakeholders operating in the EGREE, efforts will be made to better align their CSR programs with mainstreaming biodiversity conservation objectives³². This would be an important step towards taking ownership for their role in maintaining the ecosystem. Continuous interactions, discussions and liaison will be required for bringing changes in CSR activities.

Output 2.4 Compendium of best practices on mainstreaming biodiversity for key production sectors

111. In order to facilitate replication of the project strategy to other coastal and marine environments where production sectors threaten biodiversity, technical handbooks/ manuals will be prepared on best practices on mainstreaming biodiversity for key production sectors. This will include compendiums for Fisheries, Aquaculture, and Salt pans. For manufacturing units the main emphasis will be on natural gas

³² Discussions with the major production sectors in the project area revealed that they are actively involved in CSR activities and most of them are related to health, education, etc but seldom involve biodiversity related activities. The preparation of sectoral plans under the Strategic Plan provides them with an ideal opportunity for gaining greater visibility in the public sphere on contributions made to biodiversity conservation and environmental stewardship for future generations.

& oil, fertilizers, liquid petroleum gas, iron ore fines and power generation (based on the threat-scape analysis in Annex 12). Compendiums will also be prepared for the Ports and Shipping sector.

112. International and regional experience and existing tools will be examined and tailored to the national and local context. A series of consultations will be held with sector representatives (government and private sector) communities and research institutions during the process of development of the compendiums. This will be a useful resource for both government and private sector institutions active in each of the identified production sectors.

Output 2.5 Revised management plan for the CWLS

113. As outlined in the baseline analysis section of this document, the CWLS has a Management Plan for the period 2003-04 to 2012-13. The existing plan is thus now due for revision. In the context of new and emerging challenges and complex issues of natural resource management, the preparation of the plan needs to be made more participatory through a series of consultations with all stakeholders. Further, it is also important to integrate more technical inputs into the drafting of the plan, compared to the earlier plan revision exercise, so as to capture the specificities of the EGREE which is a highly dynamic system and also to address new generation threats and management challenges.

Output 2.6 Training programs and associated tools are developed and implemented for the conservation sector

114. Needs assessment: The entry point activity for capacity development will be an assessment of the needs of the conservation institutions (primarily APFD) for effectively conserving the EGREE in general, and the CWLS in particular. The needs assessment will also include an identification of all target groups that must form part of the training program.

115. Training program: Based on the identified requirements, a training curriculum will be developed and resource persons identified. The presence of research institutions, universities, and other educational and training institutes in the State, and NGOs will be capitalized on. While the specific training needs to be met will be defined after the needs assessment is completed, it is expected that training content will relate to the following areas:

- Management Planning in the EGREE
- Environmental laws, policies and compliance regimes
- Habitat improvement techniques
- Business Planning (Financial Planning, Budgeting by Results)
- Project Management (including operational planning)
- Monitoring and Evaluation (including accountability and reporting)
- Conservation of mangrove forests and participatory forest management
- Conflict Resolution
- Governance systems for effective resource management

116. Associated handbooks/ manuals: To support the training programs and in order to facilitate replication of the project strategy elsewhere, technical handbooks/ manuals will be prepared that will cover the material of each major training session. This will be a useful resource for existing and incoming staff of the CWLS, and can also be shared with administrative units of other areas with coastal/ marine/ estuarine/ mangrove components. Further, in order to ensure that training support can continue post-project, efforts will be made to associate the training curriculum and resource persons with an existing training institution. For instance, training content related to the conservation sector could be integrated with the Wildlife Institute of India or other similar institutes.

Output 2.7 Implementation support to the conservation sector

117. Technical and financial support will be provided for implementing the activities identified through the Management Planning process. These may include eco-restoration of mangrove areas, control of poaching activity, capacity development of enforcement personnel and local community members, participatory resource management, provision of better equipments, strengthening wildlife research, education and nature awareness; strengthening of infrastructure; wildlife veterinary care; staff welfare activities; ecocodevelopment and community oriented activities; fostering eco-tourism, etc. Cofinancing leveraged from the state government for the conservation sector will be deployed for implementation of the CWLS Management Plan.

Output 2.8 System for effective monitoring and enforcement of the Strategic Plan and the Sector Plans

118. This output will focus on putting in place a monitoring, reporting and evaluation system to assess the impacts of biodiversity mainstreaming activities on the EGREE (the system will be developed in coordination with the second project under the IGCMP on Maharashtra's Sindhudurgh coast). The system will initially be used as a tool for monitoring and evaluating project results and impacts, and over the long-term can be used for monitoring implementation of the Strategic Plan for the EGREE and Sector Plans. Project monitoring and evaluation will follow the UNDP/GEF quality guidelines as described in detail in the project's M&E Plan and M&E Budget. Ecological, economic and financial indicators and the associated baseline and target values from the project's log frame will be integrated in the system and tracked. The Project's annual reports, monitoring reports, and results of field visits will also be uploaded in the system, as will the findings of independent mid-term and final evaluations. The system will be able to generate reports on different indicators at any time, depending on the frequency of information upload, which will provide for greater accountability and transparency. Necessary software support for reporting purpose will be made available to sector agencies to facilitate the process.

119. In terms of field-level data collection on impacts of project actions, a combination of approaches will be followed. Community-Based Impact Assessment and other techniques will be employed, while also incorporating local knowledge on impact monitoring. Monitoring groups will be formed under the institutional umbrella of the EDCs and participants will be trained in documenting and mapping village level natural resource use and collecting data on change realized as a result of project interventions. Technical advice and guidance will be provided by external competent support agencies. For each of the production sectors, a combination of self-monitoring/ reporting (through in-house monitoring teams), and external verification will be followed. Measurement of impact indicators related to global benefits will be undertaken through subcontracts to qualified institutions.

120. Surveillance and enforcement of the revised CWLS Management Plan will be undertaken by the PA management unit and its enforcement capacities are to be strengthened under Output 2.7. Ensuring compliance with the production Sector Plans (e.g., fisheries, aquaculture, manufacturing units), as well as compliance with the Community Natural Resource Plan, will be the responsibility of the relevant state line department. The project will support them with the training needed to ensure this compliance

Outcome 3: Community livelihoods and natural resource use are sustainable in the EGREE

121. The people living around the CWLS are meeting their biomass requirement from the sanctuary. They are also engaged in economic activities such as fishing, animal husbandry, collection of shells, etc. The main aim of this project component is to negate the negative dependency and bring resource use to a sustainable level. In order to do this, institutional strengthening will be very important. Most of the villages surrounding the project area have formed Self Help Groups (SHGs) and other local institutions. Twenty EDCs have been constituted under the donor-funded Andhra Pradesh Forestry Project with the help of non-governmental organizations. However, these organizations need to be re-vitalized. The outputs to be realized under this outcome are described below.

Output 3.1 Capacity development of community institutions

122. In the project area there are several community institutions that have functioned in the past or continue to function as a locus for organized community development activities (e.g., SHGs, EDCs, Co-operatives, and Mangrove Protection Committees). In the 44 villages near the CWLS there are 709 SHGs; 20 EDCs; 16 Fishermen's Association; 33 Women's Organization; 5 NGOs; 17 Youth Clubs; and 5 Dairy Cooperatives. Most of these VLIs still exist and some of them, especially SHGs and Co-operatives are functioning well. However, EDCs, Mangrove Protection Committees and other user group-based organizations are not active in the baseline scenario. Therefore, this output will undertake targeted efforts in strengthening the existing VLIs and/ or new VLIs that need to be established. Strengthening of VLIs will be carried out through focused stakeholder consultations and need based training programmes. The training need assessment, preparation of curriculum, identification of resource persons/ institutions, etc will be carried as identified in the sector plan for the livelihoods sector. Since the members of these institutions depend on the estuarine ecosystem for their subsistence and there is a perceived decline in resources, the dependents need to be appropriately capacitated for sustainable resource based livelihood approaches/ alternate livelihoods. Training will be imparted on required skills such as sustainable farming, fishing, use of conservation friendly tools (Turtle Exclusion Devices), sustainable aquaculture, horticulture, handicrafts, soft skills (vocational trainings), value added fish production and marketing (such as dry fish and crab fattening), etc. They may also need training on account-keeping and office management.

123. Rigorous awareness programmes and continuous community interaction with relevant entry point activities may be required for mobilizing these organizations and thus building social capital among the communities. Godavari Foundation shall take a lead role in this regard by facilitating the preparation of the Sector Plan for the Livelihood Sector, initiate stakeholder consultations, undertake entry point activities, etc while involving the concerned line Departments and other stakeholders.

Output 3.2 Development and implementation of a sustainable community natural resource use plan

124. Community awareness of the declining status of resources and the strengthened community/user group organizations will be channelized towards developing a sustainable community natural resource use plan. The plan for community/ user group-based resource management would address different issues related to resource utilization. It will include the preparation of detailed micro plans for collection of resources (including zoning, season, duration, monitoring and enforcement), plans for effective utilization of collected resources through value addition³³, identification of opportunities for income generation during the lean period, and identification of opportunities for non-resource based income generation. Some of the proposed alternatives to be considered include promoting agriculture suited to local ecological conditions including cultivation of medicinal plants and other minor forest produce, promotion of stall feeding of high yielding milch animals, rearing of apiculture, sericulture and pisciculture, promoting community based ecotourism programmes, setting up of cottage industries like handicrafts, supporting the marketing of various local produce. Other, social welfare initiatives could include safe drinking water, housing, roads, and energy saving initiatives such as solar street lights, supply of improved chullahs, LPG, solar cookers, pressure cookers and gobar gas plants. Community activities geared towards development of collective action such as community-level savings scheme and collective enterprises will also be promoted. Depending on the initial stakeholder consultations, micro plans will be prepared either at the level of resource-user group or at the level of the community/ village. The user group approach has the advantage of bringing together similar resource users (e.g., fishing, lime shell collection, etc.) from different villages.

³³ Under the present scenario, the entire catch has to be disposed off on the same or next day.

125. The natural resource management plan and strategies will be founded on extensive interactions among the community. Continuous dialogue with community, cultural/ religious and political leaders will facilitate better self-regulation. Strategies will be discussed and vetted among the user groups so as to ensure their acceptance and efficient implementation. In addition, workshops and studies will be conducted that bring in external expertise and best practices. Necessary data collection, analysis and comprehensive feasibility studies will be undertaken, as required, for selecting the appropriate alternate income generation activities (resource based and non-resource based) to be included in the micro plans. Codification of access rights of the communities and its incorporation into the Management Plan of CWLS shall also be attempted under this component.

Output 3.3 Implementation of livelihood diversification strategy and related socio-economic interventions based on market and community needs

126. This output will provide technical and financial support to the VLIs to implement the livelihood diversification strategies that may further reduce excessive dependency on resources by communities. The strategy shall broadly involve ‘hard’ and ‘soft’ components. While the soft component will involve imparting necessary vocational skills to the communities (particularly women and youth), the ‘hard’ component will offer support for practicing the skills acquired. The alternate livelihoods may include – automobile repair, para-medical training, house-hold appliances repair, driving, welding, plumbing, electric and electronics servicing, etc. Further, community based tourism (CBT) holds good potential for augmenting the community livelihoods. However, these options shall be finalized after extensive stakeholder consultations during the course of project implementation as some of these activities may seem attractive have to be critically looked for its feasibility among the villages and the market for the product. While identifying livelihood strategies, special care shall also be given to pick those activities with substantial livelihood augmentation and income generation potential. Government cofinancing that has been leveraged for the livelihoods sector (from fisheries department budgets and schemes such as DRDA and NREGA) will be directed to putting in place these types of alternative livelihood and social welfare programs.

127. The target beneficiaries will be largely women. By and large, in the surrounding villages, men are involved in fishing and agriculture effort outside the house, and women are involved in allied activities that take place near the homes such as drying of fish, local marketing etc. The culture of women’s self-help groups with good micro-credit system and micro enterprises is very strong. There is substantial social capital built up among women already. The project will target both men and women in defining and implementing alternative livelihood-generation activities. However, going by the initial analysis, more than 50 % of the project beneficiaries are expected to be womenfolk. The project will expend efforts in carrying out wherever possible gender analysis for the design and analysis of such interventions, and shall take steps to ensure that perceptions of both women and men are taken into consideration.

2.4 Key Indicators, Risks and Assumptions

128. The indicators and their baseline and target values are presented in the Project’s Results Framework (Section 3). Based on discussions during project preparation, the following risks were identified. Means to mitigate these risks were also discussed and integrated into the project strategy.

Table 4. Project Risks

| Risk/ Assumption | Risk Rating | Mitigation Strategy |
|---|-------------|---|
| Cooperation of large scale industries located in the EGREE may not be forthcoming due to apprehension that their economic interests would be compromised, and that the benefits gained from participation in the project may be minimal | M | Industries have a responsibility to meet certain environmental standards and norms. Such provisions are to be stressed by the project and necessary measures to support them in meeting these will be undertaken by the project (technical and capacity building measures under Component 2). Large companies (e.g., Reliance, Gujarat State Petrochemicals limited) located in the region stress on their corporate social responsibility and their commitment to community-focused initiatives, including |

| Risk/ Assumption | Risk Rating | Mitigation Strategy |
|---|-------------|--|
| | | environment protection. The project will encourage better alignment of CSR programs with biodiversity conservation and sustainable livelihoods objectives. Further, industry representatives will be key participants in the cross-sectoral institutional mechanism established by the project. Knowledge products will be developed that document the benefits of a well-preserved coastal and marine environment to the medium to long term economic potential of these sectors and identify the different types of incentives –both formal and informal- that could be put in place for each sector. ○ |
| Level of interest from government agencies whose jurisdictions fall within the EGREE may differ depending on the benefits expected from the project | M | Building capacity and awareness among officials regarding coastal and marine biodiversity and their global values will be the focus of the project (capacity building activities under Component 2). Further, creating a common platform that involves all line departments with government recognition may help to address the jurisdictional overlaps. |
| Stakeholder institutions may not provide high-level representation in the cross-sectoral institutional mechanism | M | The design of the cross-sectoral institution will involve active dialogue with stakeholders at the highest level to ensure full ownership and participation in the agreed final structure. |
| Stakeholder institutions may not be willing to share information that is required for mainstreaming coastal and marine biodiversity conservation | M | By involving stakeholder institutions in the design of the cross-sectoral institutional mechanism (Foundation) and giving them a defined role in its operation, full ownership of the project approach will be realized. Further, the structure, composition and authority of the Foundation will be established by Government Order giving it the needed political weight. This will help ensure effective sharing of information. |
| The knowledge products developed would not be utilized for better understanding and cooperation among stakeholders | L | Output 1.2 of the project will specifically focus on a knowledge management and dissemination strategy, not just for the project but also for the IGCMP. This will be a national resource on issues related to mainstreaming biodiversity conservation objectives in production sectors in coastal and marine areas. |
| Strategies for policy amendments and guidelines for addressing biodiversity conservation in sector practices may not receive government and political support | M | In developing the strategies for policy amendments and guidelines, a highly consultative approach will be used drawing on reviews and inputs from the line Departments and private sector representatives to ensure feasibility and acceptability of the proposed changes. |
| Institutions are unwilling to commit the expected number of personnel for training and capacity building | L | This will be mitigated through representation in the Foundation and ownership of the project approach. |
| Trained staff may not continue in current roles | M | This is a risk particularly in government agencies where there are frequent transfers. This risk will be mitigated by ensuring that training sessions are accompanied by associated manuals/ handbooks/ compendiums (Outputs 2.1 and 2.2) that can be a useful resource for existing and in-coming staff. |
| Sector representatives may not be committed to implementing the sectoral plans that form part of the landscape level Strategic Plan for the EGREE | M | Cofinancing commitments have already been obtained from government line Departments. In addition, the project will work with private sector industries operating in the area to better align their CSR programs/ budgets with biodiversity conservation objectives. During PPG discussions it was clear that there is interest in the project objective and approach but support is needed in terms of technical assistance and capacity building. |
| Local communities may not be willing to participate in the conservation and protection of coastal and marine ecosystems unless the project addresses their livelihood needs | L | The project will work closely with surrounding communities to strengthen the existing CBOs and develop micro plans for sustainable natural resource use. Communities will receive technical and financial support for strengthening their livelihoods in sustainable ways. Awareness programmes will be developed that clearly outline the benefits of participation/ demonstration of success stories to gain their interest in the project. The project will recognize the traditional knowledge and crafts of the coastal population and their contribution to the conservation of ecologically sensitive areas. It will also recognize usufruct rights of these communities. |
| To date, non-climate related | M | The project proposes to address this risk by first and foremost building a |

| Risk/ Assumption | Risk Rating | Mitigation Strategy |
|--|-------------|--|
| anthropogenic stressors have likely accounted for most of the global average annual rate of mangrove loss. However, climate change-induced perturbations including relative sea level rise and change in salinity may constitute a substantial proportion of predicted future losses. The impacts of climate change on EGREE are poorly understood. However, available literature suggests that the mangrove ecosystem of the east coast of India is one of the most vulnerable regional habitats to be exposed to sea-level rise. (See section on Climate Change Context for more details.) | | better understanding and knowledge base on the impacts of climate change and variability on the EGREE (study to be done under Output 1.3). The findings of this study will be critical inputs into the process of landscape-level planning and sectoral planning of the project. Further, project efforts to mitigate the impacts of anthropogenic factors on the EGREE will improve the resilience of the EGREE and its ability to cope with climate stressors. |

L = Low threat; M = Medium threat; H= High threat

2.5 Incremental Cost Assessment

129. India's east coast eco-region spans the coastal belt of four states (West Bengal, Orissa, Andhra Pradesh and Tamil Nadu) and union territory of Pondicherry. This 2,545.1 km coastal stretch is characterized by diversified ecosystems, with many areas being of high significance, such as the Godavari River Estuary, as it harbors globally significant species. The focus of the proposed project on the East Godavari River Estuarine Ecosystem is significant due to the following reasons:

- Second largest mangrove area in the country
- High diversity of mangrove species including threatened flora
- Presence of globally threatened species of fauna
- An Important Bird Area with more than 50 migratory species
- The mangrove area and the estuary act as the spawning grounds for fish and other marine resources with significant economic significance
- The patch of mangroves in the estuarine area protects the shore line population of about 40 villages/ hamlets from natural disasters such as sea level rise, cyclones and storms
- Being one of the most productive ecosystems, carbon sequestration potential is presumably high
- Extensive area of the mangrove forests has been diverted for other land uses in the recent years
- The area experiences tremendous pressure from local livelihood dependence and industries of large to small scale
- There has been no comparable project in this region for mainstreaming biodiversity into production sectors

130. Recognizing the biodiversity significance of the area, the government has established the Coringa mangrove region as a protected area. However, given the accelerating development pressures and the fact that biodiversity cannot be shielded from harmful activities taking place in the coastal landscape outside protected areas, far greater emphasis needs to be placed on mainstreaming biodiversity considerations into economic activities.

Baseline scenario

131. Under the baseline (business-as-usual) scenario the trajectory of production activities in the land/seascape surrounding the CWLS and associated degradation trends are likely to continue as there remain persistent barriers to addressing the direct and indirect drivers of degradation. The existing planning and policy framework, as well as institutional arrangements in the EGREE are inadequate for addressing biodiversity conservation issues from a landscape/ seascape perspective. In terms of making

community resource use and livelihoods more sustainable, there is a lack of robust community-based resource governance systems and alternatives.

132. The government of Andhra Pradesh (Departments of Fisheries, Forests and Environment, Agriculture, Industries, Tourism, Rural Development, etc) will undertake various activities in the project area. The baseline is made up of diverse interventions being undertaken by the different sectors to further sector development objectives, but these interventions do not always integrate biodiversity conservation considerations. Furthermore, they are not coordinated at the landscape level to provide a cross-sectoral strategic vision for balancing conservation and production sector objectives that would then integrate sectoral support services to the stakeholders under the same vision. Nevertheless, the baseline forms the essential institutional structure into which mainstreaming of biodiversity conservation objectives needs to be pursued. The baseline is summarized below by each of the project's components. (Incremental Cost Matrix is in Annex 11.)

133. *Sectoral mainstreaming including knowledge management for conservation of coastal and marine biodiversity:* Of the departmental budgets allocated to different sectors, some resources will be set aside for conducting research, monitoring, training of sector staff, etc. However, these efforts will not be geared to mainstreaming biodiversity into sector activities. The baseline investment is estimated at USD 1.7 million.

134. *Institutional capacity development:* The bulk of sectoral department budgets (fisheries, agriculture, horticulture, animal husbandry, forests, and tourism) are allocated to pursuing sectoral objectives through activities at the village/ settlement level. These activities are largely for development of assets, but the development of institutional and individual capacities for balancing biodiversity conservation objectives with sector development objectives will not be addressed. The baseline investment is estimated at USD 0.5 million.

135. *Sustainable community livelihoods and natural resource use in the EGREE:* Under the sectoral department budgets, some resources will be allocated for development of alternate livelihood opportunities and enhancement of existing opportunities to reduce the dependency on natural resources. The baseline investment is estimated at USD 3.3 million.

Alternative strategy

136. While the national and state government has taken some steps towards sustainable utilization and management of coastal and marine resources, there remain challenges to realizing this in the ecologically critical landscape of the EGREE. On-the-ground impacts in terms of minimizing the adverse impacts of the production sectors on biodiversity are not being realized.

137. GEF support will be catalytic in mobilizing action by production sectors and other stakeholders to overcome existing barriers and introduce new strategies and technologies that will improve the condition of natural resources and increase the stability, integrity and productivity of the coastal and marine ecosystems. More importantly, building on the opportunities for community-based or stakeholder based resource management, it will promote a participatory natural resource planning and management strategy, involving large scale stakeholders such as production sectors, strengthening of village level institutions (both existing and new), and development of capacity to enable stakeholders to undertake micro level planning and management of natural resources. It will enhance the capacity of functionaries of different sectors, NGOs and CBOs to promote participatory resource management.

138. The GEF Alternative aims at making a change in natural resource management in the target project area. The aim is to engage and coordinate the different sectors at the landscape level to promote natural resource management that balances ecological and livelihood needs as an integral part of the operation of these sectors. This mainstreaming approach would enhance the resource base and generate local as well as global benefits. The Departments of Forests and Environment, Fisheries, Agriculture, Industries, Ports,

Tourism, Rural Development and many large scale production entrepreneurs will mobilize their resources in the target landscape/ seascape for mainstreaming biodiversity conservation in sector development strategies. The IC matrix details the baseline expenditures, and the incremental cost of realizing each outcome, as well as how the incremental costs are to be shared by the GEF and different government departments. (Incremental Cost Matrix is in Annex 11.)

2.6 *Cost-effectiveness*

139. In line with the GEF Council's guidance on assessing project cost-effectiveness (Cost Effectiveness Analysis in GEF Projects, GEF/C.25/11, April 29, 2005), the project development team has taken a qualitative approach to identify the most cost-effective strategy for achieving the project objective. The competing scenarios for coastal and marine biodiversity conservation are as follows. One option might be to continue with the business as usual scenario of pursuing conservation through the existing CWLS. However, given the escalating threats from anthropogenic activities in the wider landscape, this scenario could result in irreparable losses of existence values, options values and future use values. In addition, restoration of large swathes of the mangroves of the EGREE would be cost-prohibitive. For example, the range of reported costs for mangrove restoration is USD 225–216,000 per ha, not including the cost of the land (Lewis, 2005), and in Thailand, restoring mangroves is costing USD 946 per ha while the cost for protecting existing mangroves is only USD 189 per ha (Ramsar Secretariat, 2001).

140. A second option could be to expand the territorial extent of the protected area, including the mangroves occurring in the revenue areas and merging the non-sanctuary area under the CWLS, which would provide greater security for biodiversity values. However, this scenario would be unrealistic given the policy dimensions attached and the development pressures in the Godavari region. Therefore, the project focuses on a third option, which is to lay the foundation and demonstrate the possibilities for linking biodiversity conservation with livelihoods of local communities and integrating biodiversity conservation into land use planning, production practices and decision making in production sectors located in the coastal and marine environment in and around the Godavari River Estuary that includes mangroves both in sanctuary and non sanctuary areas and the adjoining land and seascape. This third option is considered as the most cost-effective deployment of GEF resources because it will ensure that investments in the conservation of the CWLS are not undone by indirect threats and, in line with the precautionary principle, it will avoid degradation of ecosystem values and services, which once lost could be prohibitively costly to restore and rejuvenate.

141. In addition, there are various elements in the project design that will generate cost efficiencies. First, the project is one of 2 projects under the IGCMP. The programme approach will generate cost efficiencies insofar as it will allow for a common system for monitoring impacts, and a shared knowledge base. This will facilitate comparisons and sharing of good practices across the different coastal and marine ecoregions and realizing economies of scale. Second, the project will develop a multi-sectoral institutional mechanism i.e., the Godavari Foundation (under Outcome 1, Output 1.1) which will facilitate discussion across sectoral agencies and the development of joint implementation strategies through which cost-efficiencies can be realized. Third, the project not only focuses on capacity development, but also on accompanying this skills development with manuals/ handbooks that can be used as an ongoing resource for staff and to train in-coming staff.

2.7 *Sustainability*

142. Ecological sustainability: The project will support long-term viability of globally significant biodiversity in the EGREE by mainstreaming biodiversity conservation considerations into the activities of the productions sector, strengthening the conservation sector's management of the CWLS, as well as making more sustainable the livelihoods/ subsistence sector. At present, of the approximately 33,000

hectares of mangrove forests in the EGREE, only 23,570 hectares are protected under the CWLS. Production and livelihoods/ subsistence activities taking place in areas outside the CWLS are placing greater stress on the ecosystem and threatening the survival probabilities of various vulnerable and threatened flora and fauna species that rely on the EGREE for survival. The project will prevent/ mitigate the negative impacts of key threats to the EGREE through the following key measures: (i) putting in place a cross-sectoral institutional mechanism (Godavari Foundation) to promote cross-sectoral dialogue and joint actions by the different sectors that operate in the EGREE, (ii) develop a landscape-level Strategic Plan that will look at current land use in the project area and will then provide a plan for how land uses/ production practices by the different sectors can be made more compatible with the conservation needs of the EGREE, (iii) develop the capacities and tools of sector institutions to implement the Strategic Plan, and (iv) develop user-group based micro plans for sustainable natural resource use along with capacity building and other technical assistance to VLIs to implement these plans (v) revise the Management Plan of CWLS and devise strategies for addressing new generation threats (vi) capacitating the park staff in improving the management effectiveness of the Sanctuary..

143. Financial sustainability: In order to ensure that biodiversity mainstreaming approaches identified under the project can be financially sustained post project, a financial sustainability strategy will accompany the landscape-level Strategic Plan. The financial strategy will look at a mix of approaches such as re-alignment of existing government budgetary resources, re-alignment of existing resources earmarked under CSR programs of large corporate institutions operating in the area, and/ or mobilizing new resources to mainstream biodiversity conservation concerns. In terms of the livelihoods/ subsistence sector, the project will implement a livelihoods diversification strategy based on economic feasibility assessments to ensure that alternative livelihoods are sustained over the long-term.

144. Institutional sustainability: To ensure that prevailing structures and processes have the capacity to continue to perform their functions over the long term, the project will devote significant resources to capacity development. Capacity development will be based on comprehensive needs assessments targeting all key stakeholders that directly or indirectly impact the EGREE. To ensure that training support can continue post-project, efforts will be made to associate the training curriculum and resource persons with an existing training institution. For instance, training content related to the conservation sector could be integrated with the Wildlife Institute of India or other similar institutes. Training content related to the production sectors could be associated with a recognized research/ training institute in India that looks at promoting greater environmental stewardship among the private sector. Further, the Godavari Foundation shall be capacitated during the course of project implementation to steer the process after the expiry of the project.

145. Social sustainability: To ensure that social exclusion is minimized and social equity maximized, project activities targeting the livelihoods/ subsistence sector will be founded on extensive stakeholder participation. Existing networks of VLIs (SHGs, EDCs, VSS) will be tapped. The project will ensure representation of women's SHGs. The project will target the institutions operating at the community level to enable them to actively participate in developing and implementing activities to ensure continuity and replicability once the project is completed. A novel horizontal method of capacity building developed in another project related to development of sustainable harvest methods for NTFPs, called Community to Community Training (CTCT), will be adopted to disseminate the lessons learnt during the project implementation. This involves organization and conduct of training programmes by the Task Teams of one village for other village communities under the umbrella of JFM committees. This has proven to be a useful mechanism for transfer of experiences in the most efficient and effective way.

2.8 *Replicability*

146. The landscape/ seascape where the project is going to be implemented is the East Godavari River Estuarine Ecosystem (EGREE). Specifically, the direct area of influence of the project, where most of the

project activities will take place will be 46,450 hectares that include the Coringa Wildlife Sanctuary and the area immediately surrounding it along with the abutting villages (see Map in Annex 2). The project is also expected to indirectly influence another 33,550 ha in the EGREE mostly through awareness generation, outreach and capacity development. Thus, the total area intended to be covered under the project comes to around 80,000 hectares including 17,486 hectares water body, and 32,142 hectares of mangroves, of which 21,600 hectares is within the CWLS.

147. More generally, there are various aspects of project design that facilitate replication. Firstly, the project will strengthen the enabling environment for biodiversity mainstreaming into production sectors by proposing strategies on amendments and methodological guidelines to complement existing policies so that they are more explicit on mainstreaming of biodiversity conservation considerations (Output 2.3). Secondly, the project will undertake research studies to address key knowledge gaps that impede mainstreaming of biodiversity conservation considerations in the activities of production sectors. These studies will be easily accessible through the knowledge management system established under Output 2.2. Lessons learned will also be easily accessible through the knowledge management system. Thirdly, the project's training programs (under Outputs 2.1, 2.2, and 3.1) will be associated and internalized with existing training institutions operating in the country so that this can become an accessible resource to other coastal and marine areas where there is interest in replicating the project approach. Training programs will be accompanied by handbooks/ manuals/ compendiums.

148. Further, towards the latter part of the project, efforts will be made to replicate the good practices evolved during the project implementation in India's other coastal states. For this, stakeholders from other coastal States/Union Territories (Kerala, Tamil Nadu, Goa, Maharashtra, Karnataka, Orissa, West Bengal, Lakshadweep, Andaman & Nicobar islands, Dadra Nagar Haveli and Pondicherry) will be trained on various aspects of integrated coastal zone management with a view to encourage potential replication elsewhere. This 'hands-on-training' shall be undertaken by the Godavari Foundation with the help of relevant national institute (National Institute of Oceanography, Wildlife Institute of India, etc) having adequate domain expertise.

3. PROJECT RESULTS FRAMEWORK

| This project will contribute to achieving the following Country Programme Outcome as defined in the CPAP for India (2008-2012): Outcome 4.3 Progress towards meeting national commitments under multilateral environmental agreements; and Output 4.3.2 National efforts supported towards conservation and management of natural resources | | | | | |
|--|--|--|---|---|---|
| Country Programme Outcome Indicators: Output 4.3.2 Indicator: Number of new joint initiatives undertaken for integrated biodiversity conservation | | | | | |
| Primary applicable Key Environment and Sustainable Development Key Result Area: 1. Mainstreaming environment and energy | | | | | |
| Applicable GEF Strategic Objective and Program: Strategic Objective 2 – To mainstream biodiversity in production landscapes/ seascapes and sectors; Strategic Priority 4 – Strengthening the policy and regulatory frameworks for mainstreaming biodiversity | | | | | |
| Applicable GEF Expected Outcomes: Conservation and sustainable use of biodiversity incorporated in the productive landscape (area of influence of economic activities in and around Coringa Wildlife Sanctuary, East Godavari river Estuary Area.) | | | | | |
| Applicable GEF Outcome Indicators: | | | | | |
| Project Strategy | Indicator | Baseline | Targets ³⁴ | Means of verification | Risks and Assumptions |
| The long-term goal to which the project will contribute is the sustainable management of the globally significant coastal and marine biodiversity of India by mainstreaming biodiversity conservation considerations into production activities in the coastal and marine zones, while also taking into account development imperatives, need for sustaining livelihoods and also addressing retrogressive factors including the anticipated impacts of climate change. | | | | | |
| Immediate Objective: To mainstream coastal and marine biodiversity conservation into production sectors in the East Godavari River Estuarine Ecosystem (EGREE) | Landscape/seascape area in the EGREE where production activities mainstream biodiversity conservation | 0 ha | About 80,000 ha (46,450 ha as area of direct influence and 33,550 ha as area of indirect influence) | Project Reports; Independent mid-term and final evaluations | Cooperation of large scale industries located in the EGREE may not be forthcoming due to apprehension that their economic interests would be compromised, and that the benefits gained from participation in the project may be minimal |
| | Percentage of allocation of CSR expenditures of production sectors aligned with landscape-level Strategic Plan for the EGREE | Limited link with biodiversity conservation objectives | At least 50% of the CSR budget of production sectors aligned with biodiversity conservation and sustainable livelihoods objectives at the landscape level | Annual Reports of the production sectors | |
| | Improvement in Total Capacity Development Scorecard (Annex 7) ³⁵ | 23% | 94% | | Mid-term and Final Evaluation |

³⁴ The time frame for realizing project targets is project end (2015), unless otherwise specified.

³⁵ This scorecard has been designed specifically for this project, as a tool to measure success in terms of developing national capacity to mainstream biodiversity conservation considerations into production sectors. While, the tool is conceptually based on the UNDP Capacity Development Scorecard, it is different in its substantive focus and the indicators because the UNDP Capacity Development Scorecard is meant to assess the development of capacities vis-à-vis the management of protected areas. During project development, the Capacity Scorecard has been applied at a general level to all production sectors operating in the EGREE. However, during the 1st 6 months of project implementation, it will be applied separately to different sectors, and within each sector, separately to state, private sector and community institutions. Once Sector Plans are prepared by mid-term, the project will have a more realistic assessment of targets.

| Project Strategy | Indicator | Baseline | Targets ³⁴ | Means of verification | Risks and Assumptions | |
|--|--|--|--|--|---|--|
| | Population size of following critical species remains stable or increases: <i>Scyphiphora hydrophyllacea</i> (IUCN threatened) Olive Ridley turtle (IUCN vulnerable status) Fishing cat (IUCN status is endangered) | <i>Scyphiphora hydrophyllacea</i> : 70 numbers Olive Ridley Turtle: 300 annually Fishing cat: 112 as per 2001 census | Population size stable/ increasing as follows: <i>Scyphiphora hydrophyllacea</i> (increase) Olive Ridley turtle (stability) Fishing cat (at least stable or increase) | Monitoring reports | fauna may depend on various extraneous factors over which project may have little control. For instance, political turmoil/ insurgency along the migratory route of birds may affect the population that ultimately reaches the EGREE. | |
| | Population size of birds (including migratory) remains stable or increases: | Baseline to be collected in Year 1 | Population size remains at least stable or increases. | Annual bird count | | |
| | % of open (degraded) mangrove areas in the project area reduced to the minimum | 40 % | 10 % | Plantation Journal/ research studies, aerial photography, Monitoring documents | | |
| Outcome 1: Sectoral planning in the EGREE mainstreams biodiversity conservation considerations | Establishment of cross-sectoral institutional mechanism with representation from conservation, livelihood and production sectors | 0 | 1 | Government Orders or notifications, meeting records | Stakeholder institutions may not provide high-level representation in the cross-sectoral institutional mechanism Stakeholder institutions are unwilling to share information that is required for mainstreaming coastal and marine biodiversity conservation | |
| | Improvement in Systemic Level Indicators of Capacity Development Scorecard (Annex 7) | SYSTEMIC LEVEL | | B/L | Tgt. | Mid-term and Final Evaluation The knowledge products developed would be utilized for better understanding and cooperation among stakeholders Strategies developed for policy amendments and guidelines for addressing biodiversity conservation in sector practices may not receive government and political support |
| | | 1. Capacity to conceptualize and formulate policies, legislations, strategies, programme | | 67% | 100% | |
| | | 2. Capacity to implement policies, legislation, strategies and programmes | | 33% | 100% | |
| | | 3. Capacity to engage and build consensus among all stakeholders | | 17% | 83% | |
| | | 4. Capacity to mobilize information and knowledge | | 33% | 100% | |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | | 33% | 100% | | | |

| Project Strategy | Indicator | Baseline | Targets ³⁴ | Means of verification | Risks and Assumptions |
|--|---|--|---|---|---|
| | Landscape level Strategic Plan that provides an enabling policy environment for mainstreaming biodiversity conservation into production sectors | 0 | 1 Strategic Plan | Approved Strategic Plan document | |
| | Amount of resources available for funding the Foundation and the compliance of approved sectoral plans | NA | Financial sustainability strategy prepared; Atleast 50% of costs for the foundation covered by regular government and other resources Atleast 50% of compliance of approved sectoral plans funded | Strategy document Financial report of the foundation Review of sectoral plans | |
| | Strategies developed for ensuring that existing sector policies mainstream biodiversity conservation | Policies requiring amendments identified in Year 1 | Strategies developed for 100% of identified policies | Relevant GOs & notifications | |
| | By project end, any new manufacturing units entering the licensing process in the EGREE are subject to the CRZ 2010 Guidelines | 0 | By project end, any new manufacturing units entering the licensing process in the EGREE are subject to the new guidelines that also incorporate climate change considerations | Final Evaluation | |
| | Incentives for production sector companies to promote biodiversity friendly practices by giving them opportunities for marketing/ advertising their efforts | 0 | By Year 2 at least 2-3 companies take up this incentive; By year 5, at least 10 companies take up this incentive | Administrative records of the project, mid-term evaluation, final evaluation | |
| Outcome 2: Enhanced capacity of sector institutions for implementing a biodiversity-friendly | Sector-specific biodiversity-compatible plans | 0 ³⁶ | Sectoral plans for Fisheries, Aquaculture, Salt pans, Manufacturing units, Ports and Shipping, Tourism | Approved Sector Plan documents | Institutions are unwilling to commit the expected number of personnel for training and capacity building Trained staff may not continue in |

³⁶ At present, the only sectoral plan is the CWLS Management Plan and this too has a number of gaps.

| Project Strategy | Indicator | Baseline | Targets ³⁴ | | Means of verification | Risks and Assumptions |
|---|---|---|---|----------------|--|---|
| sector plan including monitoring and enforcement of regulations | Improvement in Institutional and Individual Level Indicators of Capacity Development Scorecard (Annex 7) | INSTITUTIONAL | B/L | Tgt. | Mid-term and Final Evaluation | current roles Sector representatives are committed to implementing the sectoral plans that form part of the landscape level Strategic Plan for the EGREE |
| | | 1. Capacity to conceptualize and formulate policies, legislations, strategies and programme | 0% | 100% | | |
| | | 2. Capacity to implement policies, legislation, strategies and programmes | 11% | 78% | | |
| | | 3. Capacity to engage and build consensus among all stakeholders | 0% | 100% | | |
| | | 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 33% | 100% | | |
| | | INDIVIDUAL | B/L | Tgt. | | |
| | | 2. Capacity to implement policies, legislation, strategies and programmes | 17% | 100% | | |
| | | 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 33% | 100% | | |
| | Number of representatives from the key sectors (government and private) trained in mainstreaming approaches | 0 | Production sector: 1,000 Conservation sector: 300 Livelihood sector: 10,000 | | Training records; training evaluations | |
| | Compendium of best practices on mainstreaming biodiversity for key production sector | 0 | 1 ³⁷ | | Final document | |
| Use of correct fishing gear by commercial fishing operations (indicator, baselines and targets will have to be re-visited once the Sector Plans | Limited use (baseline to be measured in 1 st 3 months of project) | By project end, at least 70-80% of commercial fishing operations are using correct fishing gear | | Survey reports | | |

³⁷ This will include compendiums for Fisheries, Aquaculture, and Salt pans. For manufacturing units the main emphasis will be on natural gas & oil, fertilizers, liquid petroleum gas, iron ore fines and power generation (based on the threat-scape analysis in Annex 12). Compendiums will also be prepared for the Ports and Shipping sector.

| Project Strategy | Indicator | Baseline | Targets ³⁴ | Means of verification | Risks and Assumptions |
|--|--|---|---|------------------------------------|---|
| | are prepared by mid-term) | | | | |
| | Decline in pesticide concentration in the effluents of aqua farms in the target landscape (indicator, baselines and targets will have to be re-visited once the Sector Plans are prepared by mid-term) | Baseline concentrations to be measured in 1 st 3 months of project | 70-80% decline over baseline concentrations | Survey reports | |
| | Effluents from manufacturing units (indicator, baselines and targets will have to be re-visited once the Sector Plans are prepared by mid-term) | Baseline to be defined in consultation with the Pollution Control Board at time of approval of Sector Plans | Decline of 70-80% over baseline | Survey reports | |
| | Management Effectiveness Evaluation (MEE) Scorecard ³⁸ | Baseline to be measured in 1 st 3 months of project | MEE score improves by 20% by year 3 of the project and 30 % by year 5 | MoEF monitoring reports | |
| Outcome 3: Community livelihoods and natural resource use are sustainable in the EGREE | Number of SHGs/ CBOs strengthened | 0 | In 44 abutting villages 709 SHGs; 20 EDCs; 16 Fishermen's Association; 33 Women's Organization; 5 NGOs; 17 Youth Clubs; and 5 Dairy Cooperatives are strengthened | Administrative records | Local communities may not be willing to participate in the conservation and protection of coastal and marine ecosystems unless the project addresses their livelihood needs The opportunities for economic activities would stimulate the poor natural resource dependent marginal communities to organize and perform better. |
| | Number of skills-development activities carried out for SHGs/ CBOs/ and other local institutions for alternative and/ or sustainable ecosystem-based livelihoods | 0 | Target to be defined after design of the micro-plans | Administrative reports and records | |

³⁸ Recently, the Indian Government has adopted a framework for Management Effectiveness Evaluation (MEE) of the Protected Area network (copy of the framework is available upon request from UNDP-India Country Office). The framework is based on the tool developed by WWF and the World Bank to track management effectiveness of PAs, and it covers various aspects of PA management including – Context, Planning, Inputs, Process, Outputs, and Outcomes. In the initial phase of project implementation, UNDP will work with MoEF to expedite application of this framework to the CWLS.

| Project Strategy | Indicator | Baseline | Targets ³⁴ | Means of verification | Risks and Assumptions |
|-----------------------------|--|--|--|-------------------------------------|-----------------------|
| | that reduce pressures on biodiversity | | | | |
| | Number of people shifting to alternative livelihood options that reduce pressure on biodiversity | Baseline to be collected in Year 1 | Target to be defined after design of the micro-plans | Records of CBOs/SHGs, etc | |
| | Incidents of felling of mangrove trees, non-adherence to the seasonal ban on fishing, destructive fishing practices by local communities within the project area in contravention of community natural resource use plan | Baseline to be measured in 1 st 3 months of project | Declines by 50% by year 5, compared with baseline levels | Monitoring and surveillance reports | |
| Project Components/ Outputs | | | | | |
| Output 1.1 | Cross-sectoral institutional mechanism is in place | | | | |
| Output 1.2 | Biodiversity-friendly Strategic Plan (SP) is prepared for the project area using a strategic environmental assessment approach | | | | |
| Output 1.3 | System for knowledge management and exchange across the GEF programme | | | | |
| Output 1.4 | Strategies for incorporating coastal and marine biodiversity conservation considerations into sector policies and guidelines of production sectors | | | | |
| Output 2.1 | Development of biodiversity-friendly sector plans for each key production sector | | | | |
| Output 2.2 | Training program and associated tools are developed and implemented for the production sectors | | | | |
| Output 2.3 | Implementation support to selected activities of the biodiversity-friendly sector plans | | | | |
| Output 2.4 | Compendium of best practices on mainstreaming biodiversity for each key production sector | | | | |
| Output 2.5 | Revised management plan for the CWLS | | | | |
| Output 2.6 | Training program and associated tools are developed and implemented for the conservation sector | | | | |
| Output 2.7 | Implementation support to the conservation sector | | | | |
| Output 2.8 | System for effective monitoring and enforcement of the Strategic Plan and the Sector Plans | | | | |
| Output 3.1 | Capacity development of community institutions | | | | |
| Output 3.2 | Development and implementation of a sustainable community natural resource use plan | | | | |
| Output 3.3 | Implementation of livelihood diversification strategy and related socio-economic interventions based on market and community needs | | | | |

4. TOTAL BUDGET AND WORKPLAN

| | | | |
|---|--|-------------|----------|
| Award ID: | 00060659 | Project ID: | 00076477 |
| Award Title: | Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the East Godavari River Estuarine Ecosystem, | | |
| Business Unit: | IND10 | | |
| Project Title: | Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the East Godavari River Estuarine Ecosystem | | |
| PIMS no.: | 4257 | | |
| Implementing Partner (Executing Agency)/ Responsible partner | Ministry of Environment & Forests (MoEF), Government of India / Wildlife Wing, Environment, Forests, Science & Technology Department, State Government of Andhra Pradesh. | | |

| Responsible Party/ Implementing Agent | Fund ID | Donor Name | Atlas Budgetary Account Code | Atlas Budget Description | Total | Amount Year 1 (USD) | Amount Year 2 (USD) | Amount Year 3 (USD) | Amount Year 4 (USD) | Amount Year 5 (USD) | Budget Note |
|--|---------|------------|------------------------------|--|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------|
| MoEF/ GoAP/ UNDP | 62000 | GEF | 71300 | Local consultants | 308,200 | 30,820 | 64,722 | 67,804 | 70,886 | 73,968 | 1 |
| | | | 72100 | Contractual Services-Companies | 60,000 | 6,000 | 12,600 | 13,200 | 13,800 | 14,400 | 2 |
| | | | 71600 | Travel | 60,500 | 6,050 | 12,705 | 13,310 | 13,915 | 14,520 | 3 |
| | | | 74500 | Miscellaneous Expenses | 33,000 | 3,300 | 6,930 | 7,260 | 7,590 | 7,920 | 4 |
| | | | 72200 | Equipment | 75,000 | 7,500 | 15,750 | 16,500 | 17,250 | 18,000 | 5 |
| | | | 72300 | Material and goods | 29,200 | 2,920 | 6,132 | 6,424 | 6,716 | 7,008 | 6 |
| | | | 74200 | Audio-visual and printing production costs | 40,000 | 4,000 | 8,400 | 8,800 | 9,200 | 9,600 | 7 |
| | | | | TOTAL OUTCOME 1 | 605,900 | 60,590 | 127,239 | 133,298 | 139,357 | 145,416 | |
| MoEF/ GoAP/ UNDP | 62000 | GEF | 71300 | Local consultants | 212,900 | 21,290 | 44,709 | 46,838 | 48,967 | 51,096 | 8 |
| | | | 71200 | International Consultants | 70,000 | 7,000 | 14,700 | 15,400 | 16,100 | 16,800 | 9 |
| | | | 72100 | Contractual Services-Companies | 2,507,000 | 250,700 | 526,470 | 551,540 | 576,610 | 601,680 | 10 |
| | | | 71600 | Travel | 58,000 | 5,800 | 12,180 | 12,760 | 13,340 | 13,920 | 11 |
| | | | 74500 | Miscellaneous Expenses | 50,000 | 5,000 | 10,500 | 11,000 | 11,500 | 12,000 | 12 |
| | | | 74200 | Audio-visual and printing production costs | 40,000 | 4,000 | 8,400 | 8,800 | 9,200 | 9,600 | 13 |
| | | | | TOTAL OUTCOME 2 | 2,937,900 | 293,790 | 616,959 | 646,338 | 675,717 | 705,096 | |
| MoEF/ GoAP/ UNDP | 62000 | GEF | 71300 | Local consultants | 61,000 | 6,100 | 12,810 | 13,420 | 14,030 | 14,640 | 14 |
| | | | 72100 | Contractual Services-Companies | 1,940,000 | 194,000 | 407,400 | 426,800 | 446,200 | 465,600 | 15 |
| | | | 71600 | Travel | 17,225 | 1,723 | 3,616 | 3,790 | 3,962 | 4,134 | 16 |
| | | | 74500 | Miscellaneous Expenses | 15,000 | 1,500 | 3,150 | 3,300 | 3,450 | 3,600 | 17 |
| | | | 74200 | Audio-visual and printing production costs | 20,011 | 2,002 | 4,202 | 4,402 | 4,602 | 4,803 | 18 |
| | | | | TOTAL OUTCOME 3 | 2,053,236 | 205,325 | 431,178 | 451,712 | 472,244 | 492,777 | |
| MoEF/ GoAP/ UNDP | 62000 | GEF | 71400 | Project Manager (NPMU) | 108,000 | 10,800 | 22,680 | 23,760 | 24,840 | 25,920 | 19 |

| Responsible Party/ Implementing Agent | Fund ID | Donor Name | Atlas Budgetary Account Code | Atlas Budget Description | Total | Amount Year 1 (USD) | Amount Year 2 (USD) | Amount Year 3 (USD) | Amount Year 4 (USD) | Amount Year 5 (USD) | Budget Note |
|---------------------------------------|---------|------------|------------------------------|--|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------|
| | | | 71400 | Project Associate (NPMU) | 81,000 | 8,100 | 17,010 | 17,820 | 18,630 | 19,440 | 20 |
| | | | 71400 | Office Assistants (NPMU) | 32,400 | 3,240 | 6,804 | 7,128 | 7,452 | 7,776 | 21 |
| | | | 71400 | Project Coordinator (SPMU) | 75,600 | 7,560 | 15,876 | 16,632 | 17,388 | 18,144 | 22 |
| | | | 71400 | Financial cum Admin Assistant (SPMU) | 43,200 | 4,320 | 9,072 | 9,504 | 9,936 | 10,368 | 23 |
| | | | 71400 | Office Assistants (SPMU) | 32,400 | 3,240 | 6,804 | 7,128 | 7,452 | 7,776 | 24 |
| | | | 72400 | Office facilities, equipment and communications (NPMU) | 5,000 | 500 | 1,050 | 1,100 | 1,150 | 1,200 | 25 |
| | | | 72400 | Office facilities, equipment and communications (SPMU) | 10,000 | 1,000 | 2,100 | 2,200 | 2,300 | 2,400 | 26 |
| | | | 71600 | Travel (NPMU) | 15,000 | 1,500 | 3,150 | 3,300 | 3,450 | 3,600 | 27 |
| | | | 71600 | Travel (SPMU) | 24,000 | 2,400 | 5,040 | 5,280 | 5,520 | 5,760 | 28 |
| | | | | TOTAL PROJECT MANAGEMENT | 426,600 | 42,660 | 89,586 | 93,852 | 98,118 | 102,384 | |
| | | | | TOTAL GEF ALLOCATION | 6,023,636 | 602,365 | 1,264,962 | 1,325,200 | 1,385,436 | 1,445,673 | |

| Budget Note | Explanation |
|-------------|---|
| 1 | This includes the services of Legal Expert for drafting the constitution of Godavari Foundation, Conservation Biologist, Socio-economic and Livelihood Expert, Communication and Outreach Expert, Lead Specialist on Preparation of the Strategic Plan, Local consultant for Gap analysis, identification, prioritization and preparation of research plan, Resource Economist for PES study, Biodiversity Expert for PES Study, Climate modeling specialist for climate impact study, Biodiversity specialist for Climate Impact study, Coastal Geomorphology and Hydrology Specialist for Climate Impact Study, Relevant Specialists for other studies identified as research gaps, Data base manager for knowledge management centre, Data base Assistant, Consultant on long term institutional and financial study, Law Specialist. Annex 9 provides details on total weeks, weekly rate and terms of reference for these consultants. |
| 2 | This is the cost of organizing ten 2-day workshops (estimated cost USD 1000 per workshop) related to Output 1.1, and the cost of organizing 10 training workshops (estimated cost USD 1000 per workshop) to promote replication of the project strategy to other coastal states under Output 1.3. |
| 3 | This covers travel within India for the Legal Expert involved in the establishment of the Godavari Foundation, Subject specialists of Foundation to provide technical support for outputs 1.1 through 1.4, travel related to preparation of the Strategic Plan, travel related to Gap Analysis and development of the research plan, travel related to the PES study, Climate Impact Study, and other studies identified as research gaps, travel of the Data base manager and assistant, and travel of the consultant on long term institutional and financial study. |
| 4 | This is the cost of various meetings and consultations for realizing outputs 1.1 through 1.4. The average cost per consultation is estimated at USD500 per meeting/consultation. |
| 5 | This is cost of 10 computers at USD1,500 each and a lump sum cost of USD 60,000 for hardware and software related to establishment of the knowledge management and information exchange center under Output 1.3. |
| 6 | This is the cost of furnishing the office of the Godavari Foundation |
| 7 | Cost of publications and other materials that will be used for awareness-raising and information dissemination activities related to Outcome 1. |
| 8 | This includes the services of Sector specialists for key sectors such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans; Conservation Biologist; Socio-economic and Livelihood Expert; Communication and Outreach Expert; Specialist on mainstreaming BD in production sectors; local consultant to carry out the independent mid term evaluation and the independent final evaluation; local M&E consultant to adapt and apply the Capacity Development Score Card; and local consultants for audit. Annex 9 provides details on total weeks, weekly rate and terms of reference for these consultants. |
| 9 | This includes the services of an international expert on mainstreaming biodiversity in production sectors to prepare the Compendium of best practices on mainstreaming; |

| Budget Note | Explanation |
|-------------|---|
| | the services of Evaluation Experts for the mid-term and final evaluations. Annex 9 provides details on total weeks, weekly rate and terms of reference for these consultants. |
| 10 | This includes subcontracts to host the inception workshop (USD 7,000); and subcontracts for supporting implementation of select activities under the biodiversity-friendly sector plans and subcontracts for implementing activities under the revised CWLS management plan (USD 2.5 million). For example, in the fisheries sector these are likely to include identification and use of biodiversity friendly nets, other fishing gear and tools (e.g. turtle exclusion device), adherence to zoning and seasonal fishing regulations, assessment of carrying capacity and limits of sustainable fish catch, protection of fish nurseries and brooding stock and juveniles, value addition of raw fish products, etc; in the aquaculture sector, it involves promotion of organic aquaculture, reduced pesticide use, linking to premium market for organic prawns, etc; in the manufacturing sector, it includes, establishing and /or upgrading of effluent treatment plants by the industrial units, redirecting and allocating a part of CSR budgets for conservation programmes (mangrove planting, awareness generation, etc), putting in place disaster/ hazard reduction mechanisms, etc; and in the ports sector, the practices may include, adherence to the specifications of EIA for any future development, deepening of channels done with minimal impact on the ecological integrity of the area, etc. Examples for the CWLS MP include eco-restoration of mangrove areas, control of poaching activity, capacity development of enforcement personnel and local community members, participatory resource management, provision of better equipments, strengthening wildlife research, education and nature awareness; strengthening of infrastructure; wildlife veterinary care; staff welfare activities; ecodevelopment and community oriented activities; fostering eco-tourism, etc. Priority will be given (i) to activities/ sectors that pose the greatest adverse impact on the EGREE, and (ii) to activities/ sectors that are in greatest need of technical and financial support to modify current practices. |
| 11 | This includes domestic travel to the project site for the various experts and specialists involved in different outputs under Outcome 2; it also includes international travel for the international evaluation experts and the expert on mainstreaming BD into production sectors. |
| 12 | This is the cost of various meetings and consultations for realizing outputs 2.1 through 2.8. The average cost per consultation is estimated at USD500 per meeting/consultation. |
| 13 | Cost of publications and other materials that will be used for training, awareness-raising and information dissemination activities related to Outcome 2. |
| 14 | This includes the services of the Conservation Biologist, Socio-economic and Livelihood Expert, Communication and Outreach Expert to developing community capacities, designing the community-based resource management plan, and identifying alternative livelihood opportunities. This also includes the services of additional local specialists on biodiversity, livelihoods and resource economics to support the design and implementation of the community-based NRM strategies. Annex 9 provides details on total weeks, weekly rate and terms of reference for these consultants. |
| 15 | This is the cost of subcontracts for organizing training workshops for the communities and for supporting CBOs with the implementation of the community-based NRM plans. The latter is likely to include inputs for activities such as promoting agriculture suited to local ecological conditions including cultivation of medicinal plants and other minor forest produce, promotion of stall feeding of high yielding milch animals, rearing of apiculture, sericulture and pisciculture, promoting community based ecotourism programmes, setting up of cottage industries like handicrafts, supporting the marketing of various local produce, etc. Priority will be given (i) to activities/ sectors that pose the greatest adverse impact on the EGREE, and (ii) to activities/ sectors that are in greatest need of technical and financial support to modify current practices. |
| 16 | Cost of travel of local specialists and Subject Specialists related to Outcome 3. |
| 17 | This is the cost of various meetings and consultations for realizing outputs 3.1 through 3.3. The average cost per consultation is estimated at USD500 per meeting/consultation. Some local consultations with communities will also be organized (estimated cost per meeting is USD 50). |
| 18 | Cost of publications and other materials that will be used for training, awareness-raising and information dissemination activities related to Outcome 3. |
| 19 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 20 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 21 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 22 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 23 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 24 | Annex 9 provides details on total weeks, weekly rate and terms of reference for this consultant. |
| 25 | Facilities and communications (internet, landlines, cell phone service) for management purposes (estimated at approximately \$80/ month) |
| 26 | Facilities and communications (internet, landlines, cell phone service) for management purposes (estimated at approximately \$160/ month) |
| 27 | Management-related travel to project site for staff in the NPMU (estimated 25 trips @ 600 each) |
| 28 | Management-related travel to project site for staff in the SPMU (estimated 240 trips at 100 each) |

Summary of Funds:

| Name of Cofinancier (Source) | Classification | Type | Amount (\$) | Y1 | Y2 | Y3 | Y4 | Y5 |
|--|-----------------------|------------------------|-------------------|------------------|------------------|------------------|------------------|------------------|
| Government of Andhra Pradesh -- Department of Environment, Forest, Science, and Technology | Confirmed with letter | Cash (partner-managed) | 18,000,000 | 2,250,000 | 2,250,000 | 4,500,000 | 4,500,000 | 4,500,000 |
| Total Cofinancing | | | 18,000,000 | 2,250,000 | 2,250,000 | 4,500,000 | 4,500,000 | 4,500,000 |

Note 1: 18 million in cofinancing has been mobilized from the state government which will redirect state resources in the fisheries sector (1 million), manufacturing sectors (10 million), livelihoods sector (5 million under various central and state plan schemes such as DRDA, NREGA, etc for rural development, child and woman welfare, capacity development programmes) and the conservation sector (2 million for the management of the CWLW and the adjoining mangrove forests) to conform with the Landscape-level Strategic Plan and biodiversity-friendly Sector Plans that are to be developed for the EGREE. The bulk of cofinancing will be expended in the latter half of the project, once Sector Plans have been developed.

Note 2: Cofinancing from the private sector companies operating in the EGREE is expected over the course of the project life as the companies begin providing a greater share of their CSR budgets to activities outlined in the landscape-level Strategic Plan for the EGREE.

Budget by Outcomes and Outputs:

| OUTCOME | OUTPUT | | BUDGET (GEF resources, USD) |
|--|------------|--|-----------------------------|
| Sectoral planning in the EGREE mainstreams biodiversity conservation considerations | Output 1.1 | Cross-sectoral institutional mechanism is in place | 117,700 |
| | Output 1.2 | Biodiversity-friendly Strategic Plan (SP) is prepared for the project area using a strategic environmental assessment approach | 33,000 |
| | Output 1.3 | System for knowledge management and exchange across the GEF programme | 420,700 |
| | Output 1.4 | Strategies for incorporating coastal and marine biodiversity conservation considerations into sector policies and guidelines of production sectors | 34,500 |
| Sub total Outcome 1 | | | 605,900 |
| Enhanced capacity of sector institutions for implementing biodiversity-friendly sector plans including monitoring and enforcement of regulations | Output 2.1 | Development of biodiversity-friendly sector plans for each key production sector | 116,000 |
| | Output 2.2 | Training program and associated tools are developed and implemented for the production sectors | 81,000 |
| | Output 2.3 | Implementation support to selected activities of the biodiversity-friendly sector plans | 500,000 |
| | Output 2.4 | Preparation of compendium of best practices | 65,500 |
| | Output 2.5 | Revision of Management Plan for CWLS | 22,000 |
| | Output 2.6 | Training programme/tools (conservation sector) | 55,000 |
| | Output 2.7 | Implementation support to Conservation Sector | 20,00,000 |

| OUTCOME | OUTPUT | | BUDGET (GEF resources, USD) |
|---|---------------|--|------------------------------------|
| | Output 2.8 | System for effective monitoring and enforcement of the Strategic Plan and the Sector Plans | 98,400 |
| Sub total Outcome 2 | | | 2,937,900 |
| Community livelihoods and natural resource use are sustainable in the EGREE | Output 3.1 | Capacity development of community institutions | 92,011 |
| | Output 3.2 | Development and implementation of a sustainable community natural resource use plan | 19,000 |
| | Output 3.3 | Implementation of livelihood diversification strategy and related socio-economic interventions based on market and community needs | 1,942,225 |
| Sub total Outcome 3 | | | 2,053,236 |
| Sub Total NPMU | | | 241400 |
| Sub Total SPMU | | | 185200 |
| Total Project Management | | | 426,600 |
| GRAND TOTAL | | | 6,023,636 |

5. MANAGEMENT ARRANGEMENTS

5.1 Project Implementation Arrangements

149. The project is co-financed with funding from the GEF and UNDP acts as the GEF Executing Agency. The project will be implemented by the Ministry of Environment and Forests (MoEF) who will assume the overall responsibility for the achievement of the project results as the Implementing Partner (GEF Local Executing Agency). Department of Forests, Government of Andhra Pradesh will be the 'Responsible Party' for implementing the project at the State level. UNDP provides overall management and guidance from its New Delhi Country Office and the Regional Coordination Unit (RCU) in Bangkok, and is responsible for monitoring and evaluation of the project as per normal GEF and UNDP requirements. The administration of project funds will be the joint responsibility of MoEF, Government of Andhra Pradesh and the UNDP.

150. **National Project Director (NPD)**: MoEF will designate the concerned Deputy Inspector General of Forests (Wildlife), as the NPD. The NPD will coordinate project execution on behalf of GoI and ensure its proper implementation. The NPD will be responsible for overall project management, including adherence to the Annual Work Plan (AWP) and achievement of planned results as outlined in the Project Document, and for the use of project funds through effective management and well established project review and oversight mechanisms. The NPD will also ensure coordination with various Ministries and Agencies, provide guidance to the project team, coordinate with UNDP, review reports and look after the administrative arrangements required. More specifically, NPD's project finance and management responsibilities will include: 1) ensuring that the committed co-financing is made available on a timely basis for project implementation; 2) coordinating the financing from UNDP and GEF and from other sources; and 3) assisting in preparing Terms of Reference for contractors and required tender documentation.

151. **National Project Steering Committee (NPSC)** will be responsible for taking appropriate management decisions to ensure that the project is implemented in line with the agreed project design and consistent with national and state development policies and priorities. The NPSC will meet at least twice in a year and will provide the required oversight to the project and also ensure the overall co-ordination of the programme. The NPSC will be chaired by the Additional Director General of Forests (Wildlife), MoEF, GoI. Its membership will include the Inspector General of Forests (Wildlife), Joint Secretary (in charge of GEF portfolio), Joint Secretary (in charge of Biodiversity), representative from Ministry of Defense, Ministry of Shipping and Ministry of Agriculture, the Chief Wildlife Warden, Andhra Pradesh, representative of Integrated Coastal Zone Management Project, the State Coastal Zone Management Authority representative; two representatives of UNDP; Director of Godavari Foundation; and two non government representatives (including one from private sector/ industries) nominated jointly by the MoEF and UNDP. Chairman can also invite other members for the NPSC meetings on as-needed basis. The meetings of the NPSC will be arranged by the NPD who shall act as the ex-officio Secretary. The NPSC shall play a critical role in project monitoring and evaluation by ensuring quality assurance and accountability. It ensures that required resources are committed and arbitrates on any conflicts related to the project or negotiates a solution to any problems with external bodies. On the advice of the NPSC, the Chief Wildlife Warden, Andhra Pradesh will sign the budgeted AWP with UNDP on an annual basis, as per UNDP rules and regulations. Based on the approved AWP, the NPSC may consider and approve the quarterly plans and also approve any essential deviations from the original plans.

152. **National Project Management Unit (NPMU)** will be the administrative hub for the project located in the MoEF and will be supported with a full-time Project Manager (PM) and Project Associate (PA). PM and PA shall report to the NPD and UNDP Country Office on all matters related to project implementation and assist in coordinating with the State Government of Andhra Pradesh, UNDP, other

agencies and Stakeholders. The NPMU shall also coordinate exchange of information among the two projects developed under the IGCMP and also open channels of communication with other similar programmes/ projects in the country for ensuring synergy and initiating upstream policy engagements. (See Annex 9 for Terms of Reference of local project management staff, as well as local and international consultants that will provide technical services.)

153. **Project Assurance:** UNDP's primary responsibility under this partnership will be to render the Project Assurance function by providing independent feedback (through periodic monitoring, assessment and evaluation) on how appropriate project milestones are managed and completed.

154. **UNDP support for project management:** The UNDP Country Office will support project implementation by maintaining project budget and project expenditures, recruiting and contracting project personnel and consultant services, subcontracting, assisting with equipment procurement, and providing other assistance upon request of the MoEF. Project implementation arrangements will streamline and decentralize UNDP's normal service delivery procedures in the interest of cost-effective and time-efficient project management. At the start of the project, the project document shall be signed by Implementing Party (NPD), Responsible Party (SPD) and UNDP. The NPD shall be responsible for the management and utilization of project funds. Based on the approved AWP, and upon request from NPD, UNDP will release project funds directly to the Landscape level Project Management Unit/ Godavari Foundation (into the project account authorized by the NPD) on a quarterly basis. Using the UNDP Financial Report format, the Responsible Partner (Landscape Level Project Management Unit/ Godavari Foundation) will report expenditure on a quarterly basis together with a request for advance required for the next quarter. These will be consolidated by the National Project Manager and after authentication by the NPD be forwarded to UNDP for necessary action. The Combined Delivery Report (CDR) prepared by UNDP on a quarterly basis as well as the annual year-end CDR will be verified and certified by the NPD. The UNDP Country Office will also monitor project implementation and achievement of the project outputs and ensure the proper use of UNDP/GEF funds. Financial transactions, reporting and auditing will be carried out in compliance with national regulations and UNDP rules and procedures. The UNDP Country Office will carry out its day-to-day management and monitoring functions through an assigned Programme Officer in New Delhi, who will be also responsible for the day-to-day coordination with the project team.

155. **State Project Steering Committee (SPSC)** will be established in the state with representation from all key state Departments/ Agencies to direct and oversee project implementation and management at the state level. SPSC will be chaired by the Additional Chief Secretary (in charge of Forests and wildlife), Andhra Pradesh; the Chief Wildlife Warden shall be the ex-officio Secretary. Other members will include representatives of the relevant State Departments, Agencies, representatives of MOEF and UNDP and other stakeholders including private sector / industries nominated by the State Government. The SPSC shall meet at least once in a year to review the progress of project implementation and take management decisions for the smooth implementation of the project. The SPSC shall ensure that key officials involved in the project will have sufficient tenure for effective functioning.

156. **State Project Director (SPD):** Government of Andhra Pradesh will designate the Chief Wildlife Warden as the SPD. The SPD will be responsible for overall implementation of the project at the State level, including adherence to the AWP and achievement of planned results as outlined in the Project Document, and for the use of project funds through effective management and well established project review and oversight mechanisms. The SPD also will ensure coordination with UNDP, MoEF, various Departments and Agencies; provide guidance to the project team; review reports and look after other administrative and financial arrangements related to the project.

157. **State Project Management Unit (SPMU)** will be established to assist the SPD in the implementation of the project. The SPMU will comprise of a State Project Coordinator (SPC) and a Financial Assistant (FA). Under the direct supervision of SPD, they will work closely with the SPSC and

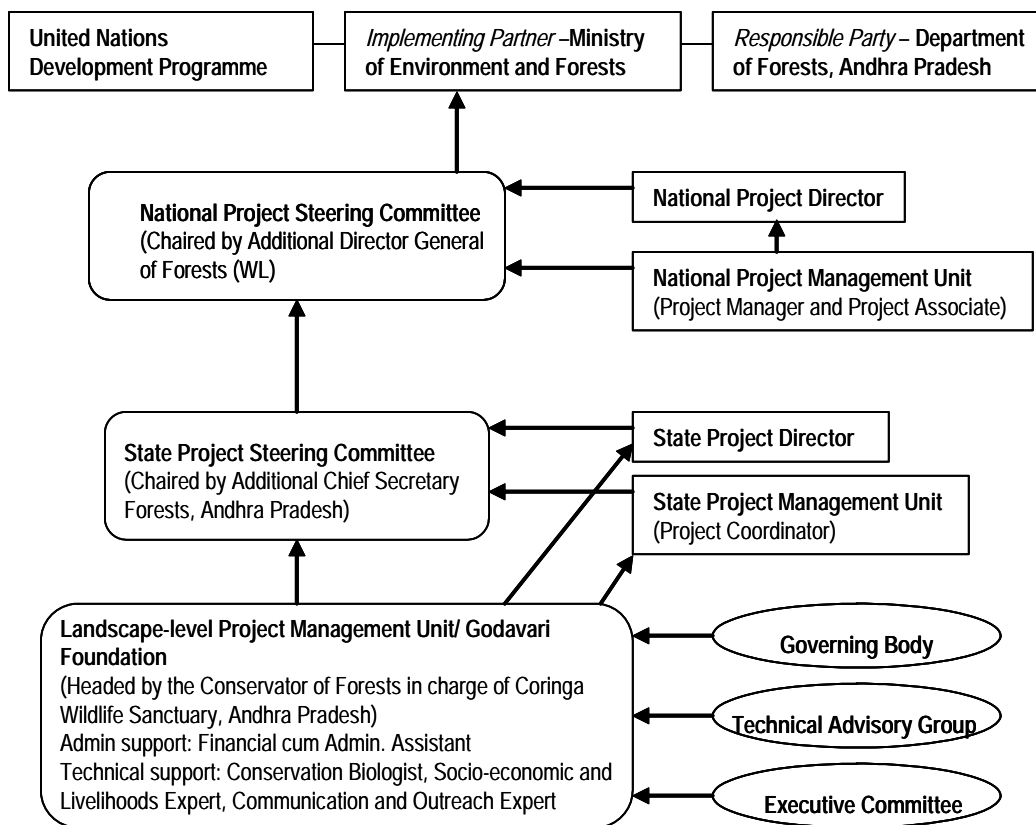
the Landscape Level Project Management Unit (LLPMU) to ensure that the project activities are proceeding as per schedule and facilitate effective state level implementation of the project. The key responsibilities for the SPMU will include: 1) coordinating project implementation with all stakeholders, State Government and central government agencies and UNDP-GEF; 2) organizing the project evaluations; 3) ensuring that there is adequate documentation by all implementing partners at all stages and in collating this documentation; and 4) facilitating the publication of project outputs.

158. **Landscape Level Project Management Unit (LLPMU):** The implementation of the project at the landscape level will be carried out through LLPMU, which will be hosted within the envisaged cross-sectoral institutional platform, the *Godavari Foundation* (GF). The GF will be a registered body represented by all key stakeholders in the EGREE (including private sector/ industries) and will have a Governing Body (GB) and Executive Committee (EC). While the GB will provide overall guidance for the smooth implementation of the project, EC will be responsible for carrying out the day today implementation of the project. The GF could be registered under the relevant State Act meant for the purpose. The Conservator of Forests in charge of Coringa Wildlife Sanctuary will be the *ex-officio* Director of the GF. The GF shall be established after consultations with stakeholders in the EGREE and with help of legal experts. Apart from the implementation of the project, LLPMU and GF may also 1) develop general policy and overall programs for the EGREE, 2) receive, control, invest and disburse all funds provided for project, 3) promote research into the scientific, sociological and economic aspects of landscape and integrate into landscape and sector plans 4) coordinate with different production sectors and other agencies to develop an environmentally sustainable strategic plan for Godavari estuarine landscape, 5) promote programs for the sustainable livelihood options of the communities dependent on the Godavari Estuary landscape 6), provide a long term institutional sustainability strategy for the project beyond project period, etc.

159. The LLPMU/ GF will be having Subject Specialists (SSs) hired under the project. To start with the SSs will be part of the LLPMU and later on will get integrated into the GF, once it has been established. SSs will provide all technical leadership and support for the project implementation, monitoring & evaluation, and adaptive management. The following SSs shall be hired under the project: Conservation Biologist (1), Socio-Economic and Livelihood Specialist (1), and Communication and Outreach specialist (1). In addition, there will be supportive staff for performing the day to day administrative and financial functions of the LLPMU. The key responsibilities of the SSs will include: 1) provide strong technical leadership and strategically important inputs to the project during its implementation 2) provide advice and guidance in the implementation of the project especially to the LLPMU, 3) to ensure that the project achieves its overall objective and outcomes as identified in the project document, 4) provide high levels of coordination during project inception and implementation at landscape and sector levels, 5) ensure sharing and flow of information in a transparent manner among all project stakeholders as appropriate, 6) support the LLPMU in the overall management of the project and to ensure coherence between all components of the project and implementing partners, 7) provide advice and assistance to organize and conduct various consultations, workshops and trainings, 8) provide advice related to the AWP, 9) participate in the recruitment of subcontractors and consultants, 10) ensure strong quality control and provide advisory support as required, 11) contribute to resource mobilization and development of partnerships to further the objectives of the project, 12) contribute to the establishment of a monitoring and evaluation plan and system for the project.

160. **Technical Advisory Group (TAG):** The successful implementation of the project requires strong technical leadership and high levels of coordination due to its multi-sectoral nature. Hence, it is necessary to have a Technical Advisory Group (TAG) to steer the process. TAG will comprise of subject matter specialists who will provide their expertise for achieving project objectives. The role of TAG shall be purely advisory and may meet once a year.

Figure 5. Project Organization Structure



5.2 Coordination with related initiatives

161. This project is being developed as 1 of 2 projects under the India GEF Coastal and Marine Program (IGCMP). The second project is in the Sindhudurgh district of Maharashtra. The proposed project will establish the necessary communication and coordination mechanisms through its NPMU and NPSC. It will also establish a joint knowledge management system as a national resource on mainstreaming coastal and marine biodiversity conservation into production sector activities. UNDP India will also take the lead in ensuring adequate coordination and exchange of experiences. In addition, the project will seek to coordinate its actions with other similar projects/ programmes in India. Similarities in the strategy of the proposed project may extend an opportunity to share lessons and utilize synergies, in particular in the areas of harmonization and mutual recognition. Also, the proposed project will seek to coordinate actions with other existing government commitments and non-government initiatives. To this end, the project will during the first year, in cooperation with the other similar projects, will explore setting up a Joint Coordination Committee (JCC) at the national level. This JCC comprised of NPDs of all the related projects and chaired by a senior MoEF official would provide an appropriate forum to both synergise activities, allow cross-fertilization of ideas and lessons, and afford greater opportunities to influence national (and sub-national) coastal management policies.

162. More specifically, through its NPMU, the project will closely coordinate with the following related initiatives.

- The DOD's ICMAM Programme – by building on the earlier scientific work and ICMAM's recommendations for Coringa.
- The project will link closely with the World Bank's Integrated Coastal Zone Management Project

which is being implemented in the three Indian States (Orissa, West Bengal and Gujarat)³⁹. The proposed project will avoid duplication by working closely with the World Bank, government partners and other stakeholders to ensure complementarities. Specifically, the project will add value to this larger programme by focusing on demonstrating effective approaches for mainstreaming biodiversity conservation objectives into production activities in relation to ICZM. The Coordination with ICZM shall happen primarily through the national PSC (in which representative of the ICZM project shall be a member), national PMU and the Knowledge Management Centre to be established at the national level.

- The project will align with the activities of the Bay of Bengal Program (BOBP) in the long term development and utilization of coastal resources of the project including responsible fishery practices and environmentally sound management of resources.
- The present project will also work closely with the UNDP-GEF Global Ballast Water Management Project, under which India is developing and implementing a comprehensive National Work Plan to address the global threat of marine bio-invasion through ship ballast water.

5.3 Audit arrangements

163. The Audit will be conducted in accordance with the established UNDP procedures set out in the Programming and Finance manuals by the legally recognized auditor.

5.4 Use of institutional logos on project deliverables

164. In order to accord proper acknowledgement to GEF for providing funding, a GEF logo should appear on all relevant GEF project publications, including among others, project hardware and vehicles purchased with GEF funds. Any citation on publications regarding projects funded by GEF should also accord proper acknowledgment to GEF. Alongside GEF, UNDP logo, GOI logo along with that of the Implementing Partner of the proposed project will also be featured.

6. MONITORING FRAMEWORK AND EVALUATION

165. The project team and the UNDP Country Office (UNDP-CO) supported by the UNDP/GEF Regional Coordination Unit in Bangkok will be responsible for project monitoring and evaluation conducted in accordance with established UNDP and GEF procedures. The Project Results Framework (in Section 3) provides performance and impact indicators for project implementation along with their corresponding means of verification. The GEF SO-2 Tracking Tool will also be used to monitor progress on mainstreaming biodiversity considerations in production sectors (see Annex 10). The following sections outline the principle components of the M&E plan and indicative cost estimates related to M&E activities. The project's M&E plan will be presented to all stakeholders at the Project's Inception Workshop and finalized following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Project start

166. A Project Inception Workshop will be held within the first three months of project start-up involving those with assigned roles in the project organization structure, UNDP country office, and, where appropriate/ feasible, regional technical policy and programme advisors, as well as other stakeholders. The Inception Workshop is crucial to building ownership for the project results and to plan the first year's AWP. The Inception Workshop report will be a key reference document and will be prepared and shared with participants to formalize various agreements and plans decided during the meeting. The Inception Workshop will address a number of key issues including:

³⁹ http://moef.gov.in/report/0910/Annual_Report_ENG_0910.pdf#page=304

- Assist all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UNDP CO and RCU staff vis-à-vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff will be discussed again as needed.
- Based on the project results framework and the GEF SO-2 Tracking Tool, finalize the first AWP. Review and agree on the indicators, targets and their means of verification, and re-check assumptions and risks.
- Provide a detailed overview of reporting, monitoring and evaluation (M&E) requirements. The Monitoring and Evaluation work plan and budget should be agreed and scheduled.
- Discuss financial reporting procedures and obligations, and arrangements for annual audit.
- Plan and schedule Project Steering Committee meetings. Roles and responsibilities of all project organization structures should be clarified and meetings planned. The first PSC meeting should be held within the first six months following the Inception Workshop.

Quarterly monitoring

- Progress made shall be monitored in the UNDP Enhanced Results Based Management Platform.
- Based on the initial risk analysis submitted, the risk log shall be regularly updated in ATLAS.
- Based on the information recorded in Atlas, a Project Progress Reports (PPR) can be generated in the Executive Snapshot.
- Other ATLAS logs can be used to monitor issues, lessons learned etc. The use of these functions will be a key indicator in the UNDP Executive Balanced Scorecard.

Annual monitoring

167. *Annual Project Review/ Project Implementation Reports (APR/PIR)*: This key report will be prepared to monitor progress made since project start and in particular for the previous reporting period (30 June to 1 July). The APR/PIR combines both UNDP and GEF reporting requirements. The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative)
- Project outputs delivered per project outcome (annual)
- Lessons learned/good practice.
- AWP and other expenditure reports
- Risk and adaptive management
- ATLAS QPR
- Portfolio level indicators (i.e. SO-2 Tracking Tool)

Periodic monitoring through site visits

168. UNDP CO and the UNDP RCU will conduct visits to project sites based on the agreed schedule in the project's Inception Report/ Annual Work Plan to assess first hand project progress. Other members of the Project Steering Committee may also join these visits. A Field Visit Report/ BTOR will be prepared by the CO and UNDP RCU and will be circulated no less than one month after the visit to the project team and Project Steering Committee members.

Mid-term of project cycle

169. The project will undergo an independent Mid-Term Evaluation at the mid-point of project implementation. The Mid-Term Evaluation will determine progress being made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; highlight issues requiring decisions and actions; and present initial lessons learned about project design, implementation and management. Findings of this review

will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The MTE will also be an opportune time to review and fine tune indicators based on the sector plans and micro plans that would have by then been developed and under implementation. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The management response and the evaluation will be uploaded to UNDP corporate systems, in particular the UNDP Evaluation Office Evaluation Resource Center (ERC). The GEF SO-2 Tracking Tool will also be completed during the mid-term evaluation cycle.

End of project

170. An independent Final Evaluation will take place three months prior to the final Project Steering Committee meeting and will be undertaken in accordance with UNDP and GEF guidance. The final evaluation will focus on the delivery of the project's results as initially planned (and as corrected after the mid-term evaluation, if any such correction took place). The final evaluation will look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental benefits/ goals. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the Regional Coordinating Unit and UNDP-GEF. The Terminal Evaluation should also provide recommendations for follow-up activities and requires a management response which should be uploaded to UNDP-GEF's Project Information Management System (PIMS) and to the UNDP Evaluation Office Evaluation Resource Center (ERC). The GEF SO-2 Tracking Tool will also be completed during the final evaluation.

171. During the last three months, the project team will prepare the Project Terminal Report. This comprehensive report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, problems met and areas where results may not have been achieved. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability and replicability of the project's results.

Learning and knowledge sharing

172. Results from the project will be disseminated within and beyond the project intervention zone through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/ or any other networks, which may be of benefit to project implementation though lessons learned. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Finally, there will be a two-way flow of information between this project and other projects of a similar focus.

Table 6. Project Monitoring and Evaluation Plan and Budget

| Type of M&E activity | Responsible Parties | Budget US\$ | Time frame |
|---|--|---|--|
| Inception Workshop (IW) | NPD, SPD, Project team, UNDP, UNDP GEF | 7,000 | Within first three months of project start up |
| Inception Report | Project Team PSC, UNDP CO | None | Immediately following IW |
| Measurement of Means of Verification for Project Purpose Indicators | Project Manager will oversee the hiring of specific studies and institutions, and delegate responsibilities to relevant team members | To be finalized in Inception Phase and Workshop. Cost to be covered by targeted survey funds. | Start, mid and end of project |
| Measurement of Means of Verification for Project Progress and Performance (measured on an annual basis) | Oversight by Project GEF Technical Advisor and Programme Officer, UNDP Measurements by regional field officers and local IAs | TBD as part of the Annual Work Plan's preparation. Cost to be covered by field survey budget. | Annually prior to APR/PIR and to the definition of annual work plans |
| PIR | Project Team PSC | None | Annually |

| Type of M&E activity | Responsible Parties | Budget US\$ | Time frame |
|--|---|-------------|--|
| | UNDP-GEF | | |
| Project Steering Committee meetings | National Project Director and State Project Director. | None | Following IW and annually thereafter. |
| Technical and periodic status reports | Project team Hired consultants as needed | 6,000 | TBD by Project team and UNDP-CO |
| Mid-term External Evaluation | Project team PSC UNDP-GEF RCU External Consultants (evaluation team) | 24,200 | At the mid-point of project implementation. |
| Final External Evaluation | Project team, PSC, UNDP-GEF RCU External Consultants (evaluation team) | 32,200 | At the end of project implementation |
| Terminal Report | Project team PSC External Consultant | None | At least one month before the end of the project |
| M&E Specialist for adapting and applying Capacity Score Card | Project team, UNDP CO | 5,000 | First year and mid-term |
| Audit | UNDP-CO Project team | 10,000 | Yearly |
| Visits to field sites (UNDP staff travel costs to be charged to IA fees) | UNDP-CO, UNDP-GEF RCU Government representatives | None | Yearly average one visit per year |
| TOTAL indicative COST Excluding project and UNDP staff time costs | | 84,400 | |

7. LEGAL CONTEXT

173. This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

174. Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner. The implementing partner shall:

- put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

175. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

176. The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision will be included in all sub-contracts or sub-agreements entered into under this Project Document.

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Annex 1: Flora and Fauna of CWLS

A. PHYTOPLANKTONS (Source: Mittal, R. 1993)

Chlorophyceae:

| | |
|-----------------------------|----------------------------|
| 1. Ankistrodesmus sigmoides | 2. A. convolutus |
| 3. A. falcatus | 4. Pedistrum ovatum |
| 5. P. duplex | 6. P. tetras |
| 7. Scenedesmus quadricauda | 8. S. obliquus |
| 9. S. dimorphus | 10. S. bijugatus |
| 11. Scenedesmus species | 12. Actinastrum hantzschii |
| 13. Closterium species | 14. Gonium pectorale |
| 15. Cosmarium quadriseta | 16. Spirogyra species |
| 17. Chodetella quadriseta | 18. Schroederia indica |
| 19. oelastrum species | |

Bacukkaruiphyceae (Centrales):

| | |
|------------------------------|-------------------------------|
| 1. Melosora moniliformis | 2. M. sulcata |
| 3. M. dubla | 4. Rhizosolenia stolterfothii |
| 5. R. crassispina | 6. Skeletonema costatum |
| 7. Leptocyclindrus minimus | 8. Thalassiosira decipiens |
| 9. Coscinodiscus sublineatus | 10. Coscinodiscus species. |
| 11. Cyclotella meneghiniana | 12. Actonocyclus repori |
| 13. Hemiaulus species | |

Bacillariophyceae (Pennales):

| | |
|-------------------------------|--------------------------------|
| 1. Asterionella japonica | 2. Amphiprora paludosa |
| 3. Pleurosigma balticum | 4. Thalassiothrix frauenfeldii |
| 5. Thelassionema nitzchioides | 6. Nitzschia longissima |
| 7. N. palea | 8. N. sigma |
| 9. N. obtuse | 10. N. seriata |
| 11. N. Closterium | 12. N. paradoxica |
| 13. N. paduriformis | 14. Nitzschia species |
| 15. Navicula species | 16. Diploneis species |
| 17. Raphoneis amphicerus | 18. Coconeis species |
| Cymbella species | |

Cyanophyceae:

| | |
|---------------------------|------------------------|
| 1. Oscillatoria species | 2. Merismopedia glauca |
| 3. Microcystic aeruginosa | 4. Spirulina species |
| 5. Anabeena species | 6. Arthospira species |

Euglenophyceae:

| | |
|---------------------------|---------------------|
| 1. Euglena acus | 2. E. viridis |
| 3. Strombomonas australis | 4. Phacus triqueter |
| 5. Distigma proteus | |

Dinophyceae:

| | |
|------------------------|---------------------|
| 1. Peridinium species | 2. Ceratium species |
| 3. Diplopsalis species | |

B. FORAMINIFERIDS (Source: Mittal, R. 1993)

Lituolidae

- | | |
|------------------------------|------------------------------|
| 1. Ammobaculites agglutinans | 2. A. directus |
| 3. A. persicus | 4. A. dilatatus |
| 5. A. exigus | 6. Haplophragmoides bancocki |
| 7. H. wilberti | |

Harmosinidae

- | | |
|----------------------|-------------------|
| 1. Reophax nana | 2. R. gracilis |
| 3. R. dentaliniformi | 4. R. agglutinans |

Rhexakinidae

1. Milliammina fusca,

Trochamminidae

- | | |
|------------------------------|-------------------------|
| 1. Trochammina inflata | 2. T. mexicana, |
| 3. T. advena | 4. T. macrescens |
| 5. Arenoparella maxicana | |
| Textulariidae | |
| 1. Textularia agglutinans | |
| Millioliidae | |
| 1. Quiqueloculina stalkerii | 2. Q. elongata, |
| 3. Q. agglutinans | 4. Q. lamarckiana |
| 5. Q. seminulum | 6. Q. lata |
| 7. Milliolinella astralis | 8. Adelosina pulchella, |
| 9. Cyclogyna planorbis | |
| Nebecularidae | |
| 1. Spiroloculina sp. | |
| Rotallidae | |
| 1. Ammonia baccaritepida | 2. A. baccari |
| 3. Asterorotalia trispinosas | 4. A. dentate |
| Iplididae | |
| 1. Elphidium glavestonans | 2. E. crispum |
| 3. E. advenum | |
| Anomalinidae | |
| 1. Hanzawaia concentrica | |
| Uvigerinidae | |
| 1. Hapkinsina glabra | |
| Nodosaridae | |
| 1. Legena Nodosaria | |
| Loxostomidae | |
| 1. Loxostomum karrerianum | |
| Bilivinitidae | |
| 1. Bolivina pacifica | 2. B. seminuda |
| 3. B. earlandi | 4. B. spethulata |
| Nonionidae | |
| 1. Nonian labrodrica | 2. N. asteregens |
| 3. Pseudononian grateloupio | |
| Pleurostomellidae | |
| 1. Pleurostomella sp. | |
| Planomilliniidae | |
| 1. Planulina sp. | |
| Globigerinidae | |
| 1. Globigerina bulloides | 2. G. conglamarata |
| Globorotalidae | |
| 1. Globorotalia menardii | |

C. MACRO ALGAE (Source: Mittal, R. 1993)

| Sl. No | Species | Family |
|--------|-----------------------|----------------|
| 1. | Bostrychia tennella | Rhodomelaceae |
| 2. | Caloglossa deprieurii | Delesseriaceae |
| 3. | Catenella impudica | Rhabdoniaceae |
| 4. | Polysiphonia sp. | Rhodomelaceae |
| 5. | Chaetomorpha sp. | Cladophoraceae |

D. MANGROVES, ASSOCIATES AND SEA GRASSES (Various sources)

| Sl. No | Species | Family | Telugu Name | Habit | Status in India | IUCN Status |
|----------------|------------------------------------|-------------|-------------|-------|-----------------------------|-------------|
| True Mangroves | | | | | | |
| 1 | Acanthus ilicifolius L | Acanthaceae | Allchi | Shrub | Common in less saline areas | LC |
| 2 | Aegiceras corniculatum (L.) Blanto | Myrsinaceae | Guggilam | Tree | Abundant | LC |

| Sl. No | Species | Family | Telugu Name | Habit | Status in India | IUCN Status |
|---------------------|---|-----------------|------------------|-------|---------------------------------------|-------------|
| 3 | <i>Avicennia alba</i> Bl. | Avicenniaceae | Elava mada | Tree | Common near the seaward side | LC |
| 4 | <i>A. marina</i> (Forsk.) Vierh. | Avicenniaceae | Thella mada | Tree | Common | LC |
| 5 | <i>A. officinalis</i> L. | Avicenniaceae | Nalla mada | Tree | Common | LC |
| 6 | <i>Bruguiera cylindrica</i> (L.) Bl | Rhizophoraceae | Urudu | Tree | Common Gaderu in river mouth | LC |
| 7 | <i>B. gymnorhiza</i> (L.) Savigny | Rhizophoraceae | Kandriga | Tree | Less frequent | LC |
| 8 | <i>Ceriops decandra</i> (Griff.) Ding Hou | Rhizophoraceae | Togara | Tree | Common | NT |
| 9 | <i>Excoecaria agallocha</i> L. | | Thilla | Tree | Common Landward side | LC |
| 10 | <i>Lumnitzera racemosa</i> Wild. | | Thanduga | Tree | Common Landward side | |
| 11 | <i>Rhizophora apiculata</i> Bl. | Rhizophoraceae | Ponna | Tree | Abundant | LC |
| 12 | <i>R. mucronata</i> Lamk. | Rhizophoraceae | Ponna | Tree | Common | LC |
| 13 | <i>Scyphiphora hydrophyllacea</i> Nara | Rubiaceae | Narathanduga | Tree | Rare (Only in Kothapalem RF) | LC |
| 14 | <i>Sonneratia alba</i> J. Smith | Sonneratiaceae | Pedda Kalinga | Tree | Rare | LC |
| 15 | <i>Sonneratia apetala</i> Buch. - Ham. | Sonneratiaceae | Kalinga | Tree | Common | LC |
| 16 | <i>Xylocarpus moluccensis</i> (Lamk.) M. Roem. | Meliaceae | Senuga | Tree | Rare | LC |
| Mangrove Associates | | | | | | |
| 17 | <i>Aeluropus lagopoides</i> (L.) Trin | Poaceae | | Herb | | -- |
| 18 | <i>Caesalpinia crista</i> L. | Caesalpiniaceae | Rachis | Vine | Common in less saline areas | -- |
| 19 | <i>Clerodendrum inerme</i> Gaertn. | Verbanaceae | Pisingi | Tree | Common along creeks in the | -- |
| 20 | <i>Dalbergia spinosa</i> Roxb. | Fabaceae | Chillinga | Shrub | | -- |
| 21 | <i>Derris trifoliata</i> Lour. | Fabaceae | Nalla theega | Vine | Common in less saline areas | -- |
| 22 | <i>Fimbristylis ferruginea</i> (L.) Vah. | Cyperaceae | | Herb | Less frequent in near river banks | -- |
| 23 | <i>Hibiscus tiliaceus</i> L. | Malvaceae | Attakanara | Tree | Towards landward side | -- |
| 24 | <i>Ipomoea pes-caprae</i> (L.) | Convolvulaceae | | Vine | Common in the sandy areas | -- |
| 25 | <i>I. tuba</i> L. | Convolvulaceae | Tellateega | Vine | Common in less saline areas | -- |
| 26 | <i>Myriostachya wightiana</i> (Nees ex. Steud.) Hook.f. | Poaceae | Dhaba gaddi | Herb | Common along the creeks | -- |
| 27 | <i>Porteresia coarctata</i> (Roxb.) Tateoka | Poaceae | Yellugaddi | Herb | Along river mouths and accreted areas | -- |
| 28 | <i>Salicornia brachiata</i> Roxb. | Chenopodiaceae | | Herb | Common in the degraded salt pan areas | -- |
| 29 | <i>Sarcolobus carinatus</i> Wall. | Asclepiadaceae | Balaboddu theega | Vine | Common in Excoecaria zone | -- |
| 30 | <i>Sesuvium portulacastrum</i> (Linn.) Linn. | Aizoaceae | | Herb | Common in the sandy areas | -- |
| 31 | <i>Suaeda maritima</i> (L.) Dumort | Chenopodiaceae | Elakura | Herb | Common in the degraded areas | -- |
| 32 | <i>Suaeda nudiflora</i> (Willd.) Moq | Chenopodiaceae | Elakura | Herb | Common in the degraded areas | -- |
| 33 | <i>Tamarix troupilii</i> Hole | Tamariaceae | Palivelu | Tree | Less frequent along river banks | -- |

| Sl. No | Species | Family | Telugu Name | Habit | Status in India | IUCN Status |
|-------------|---|------------------|-------------|-------|----------------------------|-------------|
| 34 | <i>Thespesia poulneoides</i> (Roxb.) Kostel | Malvaceae | Ganguravi | Tree | Common along landward side | -- |
| Sea Grasses | | | | | | |
| 35 | <i>Halophila beccarii</i> . Ascherson | Hydrocharitaceae | | Herb | Common Hope Islands | -- |
| 36 | <i>H. ovalis</i> (R.Br.) Hook. f. | Hydrocharitaceae | | Herb | Common Hope Islands | -- |

LC: least Concern, NT: Near Threatened

E. BIRDS

| Sl. No. | Common/Scientific Name | Abundance | Status |
|--------------------------|---|-----------|--------|
| Order Podicipitiformes | | | |
| Family Podicepididae | | | |
| 1 | Little Grebe <i>Tachybaptus ruficollis</i> | A | Res/B |
| Order Pelecaniformes | | | |
| Family Phalacrocoracidae | | | |
| 2 | Indian Shag <i>Phalacrocorax fuscicollis</i> | C | LM |
| 3 | Little Cormorant <i>Phalacrocorax niger</i> | A | LM |
| Order Ciconiiformes | | | |
| Family Ardeidae | | | |
| 4 | Grey Heron <i>Ardea cinerea</i> | A | LM/B |
| 5 | Purple Heron <i>Ardea purpurea</i> | C | Res/B |
| 6 | Little Green Heron <i>Ardea striatus</i> | C | LM |
| 7 | Pond Heron <i>Ardeola grayii</i> | A | Res/B |
| 8 | Cattle Egret <i>Bubulcus ibis</i> | A | Res/B |
| 9 | Large Egret <i>Ardea alba</i> | A | LM |
| 10 | Smaller Egret <i>Egretta intermedia</i> | A | LM |
| 11 | Little Egret <i>Egretta garzetta</i> | A | Res/B |
| 12 | Indian Reef Heron <i>Egretta gularis</i> | C | Res/B |
| 13 | Night Heron <i>Nycticorax nycticorax</i> | C | Res/B |
| 14 | Little Bittern <i>Ixotrychus minutus</i> | C | Res |
| 15 | Chestnut Bittern <i>Ixobrychus cinnamomeus</i> | C | Res/B |
| 16 | Yellow Bittern <i>Ixobrychus sinensis</i> | C | LM |
| 17 | Black Bittern <i>Ixobrychus flavicollis</i> | O | LM |
| Family Ciconiidae | | | |
| 18 | Painted Stork <i>Mycteria leucocephala</i> | C | LM |
| 19 | Openbill Stork <i>Anastomus oscitans</i> | A | LM |
| 20 | Witennecked Stork <i>Ciconia episcopus</i> | O | WM |
| Family Threskiornithidae | | | |
| 21 | White Ibis <i>Threskiornis aethiopica</i> | C | WM |
| 22 | Black Ibis <i>Pseudibis papillosa</i> | O | LM |
| 23 | Glossy Ibis <i>Plegadis falcinellus</i> | O | WM |
| 24 | Spoonbill <i>Platalea leucorodia</i> | O | WM |
| Order Anseriformes | | | |
| Family Anatidae | | | |
| 25 | Barheaded Goose <i>Anser indicus</i> | O | WM |
| 26 | Lesser Whistling Teal <i>Dendrocygna javanica</i> | A | LM |
| 27 | Large Whistling Teal <i>Dendrocygna bicolor</i> | C | WM |
| 28 | Ruddy Shelduck <i>Tadorna Ferruginea</i> | C | WM |
| 29 | Pintail <i>Anas acuta</i> | A | WM |
| 30 | Common Teal <i>Anas crecca</i> | C | WM |
| 31 | Spotbill Duck <i>Anas poecilorhyncha</i> | A | WM |
| 32 | Gadwall <i>Anas strepera</i> | C | WM |
| 33 | Wigeon <i>Anas penelope</i> | C | WM |
| 34 | Garganey <i>Anas querquedula</i> | C | WM |
| 35 | Shoveller <i>Anas clypeata</i> | C | WM |

| Sl. No. | Common/Scientific Name | Abundance | Status |
|-----------------------|---|-----------|--------|
| 36 | Redcrested Pochard <i>Netta rufina</i> | C | WM |
| 37 | Common Pochard <i>Aythya ferina</i> | C | WM |
| 38 | White-eyed Poachard <i>Aythya nyroca</i> | C | WM |
| 39 | Tufted duck <i>Aythya fuligula</i> | C | WM |
| 40 | Cotton Teal <i>Nettapus coromandelianus</i> | C | WM |
| 41 | Nakta <i>Sarkidiornis melanotos</i> | A | WM |
| Order Falconiformes | | | |
| Family Accipitridae | | | |
| 42 | Blackwinged Kite <i>Elanus caeruleus</i> | C | Res/B |
| 43 | Blackcrested Baza <i>Aviceda leuphotes</i> | O | LM |
| 44 | Crested Honey Buzzard <i>Pernis ptilorhynchus</i> | O | LM |
| 45 | Pariah Kite <i>Milvus migrans govinda</i> | C | Res/B |
| 46 | Shikra <i>Accipiter badius</i> | C | Res |
| 47 | Sparrow-Hawk <i>Accipiter nisus melaschistos</i> | C | Res |
| 48 | Tawny Eagle <i>Aquila rapax vindhiana</i> | C | Res |
| 49 | Black Eagle <i>Ictinaetus malayensis</i> | O | LM |
| 50 | Whitebellied Sea Eagle <i>Haliaeetus leucogaster</i> | R | LM |
| 51 | Indian Longbilled Vulture <i>Gyps indicus</i> | C | Res |
| 52 | Indian Whitebacked Vulture <i>Gyps bengalensis</i> | C | Res |
| 53 | Egyptian Vulture <i>Neophron percnopterus</i> | C | Res |
| 54 | Pale Harrier <i>Circus macrourus</i> | C | Res |
| 55 | Pied Harrier <i>Circus melanoleucos</i> | O | LM |
| 56 | Marsh Harrier <i>Circus aeruginosus</i> | C | LM |
| 57 | Osprey <i>Pandion haliaetus</i> | O | LM |
| Family Falconidae | | | |
| 58 | Peregrine Falcon <i>Falco peregrinus japonensis</i> | O | LM |
| 59 | European Kestrel <i>Falco tinnunculus</i> | C | WM |
| Order Galliformes | | | |
| Family Phasianidae | | | |
| 60 | Grey Partridge <i>Francolinus pondicerianus</i> | C | Res/B |
| 61 | Grey Quail <i>Coturnix coturnix</i> | C | Res/B |
| 62 | Rain Quail <i>Coturnix coromandelica</i> | C | Res |
| 63 | Jungle Bush Quail <i>Perdica asiatica</i> | C | Res |
| 64 | Red Spurfowl <i>Galloperdix spadicea</i> | C | Res |
| 65 | Painted Spurfowl <i>Galloperdix lunulata</i> | C | Res |
| 66 | Indian Peafowl <i>Pavo cristatus</i> | C | Res/B |
| Family Turnicidae | | | |
| 67 | Indian Bustard-Quail <i>Turnix suscitator</i> | C | Res |
| Order Gruiformes | | | |
| Family Rallidae | | | |
| 68 | Water Rail <i>Rallus aquaticus</i> | R | LM |
| 69 | Little Crake <i>Porzana parva</i> | O | LM |
| 70 | Ruddy Crake <i>Porzana fusca</i> | C | LM |
| 71 | Brown Crake <i>Amaurornis akool</i> | O | LM |
| 72 | Indian Whitebreasted Waterhen <i>Amaurornis phoenicurus</i> | C | Res/B |
| 73 | Watercock <i>Gallix cinerea</i> | C | Res |
| 74 | Indian Moorhen <i>Gallinula chloropus</i> | C | Res/B |
| 75 | Purple Moorhen <i>Porphyrio porphyrio</i> | C | Res/B |
| 76 | Coot <i>Fulica atra</i> | C | Res/B |
| Order Charadriiformes | | | |
| Family Jacanidae | | | |
| 77 | Pheasant-tailed Jacana <i>Hydrophasianus chirurgus</i> | C | Res/B |
| 78 | Bronzewinged Jacana <i>Mettopidius indicus</i> | C | Res/B |
| Family Charadriidae | | | |
| 79 | Sociable Lapwing <i>Vanellus gregarius</i> | C | WM |
| 80 | Redwattled Lapwing <i>Vanellus indicus</i> | C | Res/B |
| 81 | Yellow-wattled Lapwing <i>Vanellus malabaricus</i> | C | Res/B |
| 82 | Golden Plover <i>Pluvialis apricaria</i> | R | WM |

| Sl. No. | Common/Scientific Name | Abundance | Status |
|-------------------------|---|-----------|--------|
| 83 | Eastern Golden Plover <i>Pluvialis dominica fulva</i> | C | WM |
| 84 | Large Sand Plover <i>Charadrius leschenaultii</i> | C | WM |
| 85 | Ringed Plover <i>Charadrius hiaticula</i> | C | WM |
| 86 | Little Ringed Plover <i>Charadrius dubius</i> | C | WM |
| 87 | Longbilled Ringed Plover <i>Charadrius placidus</i> | R | WM |
| 88 | Lesser Sand Plover <i>Charadrius mongolus</i> | O | WM |
| 89 | Whimbrel <i>Numenius phaeopus</i> | C | WM |
| 90 | Curlew <i>Numenius arquata</i> | C | WM |
| 91 | Blacktailed Godwit <i>Limosa limosa</i> | C | WM |
| 92 | Bar-tailed Godwit <i>Limosa lapponica</i> | O | WM |
| 93 | Spotted Redshank <i>Tringa erythropus</i> | R | WM |
| 94 | Common Redshank <i>Tringa totanus</i> | C | WM |
| 95 | Marsh Sandpiper <i>Tringa stagnatilis</i> | C | WM |
| 96 | Green Shank <i>Tringa nebularia</i> | C | WM |
| 97 | Green Sandpiper <i>Tringa ochropus</i> | C | WM |
| 98 | Wood Sandpiper <i>Tringa glareola</i> | C | WM |
| 99 | Spotted Green Shank <i>Tringa guttiter</i> | C | WM |
| 100 | Terek Sandpiper <i>Tringa terek</i> | R | WM |
| 101 | Common Sandpiper <i>Tringa hypoleucos</i> | C | WM |
| 102 | Solitary Snipe <i>Gallinago solitaria</i> | R | WM |
| 103 | Wood Snipe <i>Gallinago nemoricola</i> | C | WM |
| 104 | Pintail Snipe <i>Gallinago stenura</i> | C | WM |
| 105 | Great Snipe <i>Gallinago media</i> | R | WM |
| 106 | Common Snipe <i>Gallinago gallinago</i> | R | WM |
| 107 | Woodcock <i>Scolopax rusticola</i> | R | WM |
| 108 | Knot <i>Calidris canuta</i> | C | WM |
| 109 | Eastern Knot <i>Calidris tenuirostris</i> | C | WM |
| 110 | Sanderling <i>Calidris alba</i> | C | WM |
| 111 | Little Stint <i>Calidris minuta</i> | A | WM |
| 112 | Temminck's Stint <i>Calidris temminckii</i> | C | WM |
| 113 | Dunlin <i>Calidris alpina</i> | C | WM |
| 114 | Curlew-Sandpiper <i>Calidris testacea</i> | O | WM |
| 115 | Ruff and Reeve <i>Philomachus pugnax</i> | R | WM |
| Family Rostratulidae | | | |
| 116 | Painted Snipe <i>Rostratula bengalensis</i> | C | WM |
| Family Recurvirostridae | | | |
| 117 | Blackwinged Stilt <i>Himantopus himantopus</i> | C | WM |
| 118 | Avocet <i>Recurvirostra avosetta</i> | R | WM |
| Family Dromadidae | | | |
| 119 | Crab Plover <i>Dromas ardeola</i> | R | WM |
| Family Glareolidae | | | |
| 120 | Indian Courser <i>Cursorius coromandelicus</i> | C | Res |
| 121 | Collared Pratincole <i>Glareola pratincola</i> | C | WM |
| 122 | Large Indian Pratincole <i>Glareola</i> | C | WM |
| 123 | Small Indian Pratincole <i>Glareola lactea</i> | C | WM |
| Family Laridae | | | |
| 124 | Herring Gull <i>Larus argentatus</i> | A | WM |
| 125 | Lesser Blackbacked Gull <i>Larus fuscus</i> | C | WM |
| 126 | Great Blackheaded Gull <i>Larus ichthyaetus</i> | C | WM |
| 127 | Brownheaded Gull <i>Larus brunnicapillus</i> | A | WM |
| 128 | Whiskered Tern <i>Chlidonias hybrida</i> | C | LM |
| 129 | Gullbilled Tern <i>Gelochelidon nolotica</i> | R | WM |
| 130 | Caspian Tern <i>Hydroprogne caspia</i> | O | WM |
| 131 | Indian River Tern <i>Sterna aurantia</i> | C | LM |
| 132 | Common Tern <i>Sterna hirundo</i> | C | LM |
| 133 | Blackbellied Tern <i>Sterna acuticauda</i> | C | LM |
| 134 | Little Tern <i>Sterna albifrons</i> | C | LM |
| Order Columbiformes | | | |

| Sl. No. | Common/Scientific Name | Abundance | Status |
|------------------------|---|-----------|--------|
| Family Columbidae | | | |
| 135 | Blue Rock Pigeon <i>Columba livia intermedia</i> | C | Res/B |
| 136 | Spotted Dove <i>Streptopelia chinensis</i> | C | Res/B |
| 137 | Little Brown Dove <i>Streptopelia senegalensis</i> | C | Res/B |
| Order Psittaciformes | | | |
| Family Psittacidae | | | |
| 138 | Reseringed Parakeet <i>Psittacula krameri</i> | C | Res/B |
| Order Cuculiformes | | | |
| Family Cuculidae | | | |
| 139 | Pied Crested Cuckoo <i>Coccyzus jacobinus</i> | C | WM |
| 140 | Indian Plaintive Cuckoo <i>Coccyzus passerinus</i> | C | Res |
| 141 | Koel <i>Eudynamis scolopacea</i> | C | Res/B |
| 142 | Small Greenbilled Malkoha <i>Rhopodytes viridirostris</i> | C | Res/B |
| 143 | Crow-Pheasant <i>Centropus sinensis</i> | C | Res/B |
| Order Strigiformes | | | |
| Family Strigidae | | | |
| 144 | Indian Great Horned Owl <i>Bubo bubo</i> | O | LM |
| 145 | Brown Fish Owl <i>Bubo zeylonensis</i> | O | LM |
| 146 | Spotted Owlet <i>Athene brama</i> | C | Res/B |
| Order Caprimulgiformes | | | |
| Family Caprimulgidae | | | |
| 147 | Indian Jungle Nightjar <i>Caprimulgus indicus</i> | C | LM |
| Order Apodiformes | | | |
| Family Apodidae | | | |
| 148 | House Swift <i>Apus affinis</i> | C | Res/B |
| 149 | Palm Swift <i>Cypsiurus parvus</i> | C | Res/B |
| Order Coraciiformes | | | |
| Family Alcedinidae | | | |
| 150 | Lesser Pied Kingfisher <i>Ceryle rudis</i> | C | Res/B |
| 151 | Small Blue Kingfisher <i>Alcedo atthis</i> | C | Res/B |
| 153 | Whitebreasted Kingfisher <i>Halcyon smyrnensis</i> | A | Res/B |
| 154 | Blackcapped Kingfisher <i>Halcyon pileata</i> | A | Res/B |
| Family Meropidae | | | |
| 155 | Bluetailed Bee-eater <i>Merops philippinus</i> | C | WM |
| 156 | Small Green Bee-eater <i>Merops orientalis</i> | C | Res/B |
| Family Coraciidae | | | |
| 157 | Indian Roller <i>Coracias benghalensis</i> | C | Res/B |
| Family Upupidae | | | |
| 158 | Indian Hoopoe <i>Upupa epops</i> | C | Res |
| Family Bucerotidae | | | |
| 159 | Grey Hornbill <i>Tockus birostris</i> | C | Res |
| Order Piciformes | | | |
| Family Capitonidae | | | |
| 160 | Large Green Barbet <i>Megalaima zeylanica</i> | C | Res |
| 161 | Small Green Barbet <i>Megalaima viridis</i> | C | Res |
| 162 | Crimsonbreasted Barbet <i>Megalaima haemacephala</i> | C | Res/B |
| Family Picidae | | | |
| 163 | Lesser Goldenbacked Woodpecker <i>Dinopium bengalense</i> | C | Res |
| Order Passeriformes | | | |
| Family Pittidae | | | |
| 164 | Indian Pitta <i>Pitta brachyura</i> | C | Res |
| Family Alaudidae | | | |
| 165 | Madras Bush lark <i>Mirafra assamica affinis</i> | C | Res |
| 166 | Redwinged Bush-Lark <i>Mirafra erythroptera</i> | C | Res/B |
| 167 | Ashcrowned Finch-Lark <i>Ermopteryx grisea</i> | C | Res/B |
| 168 | Short-Toed Lark <i>Calandrella cinerea</i> | C | Res |
| 169 | Indian Small Skylark <i>Alauda gulgula</i> | O | Res/B |

| Sl. No. | Common/Scientific Name | Abundance | Status |
|----------------------|--|-----------|--------|
| Family Hirundinidae | | | |
| 170 | Dusky Crag Martin <i>Hirundo concolor</i> | C | WM |
| 171 | Swallow <i>Hirundo rustica</i> | C | WM |
| 172 | Wiretailed Swallow <i>Hirundo smithii</i> | C | WM |
| 173 | Indian Striated Swallow <i>Hirundo daurica</i> | C | Res |
| Family Laniidae | | | |
| 174 | Indian Grey Shrike <i>Lanius excubitor</i> | C | Res/B |
| 175 | Indian Baybacked Shrike <i>Lanius vittatus</i> | C | Res/B |
| 176 | Rufousbacked Shrike <i>Lanius schach</i> | C | Res/B |
| Family Oriolidae | | | |
| 177 | Golden Oriole <i>Oriolus oriolus</i> | C | Res/B |
| Family Dicruridae | | | |
| 178 | Black Drongo <i>Dicrurus adsimilis</i> | C | Res/B |
| 179 | Whitebellied Drongo <i>Dicrurus caerulescens</i> | C | WM |
| Family Artamidae | | | |
| 180 | Ashy Swallow-Shrike <i>Artamus fuscus</i> | C | Res/B |
| Family Sturnidae | | | |
| 181 | Brahminy Myna <i>Sturnus pagodarum</i> | C | LM |
| 182 | Pied Myna <i>Sturnus contra</i> | C | Res/B |
| 183 | Common Myna <i>Acridotheres tristis</i> | C | Res/B |
| 184 | Bank Myna <i>Acridotheres ginginianus</i> | C | Res |
| Family Corvidae | | | |
| 185 | Southeastern Treepie <i>Dendrocitta vagabunda</i> | C | Res/B |
| 186 | House Crow <i>Corvus splendens</i> | C | Res/B |
| 187 | Jungle Crow <i>Corvus macrorhynchos</i> | C | Res/B |
| Family Campephagidae | | | |
| 188 | Wood Shrike <i>Tephrodornis pondicerianus</i> | C | Res/B |
| 189 | Large Cuckoo-Shrike <i>Coracina novaehollandiae</i> | C | LM |
| 190 | Small Minivet <i>Pericrocotus cinnamomeus</i> | C | Res/B |
| 191 | Central Indian lora <i>Aegithinia tiphia</i> | C | Res/B |
| Family Pyenonotidae | | | |
| 192 | Redwhiskered Bulbul <i>Pyenonotus jacosus</i> | O | LM |
| 193 | Redvented Bulbul <i>Pycnonotus cafer</i> | C | Res/B |
| 194 | Yellowthroated Bulbul <i>Pycnonotus xantholaemus</i> | O | LM |
| Family Muscicapidae | | | |
| 195 | Common Babbler <i>Turdoides caudatus</i> | C | Res/B |
| 196 | Large Grey Babbler <i>Turdoides malcolmi</i> | C | Res/B |
| 197 | Whiteheaded Babbler <i>Turdoides affinis</i> | C | Res/B |
| 198 | Redbreasted Flycatcher <i>Muscicapa parva</i> | C | WM |
| 199 | Tickell's Blue Flycatcher <i>Muscicapa tickelliae</i> | C | WM |
| 200 | Verditer Flycatcher <i>Muscicapa thalassina</i> | O | WM |
| 201 | Whitbrowed Fantail Flycatcher <i>Rhipidura aureola</i> | O | WM |
| 202 | Paradise Flycatcher <i>Terpsiphone paradisi</i> | C | Res |
| 203 | Streaked Fantail Warbler <i>Cisticola juncidis</i> | C | Res/B |
| 204 | Rufousfronted Wren-Warbler <i>Prinia buchanani</i> | C | Res |
| 205 | Plain Wren-Warbler <i>Prinia subflava</i> | C | Res |
| 206 | Ashy Wren-Warbler <i>Prinia socialis</i> | C | Res/B |
| 207 | Jungle Wren-Warbler <i>Prinia sylvatica</i> | C | Res/B |
| 208 | Tailorbird <i>Orthotomus sutorius</i> | C | Res/B |
| 209 | Indian Great Reed Warbler <i>Acrocephalus stentoreus</i> | C | Res |
| 210 | Blyth's Reed Warbler <i>Acrocephalus dumetorum</i> | C | WM |
| 211 | Booted Warbler <i>Hippolais caligata</i> | C | WM |
| 212 | Chiffchaff <i>Phylloscopus collybita</i> | C | WM |
| 213 | Olivaceous Leaf Warbler <i>Phylloscopus griseolus</i> | C | WM |
| 214 | Bright Green Leaf Warbler <i>Phylloscopus trochiloides</i> | C | WM |
| 215 | Magpie-Robin <i>Copsychus saularis</i> | C | LM |
| 216 | Redstart <i>Phoenicurus phoenicurus</i> | C | LM |
| 217 | Pied Bush Chat <i>Saxicola caprata</i> | C | LM |

| Sl. No. | Common/Scientific Name | Abundance | Status |
|----------------------|---|-----------|--------|
| 218 | Rock Thrush <i>Monticola saxatilis</i> | C | Res |
| Family Motacillidae | | | |
| 219 | Tree Pipit <i>Anthus trivialis</i> | C | LM |
| 220 | Paddyfield Pipit <i>Anthus novaeseelandiae</i> | C | LM |
| 221 | Yellow Wagtail <i>Motacilla flava</i> | C | WM |
| 222 | Yellowheaded Wagtail <i>Motacilla cireola</i> | C | WM |
| 223 | Grey Wagtail <i>Motacilla caspica</i> | C | WM |
| 224 | Indian White Wagtail <i>Motacilla alba</i> | C | WM |
| 225 | Large Pied Wagtail <i>Motacilla maderaspatensis</i> | A | Res/B |
| Family Dicaeidae | | | |
| 226 | Thickbilled Flowerpecker <i>Dicaeum agile</i> | C | Res/B |
| 227 | Tickell's Flowerpecker <i>Dicaeum erythrorhynchos</i> | C | Res |
| Family Nectariniidae | | | |
| 228 | Purplerumped Sunbird <i>Nectarinia zeylonica</i> | C | Res/B |
| 229 | Purple Sunbird <i>Nectarinia asiatica</i> | C | Res/B |
| Family Zosteropidae | | | |
| 230 | White-eye <i>Zosterops palpebrosa</i> | C | Res/B |
| Family Ploceidae | | | |
| 231 | House Sparrow <i>Passer domesticus</i> | C | Res/B |
| 232 | Baya Ploceus <i>philippinus</i> | C | Res |
| 233 | Whitethroated Munia <i>Lonchura malabarica</i> | C | Res/B |
| 234 | Whitebacked Munia <i>Lonchura striata</i> | C | Res |
| 235 | Spotted Munia <i>Lonchura punctulata</i> | C | Res/B |
| 236 | Blackheaded Munia <i>Lonchura malacca</i> | C | LM |

A- Abundant, C- Common, O-Occasional, R-Rare, Res-Resident, B- Breeder, LM-Local Migrant, WM-Winter Migrant

F. FISHES

| Sl. No. | Species | Common Name |
|---------|---------------------------------------|---------------|
| 1 | <i>Aplocheilichthys luamelastigma</i> | Ata parigi |
| 2 | <i>Ambassis interepta</i> | Glass fish |
| 3 | <i>Annabas testudinus</i> | |
| 4 | <i>Annabas olegolepis</i> | |
| 5 | <i>Belone caucela</i> | |
| 6 | <i>Beliophthalmis bodarti</i> | Mud skipper |
| 7 | <i>Colisa fasciata</i> | |
| 8 | <i>Coilinae dussimumieri</i> | |
| 9 | <i>Clarius batrachus</i> | |
| 10 | <i>Chanos ehanos</i> | Pala chapa |
| 11 | <i>Etroplus maculatus</i> | Duvvena chapa |
| 12 | <i>Elops saurus</i> | Jalugu chapa |
| 13 | <i>Etroplus suratensis</i> | Duvvena chapa |
| 14 | <i>Gobids gorius</i> | Dondulu |
| 15 | <i>Heteropneustis phossilis</i> | Singhi |
| 16 | <i>Liza tade</i> | Katta chapa |
| 17 | <i>Liza pasia</i> | Katta chapa |
| 18 | <i>Lates calcarifer</i> | Pandugoppa |
| 19 | <i>Mystus cavasius</i> | Tangara |
| 20 | <i>Mystus vittatus</i> | |
| 21 | <i>Mystus scenghala</i> | |
| 22 | <i>Mystus aor</i> | |
| 23 | <i>Mystus tengana</i> | |
| 24 | <i>Mystus gulio</i> | Jalla |
| 25 | <i>Migalops cyprinoides</i> | Kannenga |
| 26 | <i>Mugil parsia</i> | Kattu chapa |
| 27 | <i>Mugil cephalus</i> | Koyyanga |
| 28 | <i>Muraenosox talabon</i> | Kalumu pamu |
| 29 | <i>Ompak papda</i> | |
| 30 | <i>Ompak binaculatus</i> | |

| Sl. No. | Species | Common Name |
|---------|--------------------------|-----------------|
| 31 | Ompak pabe | |
| 32 | Polynemus indicus | |
| 33 | Pangasius pangasius | |
| 34 | Polynemus tetradutylum | |
| 35 | Polynemus heptadutylum | |
| 36 | Ophioccephalus gachua | Snake head Fish |
| 37 | Ophioccephalus marulius | |
| 38 | Ophioccephalus punctatus | |
| 39 | Ophioccephalus striatus | |
| 40 | Mastocumbellus armotus | |
| 41 | Mastocumbellus pancallus | |
| 42 | Tetradon fluviatitis | |
| 43 | Trapacanthus oxyeephalus | |
| 44 | Wallango attu | Vlugu |

G. PRAWNS

| Sl. No | Scientific Name | Family | Common Name | Class |
|--------|---------------------------|--------------|-----------------------------|-----------|
| 1 | Penaeus monodon | Penaeidae | Tiger Prawn | Crustacea |
| 2 | Penaeus semisulcatus | -do- | Green Tiger Prawn | -do- |
| 3 | Penaeus merguensis | -do- | Banana Prawn | -do- |
| 4 | Penaeus indicus | -do- | Yelli Royya and Tella Royya | -do- |
| 5 | Metapenaeus monoceros | -do- | Bonga Royya & Kalandan | -do- |
| 6 | Metapenaeus affinis | -do- | Kayabonga, Royya | -do- |
| 7 | Metapenaeus brevicornis | -do- | Yellow prawn or poovalin | -do- |
| 8 | Metapenaeus dobsoni | -do- | Chenki Royya | -do- |
| 9 | Parapenaeopsis hardvicki | -do- | | -do- |
| 10 | Parapenaeopsis stylifera | -do- | | -do- |
| 11 | Parapenaeopsis sculptilis | -do- | Gulla Royya | -do- |
| 12 | Solenocera indica | -do- | Yerri Royya | -do- |
| 13 | Acetes incidus | Sergestidae | Coyya Pottu | -do- |
| 14 | Palaemon tempes | Palaemonidae | Singidi Royya | -do- |

H. CRABS

| Sl. No | Scientific Name | Common Name | Class |
|--------|-------------------------|--------------|-----------|
| 1 | Scylla serrata (edible) | Guddi peetha | Crustacea |
| 2. | Portunus pelagicus | | -do- |
| 3. | Portunus sanguinolentus | | -do- |
| 4. | Charybdis cruciata | | -do- |
| 5. | Charybdis annulata | | -do- |
| 6. | Charybdis natator | | -do- |
| 7. | Mutata lunaris | | -do- |

I. SNAILS

| Sl. No. | Scientific Name | Common Name | Family. |
|---------|-------------------------|-----------------|-------------|
| 1 | Placuna placenta | Talappu gulla | Anomiidae |
| 2 | Anandra granosa | Budithagulla | Arcidae |
| 3 | Meretrix meretrix | Gangali chippa | Veneridae |
| 4 | Katelysia opima | -- | -- |
| 5 | Paphia malabarica | Benda gulla | -- |
| 6 | Donax cuneatus | -- | -- |
| 7 | Umbonium vestiarium | Nathudu gulla | Trochidae |
| 8 | Cerithidaea species | Chitti gulla | Cerithiidae |
| 9. | Hemifusus pngilenus | Sankapu gulla | -- |
| 10. | Telescopium telescopium | Bongarapu gulla | -- |

J. INSECTS

Banded lady-bird beetle
Stag beetle
Milk weed beetle
Moths
Butterflies-Wintering monarch
Insidious housefly
Mosquitoes
Locust
Wood louse
Mandibled monster
Pale beetle grub
Caterpillar
Leaf miners
Ticks
Birch leaf roller
White Ants (Termites)
Crickets

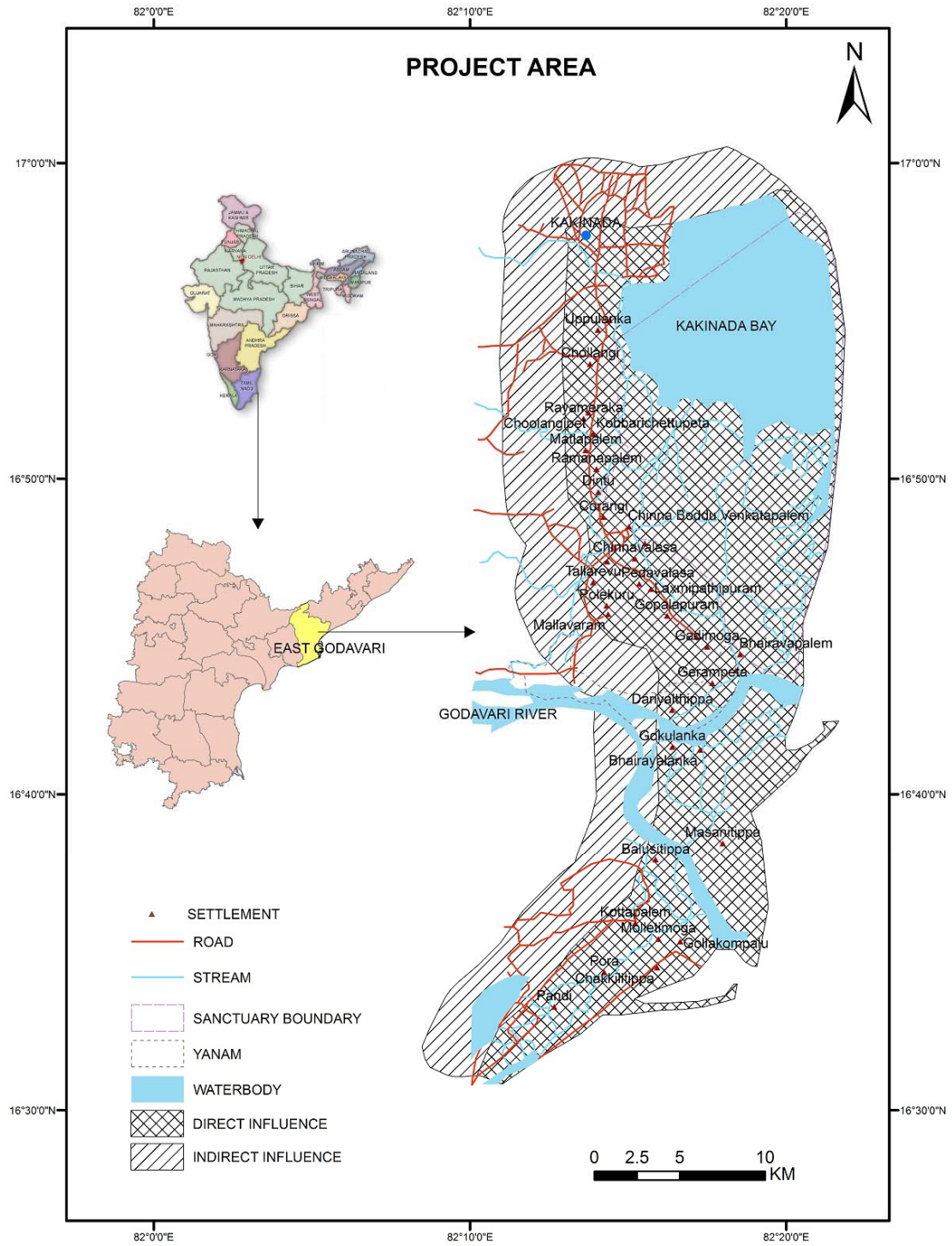
L. REPTILES

House gecko
Wall lizard
Garden lizard
Skink
Monitor lizard
Fan-throated lizard
Snake skink
Striped keelback
Olive keelback
Smooth water snake
Rat snake
Dhaman
Greek snake
Wolf snake
Banded krait
Common Sandboa
Indian krait
Cobra
Russels viper
Hook nosed sea snake
Yellow sea snake
Sawback terrapin
Flapshell turtle
Olive ridley sea turtle
Hawksbill sea
Estuarine crocodile
Marsh crocodile

K. AMPHIBIANS

Bull frog
Pond or green frog
Toad
Skipper frog
Tree frog

Annex 2: Map of Project Area



Annex 3: Demographic details of 44 Villages around the CWLS

There are 6 Mandals with 44 villages/settlements in the target landscape/seascape of the project , which is the East Godavari River Estuarine Area corresponding to Tallaravu, Karapa, Kakinada Rural, Kakinada Urban, Katrenikona and I. Polavaram Mandals of East Godavari District. The total number of households in the villages of these mandals is 27,080; the total population is 114,585, and the average household size is 4.23 persons. The table below lists the main demographic details of these villages.

| S.No | Name of village | No HHs | Population | | | Primary Occupation | Secondary Occupation |
|------|----------------------------|--------|------------|------|-------|--------------------|-------------------------|
| | | | M | F | Total | | |
| 1 | Bhairavapalem | 1105 | 2166 | 2180 | 4346 | Fishing | Ag. labour |
| 2 | Bhairavalanka | 106 | 330 | 317 | 647 | Agriculture | Fishing |
| 3 | Pedavalsala | 604 | 1120 | 1057 | 2183 | Fishing | Ag labour |
| 4 | Gadimoga | 930 | 1720 | 1695 | 3415 | Fishing | Ag. labour |
| 5 | Gopalapuram | 64 | 117 | 119 | 236 | Fishing | Ag. labour |
| 6 | Kothapalem | 208 | 668 | 616 | 1284 | Fishing | Ag. labour |
| 7 | Pora | 283 | 1897 | 987 | 910 | Fishing | Ag labour |
| 8 | Pandi | 382 | 886 | 782 | 1668 | Fishing | Wage labour |
| 9 | Babanagar | 70 | 145 | 161 | 266 | Agriculture | Fishing |
| 10 | Chakilitippa | 250 | 1246 | 1290 | 2536 | Fishing | Ag. labour |
| 11 | Lakshmipathipuram | 506 | 911 | 871 | 1782 | Fishing | Wage Labour |
| 12 | Chinavalasala | 559 | 1079 | 1050 | 2129 | Fishing | Agr. labour |
| 13 | Seetharampuram | 986 | 1998 | 2021 | 4019 | Wage labour | Carpentry |
| 14 | P. Mallavaram | 1978 | 2797 | 2657 | 5472 | Wage labour | Wage labour |
| 15 | Polekurru | 170 | 300 | 275 | 575 | Agriculture | Ag. labour, wage labour |
| 16 | Chinna Boddunkenetapalayam | 562 | 1281 | 1220 | 2501 | Fishing | Labour |
| 17 | Peda Boddu-Venkatayapalem | 371 | 788 | 826 | 1114 | Fishing | Ag. labour, wage labour |
| 18 | Kotha Korangi | 243 | 480 | 492 | 972 | Wage labour | Wage labour |
| 19 | Dindu | 72 | 140 | 148 | 288 | Fishing | Ag.labour |
| 20 | Ramannapalem | 225 | 500 | 520 | 1020 | Fishing | Ag/wage labour |
| 21 | Raghavendrapuram | 55 | 108 | 112 | 220 | Agriculture | Ag.labour |
| 22 | Kothuru | 446 | 882 | 902 | 1784 | Fishing | Wage labour |
| 23 | Matlapalem | 479 | 910 | 930 | 1880 | Fishing | Ag/wage labour |
| 24 | Rayameraka | 122 | 145 | 140 | 285 | Dairy & Agric. | Ag/wage labour |
| 25 | Chollangipeta | 525 | 1267 | 1268 | 2535 | Dairy & Agric. | Ag/wage labour |
| 26 | Kobbarichettupeta | 170 | 405 | 445 | 850 | Fishing | Ag/wage labour |
| 27 | Bhairavalanka | 75 | 180 | 195 | 375 | Ag. labour | Wage labour |
| 28 | Goghulanka | 375 | 580 | 570 | 1150 | Agric & Fishing | Ag. labour, fishing |
| 29 | Uppalanka | 506 | 1046 | 1037 | 2083 | Fishing | Wage labour |
| 30 | Pagadalapeta | 1108 | 1820 | 1830 | 3650 | Fishing | Wage labour |

| S.No | Name of village | No HHs | Population | | | Primary Occupation | Secondary Occupation |
|------|-----------------|--------|------------|-------|-------|---------------------|--------------------------|
| | | | M | F | Total | | |
| 31 | Chollangi | 738 | 1512 | 1488 | 3000 | Agriculture | Ag/wage labour |
| 32 | Dariyalatippa | 312 | 1328 | 1137 | 2465 | Fishing | Wage labour |
| 33 | Gollakomaplu | 165 | 644 | 622 | 1266 | Agriculture | Fishing, Wage labour |
| 34 | Savitrinagar | 475 | 960 | 940 | 1900 | Agri & carpentry | Ag/wage labour |
| 35 | Masanitippa | 325 | 1655 | 1457 | 3012 | Fishing | Agriculture |
| 36 | Balusitippa | 338 | 1749 | 1541 | 3290 | Fishing | Agriculture, Wage labour |
| 37 | Molletimogga | 295 | 1167 | 1081 | 2248 | Fishing | Agriculture, Wage labour |
| 38 | Gerampeta | 315 | 995 | 963 | 1958 | Fishing | Wage labour |
| 39 | Surachirrayanam | 265 | 1238 | 1137 | 2375 | Fishing | Ag. labour |
| 40 | Tallarevu | 3092 | 6428 | 5943 | 12371 | Dairy & Agriculture | Agr/Wage labour |
| 41 | Etimoga | 6500 | 13600 | 12400 | 26000 | Fishing | Wage labour |
| 42 | Chollangigullu | 75 | 171 | 204 | 375 | Fishing | Wage labour |
| 43 | Pathakorangi | 375 | 655 | 620 | 1275 | Fishing | Ag labour |
| 44 | Totapeta | 275 | 450 | 420 | 875 | Fishing | Wage labour |

Annex 4: Manufacturing Activity in the East Godavari River Estuarine Ecosystem (EGREE)*

The table below lists all industrial activity in the East Godavari District. Of these industrial units, those that are located in the target landscape/ seascape of the project – i.e., those located in the Tallaravu, Karapa, Kakinada (Rural), Kakinada (Urban), Katrenikona and I. Polavaram Mandals of East Godavari District – are highlighted.

Table 7. Details of Large Scale Manufacturing Units

| Name and Address of the unit | Location | Mandal | Item of Manufacture | Investment (INR Crores) |
|--|----------------------------|------------------|--|-------------------------|
| Matrix Bio Sciences Pvt. Ltd. | Vadisaleru | Rangampeta | Aqua feed | 6.00 |
| Sri Ramalingeswara paper Mills Ltd | Vemulapalli | Kadiyam | Paper (Writing/craft) | 6.00 |
| R.R.Refineres Ltd | Vemulapalli | Kadiyam | Refined Rice Bran Oil | 6.00 |
| Shalimar Global Oils Pvt. Ltd. | IDA, Vakalapudi, | Kakinada(Urban) | Oil Refining | 6.35 |
| Vinayaka Paper Boards Ltd. | Kanavaram | Satyavedu | Paper (All varieties) | 6.60 |
| Avanthi Feeds Ltd. | Ethakota | Ravulapalem | Shrimp shell meal | 7.20 |
| SPS Textile Industries | Ravikampadu | Kollur | Cotton Yarn | 8.60 |
| Sarda Agro Oils | Kakinada | Kakinada Rural | Oil Refinery | 8.90 |
| Venkatarama Oil Industries Ltd | Hussainpuram | Tadipatri | Rice Bran Oil | 9.58 |
| Artos Breweries Ltd. | Ramachandrapuram | Ramachandrapuram | Beer | 9.99 |
| Sri Murali Mohana Boiled & Raw Rice Mill | Komaripalem | Biccavole | Rice (Parboiled) | 10.00 |
| Shree Chakra Papers Pvt. Ltd | G. Ragampet, | Peddapuram | Newsprint | 10.17 |
| Ramachandra Paper Boards Ltd. | Yedida | Atreyapuram | Newsprint & White paper | 10.19 |
| Ch.Veeraraju&Co, Palacherla | Rajahmundry | Rajamundry Rural | Stone aggregates | 10.55 |
| Praag Distilleries | Nallamilli | Anaparthi | IML (Liquor Mfg.) | 11.00 |
| Priyadarsini Spinning Mills Ltd. | Y.Kothapalli | U.Kothpalli | Gas Based Power | 11.15 |
| N.C.S.Estates Ltd. | Ch.Brahmadevam | Rayavaram | Industrial Alcohol | 12.00 |
| Kedia Overseas Ltd. | Vakalapudi | Kakinada Rural | Oil Refinery | 12.50 |
| Manihamsa Power Project | Yeleswaram | Yeleswaram | Power generation | 14.35 |
| Palm Tech India Ltd. | Peddapuram | Peddapuram | Crude Palm Oil | 14.57 |
| GoodHealth Agrotech Pvt. Ltd | IDA, Vakalapudi, Kakinada | Kakinada Urban | Oil Refining, Vanaspati | 15.50 |
| Surya Chandra Paper Mills Ltd. | Maredubaka | Mandapeta | Paper (All varieties) | 16.04 |
| Acalmar Oils & Fats Ltd. | Vakalapudi | Kakinada Rural | Hydrogenated Oils, Vanaspati | 19.54 |
| Shri Papers Ltd. | G.Ragampeta | Ravulapalem | Paper Board & Captive power | 19.61 |
| Vamsi Industries Ltd. | Vemulapalli | Dwarapudi | Power generation | 20.00 |
| PSL Limited | IDA, Peddapuram | Peddapuram | Coating of pipes | 20.10 |
| Sri Lalitha Enterprises | Peddapuram | Peddapuram | Rice | 21.00 |
| Nikhil Refineres Ltd. | Vakalapudi | Kakinada Rural | Edible Oil Refinery, Vanaspati | 22.50 |
| Hindustan Petroleum Corporation Ltd, Gokavaram | Gokavaram | Peddapuram | Gas Filling in Cylinders | 24.25 |
| Aclamar Oils & Fats Ltd., Unit- II | Vakalapudi, Kakinada Rural | Kakinada Rural | Interestificatin of Oils | 24.32 |
| Sarvaraya Textiles Ltd | Kakinada | Kakinada Urban | Cotton Yarn | 25.00 |
| Shri Shakti LPG Ltd. | Nemam | Kakinada Rural | LPG bottling | 25.00 |
| I.L.T.D. Ltd | Anaparthi | Anaparthi | Threshing & Redrying of Tobacco | 25.00 |
| ONGC Mini Oil Refinery | Nagaram | P.Gannavaram | Oil Refinery/Naptha, Kerosene & Diesel | 27.00 |
| Gowthami Liquid Storage (P) Ltd. | Vakalapudi | Kakinada Rural | Edible Oil Refinery | 28.87 |
| Arani Agro Oils Industries | Kakinada | Kakinada Rural | Refined Sunflower Oil, Palm Oil, Fatty Acids | 30.50 |
| Agarwal Industries Pvt. Ltd | IDA, Vakalapudi, Kakinada | Kakinada Rural | Oil Refining, Vanaspati | 33.08 |
| S.R.M.T. Ltd. | Kakinada | Kakinada Urban | Automobile Components | 33.68 |
| Sarvaraya Sugars Ltd., (Bottling Unit) | Keasavaram | K.Gangavasram | Soft Drinks | 36.00 |
| Sri Ramadas Paper Boards (P) Ltd. | Jegurupadu | Kadiyam | Paper & Paper Boards | 36.14 |
| Sarvaraya Sugars Ltd. (Bottling Plant) | Vemagiri | Kadiyam | Soft drinks, Aerated Water | 40.00 |
| Sarvaraya Sugars Ltd. | Chelluru | K.Gangavasram | Sugar, Industrial Alcohol | 40.82 |
| Steel Exchange India Ltd. | Kothapeta | Kothapeta | Captive Power, Steel Ingots | 51.10 |

| | | | | |
|--|-----------------|------------------|--------------------------------|----------|
| Sri Vatsa Power Projects Ltd. | Sivakodu | Razole | Gas Based Power | 60.00 |
| Ruchi Infrastructure Ltd. | Kakinada | Kakinada Rural | Veg. Oil refinery | 76.00 |
| Naturol bio-energy Ltd. Kakinada | IDA, Vakalapudi | Kakinada Rural | Bio-Diesel | 140.00 |
| Galxo Smithkline Beechem Consumer Health Care Ltd. | Bommuru | Rajamundry Rural | Horlicks, Cosmetics | 150.00 |
| Deccan Sugars Ltd | Samalkot | Samalkot | Sugar, Industrial Alcohol | 150.00 |
| Coastal Paper Mills Ltd. | Kadiyam | Kadiyam | Paper (All varieties) | 155.55 |
| Coromondal Fertilisers & Chem. Ltd. | Kakinada | Kakinada Rural | DAP, NPK Grades | 205.66 |
| A.P.Paper Mills Ltd | Rajahmundry | Rajamundry Rural | Paper (Writing/craft) | 366.33 |
| RAK Ceramics INDIA PVT LTD | IDA, Peddapuram | Peddapuram | Vitrified Tiles, Sanitary ware | 380.00 |
| G.V.K. Industries Ltd. | Jegurupadu | Kadiyam | Gas based power | 750.00 |
| Reliance Energy Ltd. | Samalkot | Samalkot | Power generation | 1000.00 |
| Spectrum Power Generation Ltd. | Nemam | Kakinada Rural | Power generation | 1000.00 |
| Nagarjuna Fertilisers & Chemicals Ltd. | Kakinada | Kakinada Rural | Urea, Ammonia | 2395.60 |
| Reliance Petro | Gadomoga | Talleravu | Natural Gas (KG6 basin) | 50000.00 |

Table 8. Details of Medium Scale Industries

| Name and Address of the unit | Location | Mandal | Item of Manufacture | Investment (INR Crores) |
|---|---------------------------|-------------------|------------------------------------|-------------------------|
| Lakshmi Ganapathi Rice Mill | Rayavaram | Rayavaram | Rice (Parboiled) | 1.26 |
| SIGGIL Industries Ltd. (Closed) | Kakinada | Kakinada (Urban) | Carbon Dioxide Bottling | 1.35 |
| KPR Rice Mills | Komaripalem | Samalkot | Rice (Parboiled) | 1.39 |
| Koya & Company Constructions Pvt. Ltd. | Dosakayalapalli | Samalkot | Pre-stressed Cement Concrete Pipes | 1.40 |
| Sri Surya Modern Rice Mill | Komaripalem | Samalkot | Rice (Parboiled) | 1.44 |
| Adilaxmi Industries | Vetlapalem | Samalkot | Rice Milling | 1.47 |
| Kalyana Chakravarthi Rice Mill | Pedapalla | Alamuru | Rice (Raw & Boiled) | 1.49 |
| Sri Jayalakshmi Hitech Rice Mill | Venturu, Rayavaram(M) | Rayavaram | Rice (Parboiled) | 1.57 |
| SBS Paper Boards (P) Ltd. | Kanavaram | Rajanagaram | Duplex Boards | 1.77 |
| Sri Sai Teja Agro Inds Pvt Ltd. | Tossipudi | Biccavolu | Rice (Boiled) | 1.77 |
| Sri Balaji Boiled & Raw Rice Mill, | Ramavaram | Jaggampeta | Rice | 1.80 |
| Sri Suvarna Lakshmi Traders | Machavaram, Rayavaram (M) | Rayavaram | Rice | 1.90 |
| Sir Arther Cotton Modern Rice Mill | Mahendrawada | Anaparthi | Rice (Parboiled) | 1.90 |
| Rama Lakshmi Satyanarayana Rice Mill | Vedurumudi | Kapileswarapuram | Rice | 1.92 |
| Sri Lakshmi Satyanarayana | Penuguduru | Karapa | Rice (Parboiled) | 2.00 |
| Sri Satya Sea Foods | Panasapadu | Samalkot | Seafood Processing | 2.18 |
| Sri Uma Paddy Para Boiled Plant | Mahendrawada | Anaparthi | Rice (Parboiled) | 2.24 |
| Venkataramana Rice Mill | Biccavole | Biccavolu | Rice (Parboiled) | 2.34 |
| Sri Venkateswara R & B Rice Mill, | Duppalapudi | Anaparthi | Rice | 2.41 |
| Veera Venkata Lakshmi Textiles Ltd. (Closed) | Vemulapalli | Kadiyam | Cotton Yarn | 2.42 |
| Sri Surya Gangadhara Boiled & Raw Rice Mill | Balabhadrapuram | Dwarapudi | Rice Milling | 2.43 |
| Sri Ramadas Paper Boards (P) Ltd. | Jegurupadu | Kadiyam | Paper & Paper Boards | 2.50 |
| Jai Bhavani Power Tech (P) Ltd | Gollapalem | Karapa | Steel Re rolling | 2.50 |
| Sugam Agro Tech Ltd | Peddapuram | Peddapuram | White Button Mushrooms | 2.50 |
| NSN Reddy Rice Industries, Yanam Road, Chollangi (V), Tallarevu (M) | Chollangi, Tallarevu (M) | Tallarevu | Rice | 2.71 |
| A.G.A.. Publications Ltd. | Rajahmundry | Rajahmundry Urban | News paper printing | 2.74 |
| Porus Agro Food Products | Yeditha | Ravulapalem | Rice | 2.75 |
| Nagarjuna Agri Chem (P) Ltd | Ethakota | Ravulapalem | Insecticides & Pesticides | 2.80 |
| Gayatri Rice Mills | Tossipudi | Biccavole | Rice (Parboiled) | 2.93 |
| Sri Venkata Padmavathi Raw & Boiled RiceMill | Turangi | Kakinada Rural | Rice (Raw & Boiled) | 3.00 |
| Samera Solvents Oil (P) Ltd. | Mandapeta | Mandapeta | Rice Brawn Oil | 3.00 |
| Sri Venkateswara Rice Industry | Mandapeta | Mandapeta | Rice (Raw & Boiled) | 3.12 |
| Ammireddy Oils Ltd. | Anaparthi | Anaparthi | Rice Bran Oil Refinery | 3.25 |

| Name and Address of the unit | Location | Mandal | Item of Manufacture | Investment (INR Crores) |
|---------------------------------------|-----------------------|------------------|----------------------------|-------------------------|
| Sri Jaya Lakshmi R & B Rice Mill | Venturu, Rayavaram(M) | Rayavaram | Rice | 3.40 |
| Sri Agasteswara Paper Boards Mill Ltd | Tapeswaram | Mandapeta | Paper (Craft , Gray Paper) | 3.47 |
| Janakirama Raw&Boiled Rice Mill | Vakada, Karapa(M) | Karapa | Rice & Rice products | 3.50 |
| Sri Veerabhadreswara Rice Mill | Polamuru | Rayavaram | Rice (Boiled) | 3.56 |
| Siva Kalyani Paper Boards | Jegurupadu | Kadiyam | Duplex Board | 3.60 |
| Chaitanya Rice Mill | Chelluru | Rayavaram | Rice | 3.65 |
| Chandrika Rice Mill | Rayavaram | Rayavaram | Rice (Boiled) | 3.79 |
| Godavari Edible Bran Oil Ltd. | Vemulapalli | Kadiyam | Rice Bran Oil | 3.80 |
| Rajahmundry Paper Mills Ltd. | Parijellipeta | Rajamundry | Paper Products | 3.96 |
| Madhavi Edible Bran Oils | Mandapeta | Mandapeta | Rice Bran Oil Refinery | 4.00 |
| G.N.G.Export, Port area, | Kakinada | Kakinada (Urban) | Iron Ore fines | 4.04 |
| GMK Products Pvt. Ltd. | Kesanapalli | Malikipuram | Gas Based Power | 4.35 |
| Nekkanti Sea Foods Ltd. | Ethakota | Ravulapalem | Frozen Prawns & Fish | 4.50 |
| Jaya Venkata Rama Power Products | Perrayacheruvu | Uppalagupatnam | Gas Based Power Generation | 4.50 |
| Venkata Raya Power Pvt. Ltd., | Mori | Razole | Gas Based Power | 4.60 |
| Seven Hills Papers Pvt Ltd. | G.Ragampeta | Alamuru | Paper Board | 4.65 |
| Andhra Electronics Ltd. | Kakinada | Kakinada (Urban) | Quartz Crystals | 4.85 |
| Laxman Paper Mills (P) Ltd. | Z.Medapadu | Samalkot | Paper Products | 4.90 |
| Southern Drugs & Pharmaceuticals | Dowlaiswaram | Dowleswaram | Eno Salt | 5.00 |

* In the first year of the project, when the base line is going to be finalized, the above listed industries shall be prioritized as per their impact on the EGREE as per the CRZ 2010 Notification.

Table 9. Mandal-wise Classification of Small Scale Industries

| Name of the Mandal | No. of Units | Employment |
|--------------------|--------------|------------|
| Addateegala | 0 | 0 |
| Alamuru | 2 | 72 |
| Allavaram | 0 | 0 |
| Amabajipeta | 1 | 5 |
| Amalapuram | 0 | 0 |
| Anaparthi | 6 | 132 |
| Atreyapuram | 2 | 43 |
| Biccavolu | 4 | 120 |
| Devipatnam | 0 | 0 |
| Gandepalli | 1 | 36 |
| Gangavaram | 0 | 0 |
| Gokavaram | 0 | 0 |
| Gollaprolu | 2 | 12 |
| I.Polavaram | 0 | 0 |
| Inavilli | 0 | 0 |
| Jaggampeta | 4 | 408 |
| Kadium | 3 | 131 |
| Kajuluru | 1 | 17 |
| Kakinada (Rural) | 24 | 517 |
| Kakinada (U) | 12 | 220 |
| Kapileswarapuram | 0 | 0 |
| Karapa | 1 | 13 |
| Katrenikona | 0 | 0 |
| Kirlampudi | 1 | 21 |
| Korukonda | 3 | 22 |
| Kotananduru | 1 | 3 |
| Kothapalli | 2 | 47 |

| Name of the Mandal | No. of Units | Employment |
|--------------------|--------------|------------|
| Kothapeta | 2 | 39 |
| Malikipuram | 1 | 101 |
| Mamidikuduru | 1 | 13 |
| Mandapeta | 8 | 365 |
| Maredumilli | 0 | 0 |
| Mummidivaram | 0 | 0 |
| P.Gannavaram | 0 | 0 |
| Pamaru | 2 | 7 |
| Pedapudi | 1 | 15 |
| Peddapuram | 10 | 387 |
| Pithapuram | 3 | 17 |
| Prathipadu | 2 | 214 |
| R.C.Puram | 4 | 39 |
| Rajahmundry | 12 | 317 |
| Rajahmundry(U) | 15 | 307 |
| Rajanagaram | 5 | 222 |
| Rajavommangi | 0 | 0 |
| Rampachodavaram | 0 | 0 |
| Rangampeta | 1 | 61 |
| Ravulapalem | 1 | 11 |
| Rayavaram | 5 | 99 |
| Razole | 1 | 8 |
| Sakhinetipalli | 0 | 0 |
| Samalkot | 8 | 490 |
| Sankhavaram | 1 | 4 |
| Sitanagaram | 1 | 13 |
| Tallarevu | 2 | 28 |
| Thondangi | 0 | 0 |
| Tuni | 0 | 0 |
| Uppalaguptam | 0 | 0 |
| Y.Ramavaram | 0 | 0 |
| Yeleswaram | 0 | 0 |
| TOTAL | 156 | 4576 |

Annex 5: Legislation and Policies related to Conservation and Sustainable Use of Coastal and Marine Biodiversity and Environmental Regulation of Production Activities

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|---|--|-----------------------------------|
| National legislation related to conservation and sustainable use of coastal and marine biodiversity and environmental regulation of production activities | | |
| Biological Diversity Act 2002 | The Biological Diversity Act is an act to provide for the conservation of biological diversity, sustainable use of its components, and fair and equitable sharing of the benefits arising out of the use of biological resources and knowledge associated with it. More specifically, it provides for the designation of institutions as repositories of biological resources. For implementation, the Act provides for National Biodiversity Authority (NBA) and also recommends the creation of State Biodiversity Boards. However, currently, the Act does not cover the aspects of coastal and marine biodiversity in its specific contexts. | A |
| Coast Guard Act, 1950 | The Act provides provisions for levying heavy penalties for the pollution of port waters. Coast guard under the Ministry of Defense is responsible for combating marine pollution. One of major economic activities in the EGREE is Kakinada Sea Port related and there is oil pollution due to this. However, currently there is need to strengthen the enforcement of its provisions in the EGREE. | A |
| Coastal Regulation Zone Notification 1991 | The Coastal Regulation Zone Notification places regulations on various activities, including construction. It gives some protection to activities that pertain to the backwaters and estuaries. Issued under the Environment (Protection) Act, 1986, coastal stretches have been defined in Coastal Regulation Zone (CRZ) and restrictions have been imposed on industries, operations and processes within the CRZ. For regulating development activities, the coastal stretches within 500 meters of High Tide Line on the landward side are classified into four categories, namely: CRZ-I, areas that are ecologically sensitive and important, CRZ-II, the areas that have already been developed upto or close to the shoreline, CRZ-III, areas that are relatively undisturbed and those which do not belong to either CRZ-I or CRZ-II and CRZ-IV, coastal stretches in the Andaman & Nicobar, Lakshadweep and small islands. Since majority of the project area falls within the CRZ specification and mangroves being one of the ecological sensitive areas, all the implementation activities need to be complied by the CRZ notification. The issues such as pressure on urbanisation, development, special economic zones, etc still persists in the coastal areas, hence very relevant with the mainstreaming objective of the project. | A |
| Environment (Protection) Act, 1986 | The Environment (Protection) Act, 1986 authorizes the central government to protect and improve environmental quality, control and reduce pollution from all sources, and prohibit or restrict the setting and /or operation of any industrial facility on environmental grounds. The Environment (Protection) Rules lay down procedures for setting standards of emission or discharge of environmental pollutants to regulate industrial locations and to prescribe procedures for managing hazardous substances. The production activities and their resultant impacts are controlled by EPA. | A |
| Environment Impact Assessment Notification, 2006 | The objective of the notification and subsequent amendments is to protect and conserve the environment through regulation of the new developments taking place via ensuring environmental compliance causing least/ negligible adverse impacts on the environment. Although EIA has been made mandatory for all the investment and development projects in the coasts, the implementation of Environment Management Plan seems to be overlooked. This is evident from the pollution level in the coastal waters of the country (Mohandas et al, 2000). The conduct of EIA, for setting up of any production unit will be brought under this notification. | A |
| Forest Conservation Act, 1980 (amended in 1988) | The act deals with mainly to provide regulatory framework for the protection of the forest areas, resources, diversion of forestry land for non-forestry purposes such as industry and mining. The Act requires the state government in question to get approval from the central government before de-gazetting or de-notifying reserved forests, leasing reserved forest lands to private persons or corporations or clearing land for reforestation. The CWLS and Mangrove forests in the EGREE are covered under this act, but the marine biological diversity conservation is not addressed appropriately. | B |
| Hazardous Wastes (Management and Handling) Rules, 1989 | The objective of Hazardous Waste (Management and Handling) Rules is to control the generation, collection, treatment, import, storage, and handling of hazardous waste. Currently, the production sectors seldom handle any hazardous wastes hence low significance | C |
| Indian Fisheries Act, 1897 | The Indian Fisheries Act establishes two sets of penal offences whereby the government can sue any person who uses dynamite or other explosive substance in any way (whether coastal or inland) with intent to catch or destroy any fish or poisonous fish in order to kill. Since fishing is one of the major economic activities in the EGREE, Fisheries Act and its regulation are highly significant. The | A |

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|--|---|-----------------------------------|
| | Act needs strengthening from a biodiversity point of view. | |
| Indian Ports Act, 1908 | The Indian Ports Act provides enactment relating to ports and port charges and rules for safety of shipping and conservation of ports. The Activities of Sea Ports are governed by this act which is one of the major economic activities in the mainstreaming context. The Act needs strengthening from a mainstreaming perspective. | A |
| Joint Forest Management Notifications | JFM was formerly launched on June 01 1990, as a government attempt to towards regenerating and sustainably using the forests providing guidelines for the involvement of village communities and voluntary agencies in the regeneration degradation of forests. Although the initial thrust was towards timber production, both communities and forest officials realized that non timber forest produces were far more sustainable and beneficial, provided that harvesting was done in a sustainable manner. The February 2000 guidelines for JFM thus shifted focus from timber to NTFP. These guidelines also extended JFM to standing or well stocked forests, with a motive to promote conservation. The village level institutions such EDC and VSS which will be constituted under this notification is involved in the project components both for capacitating and pilot implementing. However, the Notifications does not specifically address the complex resource management issues of coastal and marine areas. | B |
| Marine Fishing Regulation Act, 1978 | A model act that provide guideline to the states in India for enacting laws meant for protection of marine fisheries by regulating fishing in the territorial waters. The measures include regulation of mesh size and gear, reservation of zones for various fishing sectors and also declaration of closed seasons. This regulation act is one of the most important acts on account of marine resource conservation and regulation of fishing activities. However, the Act needs strengthening from a biodiversity and sustainable fisheries point of view. | A |
| Maritime Zones of India (Regulation of Fishing by Foreign Vessels) Act, 1976 | The Act describes the various zones such as territorial waters, EEZ, continental shelf etc. The sustainability of marine fishing is dealt through this regulation. This Act is moderately significant in the EGREE in dealing with illegal trawling. | B |
| Merchant Shipping Act, 1958 | The Merchant Shipping Act aims to deal with waste arising from ships along the coastal areas within a specified radius. This Act is moderately significant in the EGREE in dealing with ballast water, oil pollution and invasive species. . | B |
| Water (Prevention and Control of Pollution) Act, 1974 | The Water (Prevention and Control of Pollution) Act establishes an institutional structure for preventing and abating water pollution. It establishes standards for water quality and effluent. Polluting industries must seek permission to discharge waste into effluent bodies. The CPCB (Central Pollution Control Board) was constituted under this act. The water pollution is one of the major threats in the EGREE hence a significant act in the context of the project. There is need for stronger enforcement of this Act in the EGREE. | A |
| Wildlife Protection Act, 1972 (amended in 1983, 1986, 1991 and 2001) | The WPA is meant for the protection of wild plants and animals and regulates hunting, trade and collection of specific forest products. Rules of this Act, and subsequent amendments provide for the protection of birds and animals and for all matters that are connected to it whether it be their habitat or the waterhole or the forests that sustain them. The 2001 amendment of the act included several species of fish, corals, sea cucumber and sea shells in Schedule I and III. The said act is highly significant in the context of protection of wildlife in the PA, but as a gap it may be pointed out that there is not much focus on the protection and conservation of marine life.. | A |
| National Policies related to conservation and sustainable use of coastal and marine biodiversity and environmental regulation of production activities | | |
| Deep Sea Fishing Policy, 1991 | The New Deep Sea Fishing Policy announced in March, 1991 became fully effective during the year 1992-93. A number of vessels under Joint Venture, Test Fishing and Leasing were permitted and some vessels started operating from 1993 onwards. However, in the wake of agitation by traditional fishermen groups, a committee was constituted to review the deep sea fishing policy. The Government has decided to accept the recommendations of the Review Committee in principle. It has also been decided to rescind the New Deep Sea Fishing Policy of 1991 whereas the charter policies are already being phased out. The Ministry has initiated action for formulation of a New Deep Sea Fishing Policy and a legislation to regulate operations of Indian fishing vessels in the Indian EEZ in consultation with Maritime States/UTs . With a view to achieving an integrated development of the Deep Sea Fishing Sector, the Ministry implemented the various schemes relating to infrastructure development. The conservation of globally significant species such Olive ridley, leather back, green turtle has much to do with the deep fishing policy through effective implementation. | A |
| Marine Fishing Policy | The theme of comprehensive marine fishing policy is enshrined in the National Agriculture Policy. | A |

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|--|---|-----------------------------------|
| 2004 | <p>The present policy seeks to bring the traditional and coastal fishermen also in to the focus together with stakeholders in the deep-sea sector so as to achieve harmonized development of marine fishery both in the territorial and extra territorial waters of our country.</p> <p>The policy objectives are: (i) to augment marine fish production of the country up to the sustainable level in a responsible manner so as to boost export of sea food from the country and also to increase per capita fish protein intake of the masses, (ii) to ensure socio-economic security of the artisanal fishermen whose livelihood solely depends on this vocation. (iii) to ensure sustainable development of marine fisheries with due concern for ecological integrity and biodiversity.</p> <p>The policy support pilot implementation of selected livelihood activities for the fishing sector and also ensure socio-economic security of the fishing communities.</p> | |
| National Conservation Strategy and Policy Statement on Environment and Development, 1992 | <p>Policy formulated in response to the need for laying down the guidelines that will help to weave environmental considerations into the fabric of national life and development process. The major objectives of the policy with respect to marine and coastal zones are: ensure that the environment and productivity of coastal areas and marine ecosystems are protected; conserve and nurture the biological diversity, gene pool and other resources through environmentally sustainable development and management of ecosystems, with special emphasis on our mountain, marine and coastal, desert, wetlands, riverine and island ecosystems; and, protect the scenic landscapes, areas of geomorphological significance, unique and representative biomes and ecosystems and wildlife habitats, heritage sites/structures and areas of cultural heritage importance. The mainstreaming of production sector focussing on conservation and protection of natural resources comply with the stated policy.</p> | A |
| National Environment Policy 2006 | <p>The National Environment Policy stresses the need for an approach to coastal environmental regulation in a more holistic manner and preparation of ICZM plans. NEP suggests on the need to decentralize, the clearance of specific projects to State level environmental authorities, exempting activities, which do not cause significant environmental impacts, and are consistent with approved ICZM plans. NEP suggests the following actions to be taken up:</p> <p>Mainstream the sustainable management of mangroves into the forestry sector regulatory regime, ensuring that they continue to provide livelihoods to local communities; Disseminate available techniques; Explicitly consider sea-level rise and vulnerability of coastal areas to climate change and geological events, in coastal management plans, as well as infrastructure planning and construction norms; Adopt a comprehensive approach to Integrated Coastal Management by addressing linkages between coastal areas, wetlands, and river systems, in relevant policies, regulation, and programs; Develop a strategy for strengthening regulation, and addressing impacts, of ship-breaking activities on human health, and coastal and near marine resources</p> <p>The integrated or rather advanced concept of mainstreaming of sectoral activities with resource conservation is compliance of NEP.</p> | A |
| National Forest Policy, 1988 | <p>The Government of India in the erstwhile Ministry of Food and Agriculture enunciated a Forest Policy to be followed in the management of State Forests in the country. The principal aim of Policy must be to ensure environmental stability and maintenance of ecological balance including atmospheric equilibrium which is vital for sustenance of all life forms, human, animals and plants. The derivation of direct economic benefit must be subordinated to this principal aim.</p> <p>The management of CWS and reserve forests in the EGREE are carried out according to the National Forest Policy. The project which aims the environment stability and maintenance of ecological balance is also comparable to the the principle of National Forest Policy.</p> | A |
| National Wildlife Action Plan, (2002-16) | <p>Adopted in 1983 for the first time, the plan outlines the strategies and action points for wildlife conservation. The outputs of the projects related to strengthening of PA, conservation of ecologically important areas, restoration of mangroves, conservation programme on turtles are derived from the NWAP.</p> | A |
| Policy Statement on Abatement of Pollution, 1992 | <p>This policy attempts to harmonize economic development and environmental imperatives using a variety of regulatory instruments, fiscal incentives and educational and outreach methods to promote the application of the best technologies to reduce pollution. The policy emphasis is on increased use of regulations and application of financial incentives. The concept of mainstreaming production activities with conservation of biodiversity and some of the outputs mentioned in the strategy framework is highly relevant to the policy statement.</p> | A |
| Tourism Policy, 1998 | <p>Coastal tourism, more than any other activity that takes place in coastal zones and the near-shore coastal ocean, is increasing in both volume and diversity. Both the magnitude and the dynamic nature of this sector demand that it be actively taken into account in community, industry, and government plans, policies, and programs related to oceans and coasts. The rapid growth of tourism</p> | B |

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|--|---|-----------------------------------|
| | and similarly eco-tourism are important elements for coastal communities and offer both costs and benefits for the management of coastal zones. In coastal areas, the tourism sector has, until recently, rarely been consulted regarding resource decisions. Consequently, there is little legislation that specifically relates to tourism while the allocation of coastal resources has generally ignored tourism needs. As a result of this, and in the face of growing tourism demand, issues of conflict are emerging. One of the alternate livelihood activities mentioned in the project is exploration of tourism activities in the EGREE. But currently there is little legal framework to support tourism activities in the coastal area which could aim economic benefits to the local population | |
| State Level Polices and Acts related to conservation and sustainable use of coastal and marine biodiversity and environmental regulation of production activities | | |
| Andhra Pradesh Biotechnology Policy, 2001 | This identifies the biotech sector as one of the “Engines of Growth”. The objectives of the Policy are: to take up a detailed inventory of the bio-resources in the State with the help of Universities, research institutions, NGOs and private agencies, to promote conservation of bio-diversity and sustainable exploitation of bio-resources, to create a congenial environment for encouraging R and D in biotechnology and allied fields through the development of infrastructure and through appropriate incentives and regulatory framework for research, to provide special incentives to the biotech industry and related sectors, to focus on human resource development in the area, to create an enabling environment for the growth of the biotech industry, especially the simplification of procedures for getting clearances for the commercialization of new biotech products and for the use of laboratory animals for drug discovery, etc. The focus areas include among many others, marine and forest and environment focused biotechnology also. Biotechnology policy is relevant to the mainstreaming project only when the coastal and marine biological resources have been put into production activities. | C |
| Andhra Pradesh Industrial Policy 2005-10 | Andhra Pradesh announced its new industrial policy in June 2010, and the objectives are to promote Andhra Pradesh as an attractive destination for industrial investments, to market Andhra Pradesh as competitive investment destination for Foreign Investments, to create enabling environment for ensuring maximum value addition to the abundant locally available resources, to encourage establishment of New Tiny and Small Scale Industries particularly in rural areas to achieve the twin objectives of employment generation and utilization of local resources, to arrest environmental degradation, etc. State industrial policy which aims only industrial growth has got maximum impact to the sustainable development of the area. At the same time the policy is spelling out the environmental degradation too which is a welcome move towards mainstreaming. | A |
| Andhra Pradesh State Forest Policy, 2002 | The focal theme of the vision on State Forestry Sector as per the Vision 2020 statement of Andhra Pradesh is ‘sustainable management of forest resources through participatory approach’, with emphasis on the protection and regeneration of forests and forestland to ensure a green and healthy Andhra Pradesh for the future generations. The major acts and rules within the framework of the policy are the Andhra Pradesh Forest Act (1967), Andhra Pradesh Minor Forest Produce (Regulation of Trade) Act 1971, Andhra Pradesh Forests Conservation act 1980 (as amended in 1988), Andhra Pradesh Scheduled Areas Minor Forest Produce (regulation of Trade) Rules, 1990, etc. Similar to the national forest policy, the state policy too stress upon the management of the area for ecological balance and security. It also emphasises on the involvement of village level participatory management committees such as EDCs and PFM committees. However, these are not explicitly addressing the needs of the EGREE. | A |
| State Mineral Policy | Aims at optimum exploitation, scientific development, value addition, marketing and exports under private and joint sectors. Mineral Sector, Cement & Jewelry Sectors are identified as Thrust areas in the New Industrial Policy; brought out simplified entrepreneur friendly structural changes in the State Mineral Policy, decentralized, deregulated & introduced Prefixed Time frame in the processing of Mineral Concessions at each level for faster implementation of projects. Salt manufacturing is the only mineral related activities carried out in the EGREE, which is also in declining stage. However, assuming that Salt Pans are going to stay at least for a while in the EGREE, there is need to dovetail BD considerations into it. | C |
| International Conventions and Treaties | | |
| Ramsar Convention, 1971 | The Convention on Wetlands is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. This is one of the oldest ecosystem specific conventions for the conservation and sustainable utilization of wetlands to stem the progressive encroachment on and loss of wetlands now and in the future, recognizing the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value. The project area, EGREE, is largely a wetland and hence many activities related to wetlands such as planting of mangroves, conservation of turtle, | A |

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|---|--|-----------------------------------|
| | etc are related to the treaty. All the stated activities comply with the objectives of the convention hence would help in strengthening the initiatives taken by the country as a Party to Ramasar Convention. | |
| London Dumping Convention 1972 (Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972) | The Convention has a global character, and contributes to the international control and prevention of marine pollution. It prohibits the dumping of certain hazardous materials into the sea / oceans, requires a prior special permit for the dumping of a number of other identified materials and a prior general permit for other wastes or matter. The convention is relevant to the context of pollution from industries and urban agglomeration that drains into the Kakinada Bay, will be addressed in this project. | B |
| MARPOL 73/78 | It is one of the important international marine environmental conventions promoted by International Maritime Organization (IMO), designed to minimize pollution of the seas including dumping, oil and exhaust pollution. The objective of the Convention is to reduce the volumes of harmful materials entering the world's ocean and the marine environment. Ships have traditionally discharged all of their waste into the sea. It included oils, chemicals, plastics and other materials which may float, are not biodegradable, are extremely persistent and deteriorate very slowly. The output related to capacity building and pollution monitoring by pollution control board is related to this Convention | B |
| Ocean Policy Statement, 1982 | Sets out the basic principles through which the development of ocean is to be carried out. The Ocean Policy Statement is primarily aimed at utilization of marine living and nonliving resources for societal benefits in a sustainable manner. Some of the salient features of the Policy Statement include exploratory survey, assessment and sustainable utilization/harnessing of the ocean resources including living, non-living and renewable sources of ocean energy, developmental activities related to integrated coastal and marine area management, coastal community development, etc., with direct application to the welfare of the society. One of the major sector addressed in this project is oil and petrochemicals which are harnessed through offshore drilling. The sustainability of these resource utilization will be complied with this policy statement. | B |
| Convention on Migratory Species of Wild Animals 1983 | The Convention on the Conservation of Migratory Species of Wild Animals (also known as CMS or Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. It is an intergovernmental treaty, concluded under the aegis of the United Nations Environment Programme, concerned with the conservation of wildlife and habitats on a global scale. The Convention gives protection to many species of crocodiles, sharks, turtles etc. The core area of the project, CWS, and adjacent wetlands harbours many migratory birds and is an Important Bird Area of the country, which implies the relevance of the mentioned convention. | A |
| Convention on Biological Diversity, 1992 | The Convention on Biological Diversity, known informally as the Biodiversity Convention, is an international treaty that was adopted in Rio de Janeiro in June 1992. The Convention has three main goals: Conservation of biological diversity; Sustainable use of its components; and Fair and equitable sharing of benefits arising from genetic resources. The convention recognized for the first time in international law that the conservation of biological diversity is "a common concern of humankind" and is an integral part of the development process. The agreement covers all ecosystems, species, and genetic resources. It links traditional conservation efforts to the economic goal of using biological resources sustainably. It sets principles for the fair and equitable sharing of the benefits arising from the use of genetic resources, notably those destined for commercial use. | A |
| CITES (1973) | CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments which aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival. CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of IUCN (The World Conservation Union) and finally agreed at a meeting of representatives of 80 countries in Washington DC. on 3rd March 1973, and on 1 July 1975 CITES entered in force. CITES works by subjecting international trade in specimens of selected species to certain controls wherein all import, export, re-export and introduction of species covered by the Convention has to be authorized through a licensing system. The species covered by CITES are listed in three Appendices, according to the degree of protection they need. Roughly 5000 species of animals and 28000 species of plants are protected by CITES against over-exploitation through international trade. Some of the important coastal and marine species found in the EGREE are covered under the ambit | A |

| Legislation/ Policy | Brief Description | Relevance in the context of EGREE |
|---|--|-----------------------------------|
| | of the Convention. The capacity building intended to provide during the project implementation would also help in increasing the awareness of different stakeholders about CITES. | |
| Basel Convention, 1992 | The convention contains specific provisions for the monitoring of hazardous wastes. A number of articles in the convention oblige parties to take appropriate measures to implement and enforce its provisions, including measures to prevent and punish conduct in contravention of the convention. The pollution monitoring and abatement through appropriate system is in conformity with the Convention. | B |
| UN Convention on the Law of Seas (UNCLOS), 1994 | UNCLOS, also called the Law of the Sea Convention or the Law of the Sea Treaty, is the international agreement that resulted from the third United Nations Conference on the Law of the Sea (UNCLOS III), which took place from 1973 through 1982. The Law of the Sea Convention defines the rights and responsibilities of nations in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. The Convention, concluded in 1982, replaced four 1958 treaties. UNCLOS came into force in 1994. To date, 158 countries and the European Community have joined in the Convention. However, it is now regarded as a codification of the customary international law on the issue. The mainstreaming project comprehensively addresses the sustainable utilization of marine and coastal resources and conservation of the same for posterity. All the activities in the project would help in strengthening the compliance of the country towards the convention. | B |
| Kyoto Protocol, 1997 | The Kyoto Protocol was adopted by the third Conference of Parties (COP – 3) of the UNFCCC on 11 December, 1997 in Kyoto, Japan and entered into force on 16 February, 2005 with the ratification by Russia on November 18, 2004 (accounted in total for at least 55% of the total carbon dioxide emissions for 1990 of the Parties). The Kyoto Protocol sets legally binding targets for industrialized countries to reduce their greenhouse gas emissions (5.2%) to a level equivalent to year 1990 by the target year 2012. The goal is to lower overall emissions of six greenhouse gases – carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydro fluorocarbons and per fluorocarbons. Developing countries like Brazil, China and India have ratified the protocol. The KP is particularly important in the context of marine and coastal ecosystem based project interventions. The project and its various components though are not directly aiming to address reduction of green house gases, certain activities such as mangrove restoration, control of pollution (emission) are related to climate change. This indicates adherence of the project towards Kyoto Protocol and climate change. | A |

Annex 6: Stakeholder Analysis and Involvement Plan

Main stakeholders

177. The immediate stakeholder group for the project is the local community, especially the poorest fishermen who are highly vulnerable to any resource depletion in the coastal and marine environment due to their dependency on the quality and accessibility to coastal resources. CBOs such as Self-help Groups (SHGs), Mahila Samkhyas, Dairy Cooperatives, Van Samrakshan Samitis (VSS), local JFM Committees (i.e., Eco Development Committees or EDCs) are important stakeholders because they are the primary entry-point for engaging communities in the project.

178. The Forest Department at the local, state and national levels is another important stakeholder given its mandate for environmental protection and biodiversity conservation. Other government entities that are important stakeholders include the State Pollution Control Board, State Line Departments (Fisheries, Industries, Tourism, Agriculture, Animal husbandry, etc), Government Agencies (Andhra Pradesh Industrial Infrastructure Corporation Ltd, Salt Commissionerate, District Rural Development Agency, Commissioner of Ports, Non-Conventional Energy Development Corporation of Andhra Pradesh Ltd, etc).

179. In addition to government departments, key public sector institutions also have a crucial stake in the project, particularly those institutions (e.g. Gujarat State Petro Chemicals, Kakinada seaport limited) that are directly or indirectly dependent on natural resources. These include tourism, agriculture, ports, selected industries, etc.

180. Local Government such as Municipal Corporation, Gram Sabhas and other Panchayati Raj Institutions⁴⁰ are another group of stakeholders inasmuch as they can influence the development plans and interaction of local communities with the EGREE.

181. The private sector is another important stakeholder that will be an important partner as opportunities arise for the development and implementation of initiatives that have the potential to be commercialized. In particular, more cost-effective and pragmatic approaches will require the evolution of customized technologies and specific services that can be developed and refined by the private sector as investment and business opportunities. For example, eco-tourism, small- and medium-scale rural enterprises will require active involvement of the private sector. The project will aim to develop collaboration with the private sector at an early stage of project development and implementation, based on intervention areas where private sector engagement and support can occur. Further, industrial/production enterprises (Reliance, Nagarjuna fertilizers, Godavari fertilizers) (small, medium and large scale) that operate in and around the project area and have an impact on the EGREE will be key partners in mainstreaming biodiversity conservation concerns in their operations.

182. Research Institutions (JNTU, Andhra University) and NGOs (MSSRF, Pallisri, etc) will have a significant stakeholder role in promoting awareness on integrated coastal zone management, especially in project sites and in developing linkages both to human welfare and to sustainable resources, ecosystem and environmental management. They have already been actively involved in the development of this document and will be actively involved in project implementation, particularly for capacity building support.

183. Representatives from TV, radio and print media are important partners in highlighting the need to mainstream biodiversity conservation in the wider landscape around the CWLS.

⁴⁰ A Panchayati Raj Institution (PRI) is a local-level institution for self-government in rural areas that are recognized by the Constitution of India. PRIs are elected bodies and operate at three levels, a cluster of villages, a block and at the district level. PRIs are responsible for the preparation of plans for economic development and social justice and also for the implementation of schemes for economic development and social justice as entrusted to them by the respective state government and also by the GoI.

Stakeholder participation in project design

184. The present project design reflects the findings of extensive consultations at different levels during the project planning phase. The consultations with these sectors were carried out in three phases. The first phase was during May 7th-26th 2010 where consultations were more concentrated on local people and their institutions. All the village level institutions were contacted and discussions were held in their premises regarding the conservation and livelihood issues in the EGREE. The second phase was during 10th June to 8th July 2010. During this period organized discussions were conducted with CBOs, and different department agencies. The third phase of consultations took place during July 25th to 30th 2010 and was undertaken to link the missing information of the two previous discussions.

185. A series of consultations were carried out with private production actors, the prominent among them being Reliance Petrochemicals, Nagarjuna Fertilizers, Godavari Fertilizers (Coramandal International limited), Fisheries, Aquaculture, tourism, ports, and salt pans. The consultations were mainly focused on the activities of the sectors regarding compliance towards environmental management and biodiversity conservation in the EGREE. During the consultation it was revealed that private sector in the EGREE, have some basic awareness and understanding on the need for environmental protection; but less on biodiversity conservation per se. Most of the CSR budget of these firms have been spent on social activities and very little is being spend for conservation or environmental protection. The major activities carried out currently under CSR by these sectors are education and health related. During the course of consultation, we have explained the project and its components and objectives to these major private sectors and they are keen to associate with the implementation of the programme. They also observed that it is not the lack of budget that constraints taking up environmental protection activities but the absence of good proposals. The project can give a platform for filling this vacuum

Stakeholder participation in project implementation

186. At the demonstration sites, the project will focus on stakeholder involvement in planning, implementing and monitoring of the project activities. The project will build capacity at this level by enabling multi-stakeholder communities to articulate their perceptions and to participate in decision-making. The communities will benefit from improvements in resources management and the sustainable maintenance of natural resources, both with regard to their living environment as well as their health and welfare. Additional efforts and careful diplomacy at the stakeholder level will be required in order to develop suitable mechanisms for resolving complex and often-conflicting issues in the context of integrated landscape/ seascape management.

187. Many of the stakeholders consulted in the design of this project will also play an active role in its implementation through various mechanisms. The table below summarizes the main stakeholders at the national, state and local level and their potential role in project implementation.

Summary of key stakeholder groups and their potential roles in the project

| Stakeholder | Role in the project |
|---|--|
| Ministry of Environment and Forests | Take leadership in the overall implementation of this project. Provide overall administrative locus to the project and ensure the regular monitoring and evaluation of project implementation. Steer and facilitate the required changes in the policy directives for encouraging coastal and marine conservation and sustainable utilization. Provide the required co-financing and coordinate with other Ministries and Departments at central and state government levels to ensure that the committed co-finance, both reoriented baseline and in kind are made available in a timely fashion. Coordinate smooth release of project funds from UNDP-GEF. |
| Department of Forests and Environment, Andhra Pradesh | The overall coordination of the project and ensure the regular monitoring and evaluation of project implementation. Facilitate the required changes in the institution and policy framework for implementation of the project. |

| Stakeholder | Role in the project |
|--|---|
| | Provide the required co-financing and coordinate with other departments at state government levels to ensure that the committed co-finance, both reoriented baseline and in kind are made available in a timely fashion. Coordinate smooth release of project funds from UNDP-GEF. |
| State Pollution Control Board | Implementation of Environment (Protection) Act, 1986 Regular monitoring of pollution in the creeks and estuaries Prepare awareness materials and facilitate conduct of awareness programmes |
| Line departments (Fisheries, Industries, Tourism, Agriculture, Animal husbandry, etc) | Since these line departments are largely playing a consumptive role in the landscape their involvement will be in the following: Preparation of biodiversity-friendly sector specific plans Take initiative in institution building activities such as capacity, training, awareness, etc Facilitate and coordinate capacity building and training activities for the livelihood activities which are coming under each line department Coordinate community extension activities with reputed resource persons and institutions both governmental and non-governmental |
| Government Agencies (Andhra Pradesh Industrial Infrastructure Corporation Ltd, Salt Commissionerate, District Rural Development Agency, Commissioner of Ports, Non-Conventional Energy Development Corporation of Andhra Pradesh Ltd (NEDCAP) etc) | These agencies are government/quasi government in nature and play a major role in utilizing the coastal and marine resources. Their roles will be largely similar to the line departments: Facilitate the implementation of the sector plans Take proactive role in the capacity building and training programme Facilitate awareness creation among the local/ village level institutions such as CBOs, SHGs, etc. |
| Local Government and departments (Municipal Corporation, Gram Sabhas and other Panchayati Raj Institutions etc) | Partner in the implementation of community based components of this project. Participate in the capacity building initiatives. Overall administration of the landscape Regulation and control of all the economic activities vis-à-vis land use Role in the implementation of Coastal Zone Regulation Notification 2010 Develop sectoral plans to minimize the pollution load to estuarine/ bay ecosystem. |
| Community/ user group based Organizations, SHGs, Mahila Samkhyas, Dairy Cooperatives, representatives of different community-based institutions, including local level JFM Committees (EDCs). | Participate in the planning of resource utilization and preparation of micro plans Participate in the capacity development initiatives of the project. Take leadership in the management of the resources ensuring sustainability Partner with other institutions and organizations in implementing the components of the project Participate in dissemination of lessons learnt and awareness activities. |
| Research Organizations, Universities, NGOs, National Centre for Sustainable Aquaculture (NaCSA), etc | Conduct of necessary studies and develop knowledge materials and data base Facilitate capacity building and awareness programmes on sustainable livelihood activities, alternate resource uses Facilitate the preparation of sector plans Facilitate the mobilization of communities and community organizations towards sustainable livelihood practices Facilitate monitoring and evaluation of the project activities |
| Industrial/ production (Small, Medium and Large) Enterprises | Preparation and implementation of biodiversity- friendly sector plans Take initiative to incorporate environmental/ biodiversity conservation activities in their CSR programmes Take a proactive role in capacity building and awareness programme Facilitate the conduct of training and capacity building programmes for the staff. |
| Media, both visual, audio and print | Taking the conservation message to relevant sections of the society Facilitate the effort on awareness and training programme |

Annex 7: Capacity Development Score Card

188. This scorecard has been designed specifically for this project, as a tool to measure success in terms of developing national capacity to mainstream biodiversity conservation considerations into production sectors. While, the tool is conceptually based on the UNDP Capacity Development Scorecard, it is different in its substantive focus and the indicators. This is because the UNDP Capacity Development Scorecard is meant to assess the development of capacities vis-à-vis the management of protected areas, whereas this project is about biodiversity mainstreaming into the plans and activities of production sectors operating in the EGREE.

189. Table 1 tries to be as objective as possible in its selection of indicators. Each indicator is scored from 0 (worst) to 3 (best), with an explanation of what each score represents for the particular indicator. The tool then estimates the baseline situation/ score for each indicator (cell marked in yellow), and then identifies the target situation/ score (marked in green). Tables 2 through 6 provide a quantitative summary of the total possible scores, baseline scores, target scores, baseline score as a percentage of the total possible score, and the target score as a percentage of the total possible score.

190. In assigning scores, the term "production sector activities in the EGREE" is assumed to include the following: commercial fishing, aquaculture, salt pans, manufacturing units, ports, and subsistence livelihoods. "Production sector institutions" covers all institutions that play some role in planning and management of the production sector activities (production sectors as defined above) in the EGREE. This includes state government institutions (such as AP Pollution Control Board, line ministries for fisheries, agriculture, industry, transport/ ports, rural development), local government, and Village Level Institutions (e.g., SHGs, EDCs). During project development, the Capacity Scorecard has been applied at a general level to all production sectors/ actors operating in the EGREE. However, during the 1st 6 months of project implementation, it will be applied separately to different sectors, and within each sector, separately to state, private sector and community institutions. Further, once Sector Plans are prepared by mid-term, the project will have a more realistic assessment of targets.

Table 1: Scorecard

| Strategic Area of Support | Capacity Level | Indicator | Scores | | | | | | | |
|--|----------------|--|---|---|---|--|--|---|--|---|
| | | | Worst (Score 0) | | Marginal (Score 1) | | Satisfactory (Score 2) | | Best (Score 3) | |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programmes | Systemic | There is a strong and clear legal mandate for mainstreaming biodiversity into production sector activities in the EGREE | There is no legal framework for biodiversity mainstreaming into production sector activities | | There is a partial legal framework for biodiversity mainstreaming into production sector activities, but it has many inadequacies | | There is a reasonable legal framework for biodiversity mainstreaming but it has a few weaknesses and gaps | 2 | There is a strong and clear legal mandate for biodiversity mainstreaming into production sector activities | 3 |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programmes | Institutional | There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity | There is no multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector | 0 | There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector | | There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector | | There is a multi-sectoral institutional mechanism responsible for mainstreaming biodiversity concerns into production sector | 3 |

| Strategic Area of Support | Capacity Level | Indicator | Scores | | | | | | | |
|---|----------------|--|---|---|---|---|---|---|---|---|
| | | | Worst (Score 0) | | Marginal (Score 1) | | Satisfactory (Score 2) | | Best (Score 3) | |
| | | concerns into production sector activities in the EGREE that is able to prepare effective strategies and plans to this end | activities in the EGREE | | activities in the EGREE but there is no clear strategy to this end | | activities in the EGREE, and there is an initial strategy to this end | | activities in the EGREE, and there is a regularly updated strategy developed through wide stakeholder participation | |
| 2. Capacity to implement policies, legislation, strategies and programmes | Systemic | There are adequate skills for mainstreaming biodiversity into production sector activities in the EGREE | There is a general lack of skills | | Some skills exist but in largely insufficient quantities to guarantee effective biodiversity mainstreaming | 1 | Necessary skills for effective biodiversity mainstreaming into production sector activities do exist but are stretched and not easily available | | Adequate quantities of the full range of skills necessary for effective biodiversity mainstreaming into production sector activities are easily available | 3 |
| 2. Capacity to implement policies, legislation, strategies and programmes | Systemic | There is an oversight mechanism with clear responsibility to monitor and enforce biodiversity mainstreaming into production sector activities in the EGREE | There is no oversight at all | | There is some general oversight on environmental compliance but it lacks capacity to specifically monitor and enforce compliance with biodiversity considerations | 1 | There is a reasonable oversight mechanism in place providing for regular review of biodiversity considerations but it lacks transparency (e.g. is not independent, or is internalized) | | There is a fully transparent oversight mechanism in place providing for regular review of biodiversity considerations | 3 |
| 2. Capacity to implement policies, legislation, strategies and programmes | Institutional | Production sector institutions have regularly updated, biodiversity-compatible sectoral plans for the EGREE that have been prepared with effective participation of land users | Production sector institutions do not have biodiversity-compatible sectoral plans | 0 | Production sector institutions have biodiversity-compatible sectoral plans, but these are not developed through consultations with land users | | Production sector institutions have biodiversity-compatible sectoral plans, developed through consultations with land users, but there is no process for regular review and updating of the plans | 2 | Production sector institutions have biodiversity-compatible territorial plans, developed through consultations with land users, and there is a process for regular review and updating of the plans | |
| 2. Capacity to implement policies, | Institutional | Biodiversity-compatible sectoral plans in | There is very little implementation of biodiversity- | 0 | Biodiversity-compatible sectoral plans are poorly | | Biodiversity-compatible sectoral plans are usually | 2 | Biodiversity-compatible sectoral plans are | |

| Strategic Area of Support | Capacity Level | Indicator | Scores | | | | | | | |
|---|----------------|--|--|---|--|---|---|--|---|---|
| | | | Worst (Score 0) | | Marginal (Score 1) | | Satisfactory (Score 2) | | Best (Score 3) | |
| legislation, strategies and programmes | | the EGREE are implemented in a timely manner effectively achieving their objectives | compatible sectoral plans | | implemented and their objectives are rarely met | | implemented in a timely manner, though delays typically occur and some objectives are not met | | implemented in a timely manner effectively achieving their objectives | |
| 2. Capacity to implement policies, legislation, strategies and programmes | Institutional | Production sector institutions in the EGREE are able to mobilize sufficient funding, and human and material resources to effectively implement the biodiversity mainstreaming mandate | Production sector institutions typically are severely under funded and have no capacity to mobilize sufficient resources | | Production sector institutions have some funding and are able to mobilize some human and material resources but not enough to effectively implement their biodiversity mainstreaming mandate | 1 | Production sector institutions have reasonable capacity to mobilize funding or other resources but not always in sufficient quantities for effective implementation of their biodiversity mainstreaming mandate | | Production sector institutions are able to adequately mobilize sufficient quantity of funding, human and material resources to effectively implement their biodiversity mainstreaming mandate | 3 |
| 2. Capacity to implement policies, legislation, strategies and programmes | Individual | Human resources in production sector institutions in the EGREE are well qualified and motivated to mainstream biodiversity concerns into sectoral plans | Human resources (HR) are poorly qualified and unmotivated | | HR qualification is spotty, with some well qualified, but many only poorly and in general unmotivated | 1 | HR in general reasonably qualified, but many lack in motivation, or those that are motivated are not sufficiently qualified. | | Human resources are well qualified and motivated, and a compendium of best practices for mainstreaming biodiversity conservation in production sectors and other training materials produced under the project are available as a ready resource for new staff that join government departments | 3 |
| 2. Capacity to implement policies, legislation, strategies and programmes | Individual | There are appropriate systems of training, mentoring, and learning in place to maintain a continuous flow of | No mechanisms exist | 0 | Some mechanisms exist but unable to develop enough and unable to provide the full range of skills needed | | Mechanisms generally exist to develop skilled professionals, but either not enough of them or unable to cover the full range of skills required | | There are mechanisms for developing adequate numbers of the full range of highly skilled professionals able to mainstream biodiversity in | 3 |

| Strategic Area of Support | Capacity Level | Indicator | Scores | | | | | | | |
|--|----------------|---|--|---|---|---|--|---|--|---|
| | | | Worst (Score 0) | | Marginal (Score 1) | | Satisfactory (Score 2) | | Best (Score 3) | |
| | | new staff with the capacity to mainstream biodiversity in sectoral plans in the EGREE | | | | | | | territorial plans | |
| 3. Capacity to engage and build consensus among all stakeholders | Systemic | Biodiversity-compatible Strategic Plan for the EGREE (incl. sectoral plans) have the political commitment they require | There is no political will at all, or worse, the prevailing political will runs counter to the interests of biodiversity mainstreaming into sectoral plans | | Some political will exists, but is not strong enough to make a difference | 1 | Reasonable political will exists, but is not always strong enough to fully support biodiversity mainstreaming into sectoral plans | | There are very high levels of political will to support biodiversity mainstreaming into sectoral plans in the EGREE | 3 |
| 3. Capacity to engage and build consensus among all stakeholders | Systemic | Biodiversity-compatible Strategic Plan for the EGREE (incl. sectoral plans) have the public support they require | The public has little interest in a Strategic Plan for the EGREE (incl. sectoral plans) and there is no significant lobby for it | 0 | There is limited support for Biodiversity-compatible Strategic Plan (incl. sectoral plans) | | There is general public support for Biodiversity-compatible Strategic Plan (incl. sectoral plans) and there are various lobby groups such as environmental NGO's strongly pushing for them | 2 | There is tremendous public support in the country for Biodiversity-compatible Strategic Plan (incl. sectoral plans) | |
| 3. Capacity to engage and build consensus among all stakeholders | Institutional | Production sector institutions can establish the partnerships needed to achieve biodiversity mainstreaming objectives in the EGREE | Production sector institutions operate in isolation | 0 | Some partnerships are in place but there are significant gaps, and existing partnerships achieve little | | Many partnerships in place with a wide range of agencies, NGOs etc, but there are some gaps, partnerships are not always effective and do not always enable efficient achievement of biodiversity mainstreaming objectives | | Production sector institutions establish effective partnerships with other agencies and institutions, including provincial and local governments, NGO's and the private sector to enable achievement of biodiversity mainstreaming objectives in an efficient and effective manner | 3 |
| 4. Capacity to | Systemic | Production sector | Information is | | Some information | 1 | Much information is | | Production sector | 3 |

| Strategic Area of Support | Capacity Level | Indicator | Scores | | | | | | | |
|--|----------------|--|---|--|--|---|---|--|---|---|
| | | | Worst (Score 0) | | Marginal (Score 1) | | Satisfactory (Score 2) | | Best (Score 3) | |
| mobilize information and knowledge | | institutions have the biodiversity information they need to develop and monitor biodiversity-compatible sectoral plans for the EGREE | virtually lacking | | exists, but is of poor quality, is of limited usefulness, and is not always available at the right time | | easily available and mostly of good quality, but there remain some gaps in quality, coverage and availability | | institutions have the biodiversity information they need to develop and monitor sectoral plans | |
| 4. Capacity to mobilize information and knowledge | Individual | Individuals working on sectoral planning work effectively together as a team | Individuals work in isolation and don't interact | | Individuals/sectors interact in limited way and sometimes in teams but this is rarely effective and functional | 1 | Individuals interact regularly and form teams, but this is not always fully effective or functional | | Individuals interact effectively and form cross-disciplinary functional teams | 3 |
| 5. Capacity to monitor, evaluate, report and learn | Systemic | Society monitors the state of biodiversity mainstreaming into sectoral plans in the EGREE | There is no dialogue at all | | There is some dialogue going on, but not in the wider public and restricted to specialized circles | 1 | There is a reasonably open public dialogue going on but issues that particularly magnify the conflict between economic activities and biodiversity considerations are not discussed | | There is an open and transparent public dialogue about the state of biodiversity mainstreaming into sectoral plans in the EGREE | 3 |
| 5. Capacity to monitor, evaluate, report and learn | Institutional | Production sector institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning on biodiversity mainstreaming in the EGREE | There are no mechanisms for monitoring, evaluation, reporting or learning | | There are some mechanisms for monitoring, evaluation, reporting and learning but they are limited and weak | 1 | Reasonable mechanisms for monitoring, evaluation, reporting and learning are in place but are not as strong or comprehensive as they could be | | Institutions have effective internal mechanisms for monitoring, evaluation, reporting and learning | 3 |

Table 2: Quantitative summary of Total Possible Scores

| Strategic Areas of Support | Total Possible Scores | | |
|--|-----------------------|---------------|------------|
| | Systemic | Institutional | Individual |
| 1. Capacity to conceptualize and formulate policies, legislations, | 3 | 3 | - |

| | | | |
|---|-----------|-----------|----------|
| strategies and programme | | | |
| 2. Capacity to implement policies, legislation, strategies and programmes | 6 | 9 | 6 |
| 3. Capacity to engage and build consensus among all stakeholders | 6 | 3 | - |
| 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 3 | - | 3 |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 3 | 3 | - |
| Total | 21 | 18 | 9 |
| Note: "-" means no indicator was selected for that level. | | | |

Table 3: Quantitative summary of Baseline Scores

| Strategic Areas of Support | Baseline Scores | | |
|---|-----------------|---------------|------------|
| | Systemic | Institutional | Individual |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programme | 2 | 0 | - |
| 2. Capacity to implement policies, legislation, strategies and programmes | 2 | 1 | 1 |
| 3. Capacity to engage and build consensus among all stakeholders | 1 | 0 | - |
| 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 1 | - | 1 |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 1 | 1 | - |
| Total | 7 | 2 | 2 |
| Note: "-" means no indicator was selected for that level. | | | |

Table 4: Quantitative summary of Target Scores

| Strategic Areas of Support | Target Scores | | |
|---|---------------|---------------|------------|
| | Systemic | Institutional | Individual |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programme | 3 | 3 | - |

| | | | |
|---|-----------|-----------|----------|
| 2. Capacity to implement policies, legislation, strategies and programmes | 6 | 7 | 6 |
| 3. Capacity to engage and build consensus among all stakeholders | 5 | 3 | - |
| 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 3 | - | 3 |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 3 | 3 | - |
| Total | 20 | 16 | 9 |
| Note: "-" means no indicator was selected for that level. | | | |

Table 5: Quantitative summary of Baseline Scores as a % of Total Possible Scores

| Strategic Areas of Support | Baseline Scores as % of TPS | | |
|---|-----------------------------|---------------|------------|
| | Systemic | Institutional | Individual |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programme | 67% | 0% | - |
| 2. Capacity to implement policies, legislation, strategies and programmes | 33% | 11% | 17% |
| 3. Capacity to engage and build consensus among all stakeholders | 17% | 0% | - |
| 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 33% | - | 33% |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 33% | 33% | - |
| Total | 33% | 11% | 22% |
| Note: "-" means no indicator was selected for that level. | | | |

Table 6: Quantitative summary of Target Scores as a % of Total Possible Scores

| Strategic Areas of Support | Target Scores as % of TPS | | |
|---|---------------------------|---------------|------------|
| | Systemic | Institutional | Individual |
| 1. Capacity to conceptualize and formulate policies, legislations, strategies and programme | 100% | 100% | - |
| 2. Capacity to implement policies, legislation, strategies and | 100% | 78% | 100% |

| | | | |
|---|------|------|------|
| programmes | | | |
| 3. Capacity to engage and build consensus among all stakeholders | 83% | 100% | - |
| 4. Capacity to mobilize information and knowledge: Technical skills related specifically to the requirements of GEF SO-2 and SP-4 | 100% | - | 100% |
| 5. Capacity to monitor, evaluate and report and learn at the sector and project levels | 100% | 100% | - |
| Total | 95% | 89% | 100% |
| Note: "-" means no indicator was selected for that level. | | | |

Annex 8: Letters of Endorsement and Co-financing Agreements

GOVERNMENT OF ANDHRA PRADESH
ENVIRONMENT, FORESTS, SCIENCE & TECHNOLOGY (FOR.II) DEPARTMENT

Letter No. 536/For.II(I)/09

Dated: 11.02.2009

From:
JANAKI. R. KONDAPI
Special Chief Secretary to Government,
EFS&T Department,
A.P. Secretariat,
Hyderabad

To
✓ Sri Pramod Krishnan,
Joint Director (Wild life),
Government of India,
Ministry of Environment & Forests,
Paryavaran Bhavan,
Lodi Road, New Delhi- 3.

Sir:

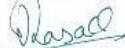
Sub: GEF- Marine and Coastal Biodiversity conservation -
Potential project sites - Reg.

Ref: From your, Lr. F. No.4-30/2007-WL - 1, Dated: 22-1-2009.
(Addressed to CWLW, Govt. of A.P, Hyderabad.)

The Global Environmental Facility (through UNDP), in consultation with the Ministry of Environment and Forests, Government of India has developed a project proposal for mainstreaming the Coastal and Marine Biodiversity. The fund requirement for the project is estimated at USD 24 millions that includes GEF grant for USD 6 millions and co- financing of USD 18 millions by the State. The State Government is agreeable to the project in a manner that GEF funding through Government of India be net additionality without any extra burden on the State.

RO
12/3
RO/

Yours faithfully,



for SPECIAL CHIEF SECRETARY TO GOVERNMENT

Annex 9 Terms of Reference for key project staff

A. Terms of Reference for key project management staff

Project Manager (PM)

Duration: Full-time during the course of the project

Location: New Delhi

Duties and responsibilities:

- PM will report to the NPD and UNDP CO and shall assist in supervising and coordinating the project to ensure its results are in accordance with the Project Document and the rules and procedures established;
- PM shall assume the overall responsibility for the day-today project management - both organizational and substantive matters – budgeting, planning and general monitoring of the project and ensure adequate information flow, discussions and feedback among the various stakeholders; ensure adherence to the project’s work plan, prepare revisions of the work plan, if required;
- PM shall all ensure proper handling of logistics related to project workshops and events; prepare GEF quarterly progress reports, as well as any other reports requested by the Executing Agency and UNDP; prepare, and agree with UNDP on, terms of reference for national and international consultants and subcontractors;
- PM shall guide the work of consultants and subcontractors and oversee compliance with the agreed work plan; maintain regular contact with UNDP Country Office, State Implementing Partner and the National Project Director on project implementation issues of their respective competence;
- PM shall monitor the expenditure, commitments and balance of funds under the project budget lines, and draft project budget revisions; assume overall responsibility for meeting financial delivery targets set out in the agreed AWP, reporting on project funds and related record keeping;
- PM shall liaise with project partners to ensure their co-financing contributions are provided within the agreed terms;
- PM shall assume overall responsibility for reporting on project progress vis-à-vis indicators in the logframe;
- PM shall also undertake any other actions related to the project as requested by UNDP or the NPD.

Qualifications and skills:

- Post Graduate degree in the field of environment & management, sustainable development or related field
- Outstanding communication, project management and organizational skills
- At least 5 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions
- Experience in working with NGOs and civil society, and with participatory approaches
- Proficiency in English and computer literacy

Project Associate (PA):

Duration: Full-time during the course of the project

Location: New Delhi

Duties and responsibilities:

- PA will provide logistical support to the NPD and PM in coordinating and conducting project related activities (trainings, workshops, stakeholder consultations, arrangements of study tour, NPSC meeting, etc.);
- PA will assist the NPD in coordinating with the State Government, Consultants, other relevant agencies and stakeholders on the implementation of the project and will assist NPD in all administrative,

- budgeting, planning and general monitoring of the implementation phase;
- PA shall support PM in preparing component wise progress report, budget expenditures, payment documents, compiling financial reports; maintain the project's disbursement ledger and journal;
- PA shall keep regular contact with project experts and consultants to inform them about the project details and changes; edit reports and other documents for correctness of form and content;
- PA shall perform any other administrative/financial duties as requested by the PM; organize and coordinate the procurement of services and goods under the project; report project implementation progress to NPD and PM.

Qualifications and skills:

- Post Graduate degree in the field of environment & management, sustainable development or related field
- Outstanding communication, project management and organizational skills
- At least 2 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions.
- Experience in working with NGOs and civil society, and with participatory approaches.
- Proficiency in English and computer literacy

OFFICE ASSISTANT

Duration: Full-time during the course of the project

Location: New Delhi

Duties and responsibilities:

- Assist the NPD and PMU and PA in the effective implementation of the project.
- Provide all logistic support to NPD and PMU on drafting, computer assistance, file management, registry, arranging meetings, etc.
- S/he shall report to the NPD.

Qualifications and skills:

- Graduate degree
- Good communication, and organizational skills
- At least 2 years of work experience in relevant field.
- Good computer skills
- Working experience with GOI institutions.

Project Coordinator (PC)

Duration: Full-time during the course of the project

Location: Hyderabad/ Godavari

Duties and responsibilities:

- Assist the SPD in supervising and coordinating the project to ensure that its results are in accordance with the Project Document and the rules and procedures established
- S/he shall report to the State Project Director.
- PC shall assume the primary responsibility for daily project management in the State - both organizational and substantive matters – budgeting, planning and general monitoring; ensure adequate information flow, discussions and feedback among the various stakeholders of the project;
- PC shall ensure adherence to the project's work plan, prepare proposals for revisions of the work plan, if required; assume overall responsibility for the proper handling of logistics related to project workshops and events in the state;
- PC shall prepare GEF progress reports for onward submission to NPMU as well as any other reports

requested by the SPD, NPD and NPMU.

- PC shall provide logistics to the work of consultants and subcontractors and oversee compliance with the agreed work plan; maintain regular contact with NPMU, Godavari Foundation/ LLPMU, other stake holders and the State Project Director on project implementation issues;
- PC shall monitor the expenditures, commitments and balance of funds under the project budget lines, and draft project budget revisions; assume overall responsibility for meeting financial delivery targets set out in the agreed AWP, reporting on project funds and related record keeping; liaise with project partners to ensure their co-financing contributions are provided within the agreed terms; ensure collection of relevant data necessary to monitor progress against indicators specified in the logframe;
- PC shall assume overall responsibility for reporting on project progress vis-à-vis indicators in the logframe and undertake any other actions related to the project as requested by SPD.
- **Qualifications and skills:**
- Post Graduate degree in the field of environment & management, sustainable development or related field
- Outstanding communication, project management and organizational skills
- At least 5 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions.
- Experience in working with NGOs and civil society, and with participatory approaches
- Proficiency in English and computer literacy

Financial-cum- Administrative Assistant (FAA)

Duration: Full-time during the life of the project

Location: Godavari

Duties and responsibilities:

- FAA shall assist the Director, GF/ LLPMU in the overall administrative and financial matters of the project at the State level.
- FAA shall be responsible for all administrative (contractual, organizational and logistical) and accounting (disbursements, record-keeping, cash management) matters under the project.
- S/he will be responsible for preparing periodic financial statements and compiling the annual project activities and achievement of planned project outputs.
- FAA shall provide general administrative and financial support to the project so as to ensure the smooth running of the landscape level project management unit; provide logistical support to the project staff and consultants in conducting different project activities;
- FAA shall monitor the budget expenditures by preparing payment documents, and compiling financial reports; maintain the project's disbursement ledger and journal; keep files with project documents, expert reports; control the usage of non expendable equipment (record keeping, drawing up regular inventories);
- FAA shall draft and finalize correspondence of administrative nature; arrange duty travel; fax, post and e-mail transmissions, and co-ordinate appointments;
- FAA shall also perform any other administrative/financial duties as requested by the PM / Director, GF and organize and coordinate the procurement of services and goods under the project.

Qualifications and skills:

- University degree preferably in account keeping
- Fluency in written and spoken English and Telugu
- Outstanding time-management, organizational and inter-personal skills
- At least 5-year experience in office administration, preferably with externally aided projects
- Excellent computer literacy

OFFICE ASSISTANT

Duration: Full-time during the course of the project

Location: Hyderabad/Godavari

Duties and responsibilities:

- Provide all logistic support to SPD and LLPMU on drafting, computer assistance, file management, registry, arranging meetings, etc.
- S/he shall report to the State Project Director.
- Assit the SPD and LLPMU in the effective implementation of the project.

Qualifications and skills:

- Graduate degree
- Good communication, and organizational skills
- At least 2 years of work experience in relevant field.
- Good computer skills
- Working experience with GOI institutions.

B. Terms of Reference for Subject Specialists

Conservation Biologist (CB)

Duration: Full-time during the course of the project

Location: Godavari

Duties and Responsibilities:

- CB will provide technical support to project implementation at the landscape level particularly in the effective and quality delivery of conservation related activities.
- CB shall assist the other technical specialists in the preparation of Landscape level Strategic Plan, Sector Plans, all research studies related to biodiversity, climate change, etc.
- CB shall assist the FD in the revision of the Management Plan of CWLS and its implementation.
- CB shall undertake the capacity building training programme of the conservation sector.
- CB shall assist the other specialists in the preparation of Natural Resource Plan, village micro-plans, etc
- CB shall undertake ecological monitoring as envisaged in the project
- CB shall provide technical support to the LLPMU and other project Consultants in coordinating and conducting different project activities related to conservation sector (trainings, workshops, stakeholder consultations, arrangements of study tour, etc.)
- CB shall advise the LLPMU in coordinating with the State Government, Consultants, other relevant agencies and stakeholders on the implementation of the project on technical matters related to conservation sector.
- CB shall keep regular contact with project experts and Consultants to inform them about the project technical details and changes and shall also review the reports and other documents for technical content with respect to conservation sector.
- S/he will also provide technical support to the development, implementation and/or evaluation of the project activities in the focal area.
- CB shall work under the overall guidance and supervision of the Director, GF and be part of the LLPMU.

Qualifications and skills:

- Post Graduate degree in the field of natural resource management or related field
- Outstanding communication, project management and organizational skills
- At least 3 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions involved in sustainable natural resource management
- Experience in working with NGOs and civil society, and with participatory approaches
- Proficiency in English and computer literacy

Socio-economic and Livelihood Specialist (SELS)

Duration: Full-time during the course of the project

Location: Godavari

Duties and Responsibilities:

- SELS will provide technical support to project implementation at the landscape level particularly in the effective and quality delivery of socio-economic/ livelihood activities.
- SELS shall assist the technical specialists in the preparation of Landscape level Strategic Plan, Sector Plans, all research studies related to biodiversity, climate change, etc.
- SELS shall conduct frequent socio-economic monitoring of the project area with a view to generate analytical information about the project implementation.
- SELS shall provide technical support to the LLPMU and other project consultants in coordinating and conducting different project activities related to socio-economic sector (trainings, workshops, stakeholder consultations, arrangements of study tour, etc.)
- SELS shall assist the FD in the revision of the Management Plan of CWLS and its implementation.
- SELS shall undertake the capacity building training programme of the livelihood sector.
- SELS shall assist the specialists in the preparation of Natural Resource Plan, micro-plans.
- SELS shall advise the LLPMU in coordinating with the State Government, Consultants, other relevant agencies and stakeholders on technical matters related to implementation of the project with respect to socio-economic sector.
- SELS shall keep regular contact with project experts and consultants to inform them about the project technical details and changes and shall also review the reports and other documents for technical content with respect to socio-economic sector.
- S/he will also provide support to the development, implementation and/or evaluation of the project activities in the focal area.
- The SELS will be responsible for advising project partners on the suitability of activities, livelihood strategies, policy change measures etc.
- SELS shall work under the overall guidance and supervision of the Director, GF and be part of the LLPMU.

Qualifications and skills:

- Post Graduate degree in the field of social sciences/ economics or related field
- Outstanding communication, project management and organizational skills
- At least 3 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions involved in sustainable development/ community empowerment/ natural resource management
- Experience in working with NGOs and civil society, and with participatory approaches
- Proficiency in English and computer literacy

Communication and Outreach Specialist (COS)

Duration: Full-time during the course of the project

Location: Godavari

Duties and Responsibilities:

- COS will provide technical support to project implementation in the landscape particularly in ensuring cross-sectoral coordination, participation of various stakeholders (including the production sectors), etc in project activities and effective and quality delivery of communication and outreach activities. .
- COS shall work under the overall guidance and supervision of the Director, GF and be part of the LLPMU.
- COS shall be focusing primarily on stakeholder engagement, particularly private production sectors in the project umbrella.
- COS shall provide technical support to the LLPMU and other project consultants in developing proper communication strategy while conducting different project activities (trainings, workshops, stakeholder consultations, arrangements of study tour, preparation of knowledge products, etc.)
- COS shall advise the LLPMU in coordinating with the State Government, Consultants, other relevant agencies and stakeholders on the implementation of the project with respect to communication and outreach activities.
- COS shall keep regular contact with project experts and consultants to inform them about the project details and changes and shall also review the reports and other documents for correctness of form and contents.
- S/he will also provide support to the development, implementation and/or evaluation of the project activities in the focal area.

Qualifications and skills:

- Post Graduate degree.
- Outstanding communication, project management and organizational skills
- At least 3 years of work experience in relevant field.
- Familiarity with the working environment and professional standards of international organizations.
- Working experience with GOI institutions involved in sustainable development/ community empowerment/ natural resource management
- Experience in working with NGOs and civil society, and with participatory approaches
- Proficiency in English and computer literacy

C. Roles and responsibilities of consultants providing technical expertise under the project

| Output | Name of the position | National/ international | Period | Task |
|--|---|----------------------------|----------|--|
| Output 1.1: Cross sectoral institutional mechanism is in place | Legal Expert for drafting the constitution of Godavari Foundation | National | 10 weeks | Legal Expert shall prepare the rules, bye-laws and the Operational Manual for the Godavari Foundation |
| Output 1.1: Cross sectoral institutional mechanism is in place | Conservation Biologist (CB), Godavari - Foundation | National | 6 months | CB shall assist the Legal Expert in preparing the rules, bye-laws and the Operational Manual for the Godavari Foundation and also support the functioning of the Foundation during the project period. |
| Output 1.1: Cross sectoral institutional mechanism is in place | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation -- | National | 6 months | SELS shall assist the Legal Expert in preparing the rules, bye-laws and the Operational Manual for the Godavari Foundation and also support the functioning of the Foundation during the |

| Output | Name of the position | National/ international | Period | Task |
|--|---|----------------------------|----------|---|
| | | | | project period. |
| Output 1.1: Cross sectoral institutional mechanism is in place | Communication and Outreach Specialist (COS), Godavari Foundation | National | 6 months | COS shall assist the Legal Expert in preparing the rules, bye-laws and the Operational Manual for the Godavari Foundation and also support the functioning of the Foundation during the project period. |
| Output 1.2 Biodiversity-friendly Strategic Plan (SP) | Lead Specialist on Preparation of the Strategic Plan | National | 20 weeks | Lead Specialist shall prepare the Strategic Plan for EGREE |
| Output 1.2 Biodiversity-friendly Strategic Plan (SP) | Conservation Biologist (CB), Godavari - Foundation | National | 2months | CB shall assist the Lead Specialist in the preparation of the Strategic Plan for EGREE. |
| Output 1.2 Biodiversity-friendly Strategic Plan (SP) | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 2 months | SELS shall assist the Lead Specialist in the preparation of the Strategic Plan for EGREE. |
| Output 1.2 Biodiversity-friendly Strategic Plan (SP) | Communication and Outreach Specialist (COS), Godavari Foundation | National | 2 months | COS shall assist the Lead Specialist in the preparation of the Strategic Plan for EGREE. |
| Output 1.3: System for Knowledge Management and exchange | Research Gap Analysis Specialist, | National | 5 weeks | Research Gap Analysis Specialist shall conduct an assessment of the existing research gaps in the EGREE and propose priority research studies to be carried out |
| Output 1.3: System for Knowledge Management and exchange | Resource Economist for PES study | National | 30 weeks | Resource Economist shall conduct an economic assessment of the ecosystem goods and services of EGREE particularly the CWLS. |
| Output 1.3: System for Knowledge Management and exchange | Biodiversity Specialist for PES Study | National | 30 weeks | Biodiversity Specialist shall look into the biological aspects of the economic assessment of the ecosystem goods and services of EGREE particularly the CWLS. |
| Output 1.3: System for Knowledge Management and exchange | Climate modeling specialist for climate impact study | National | 25 weeks | Climate Modeling Specialist shall lead the climate modeling scenario as part the study on Impacts of Climate Change on EGREE. |
| Output 1.3: System for Knowledge Management and exchange | Biodiversity specialist for Climate Impact study | National | 25 weeks | Biodiversity Specialist shall lead the biological scenario building as part the study on Impacts of Climate Change on EGREE. |
| Output 1.3: System for Knowledge Management and exchange | Coastal Geomorphology and Hydrology Specialist for Climate Impact Study | National | 10weeks | Coastal Geomorphology and Hydrology Specialist shall lead the coastal geomorphology and hydrology aspects of the study on Impacts of Climate Change on EGREE. |
| Output 1.3: System for Knowledge Management and exchange | Specialists for other studies identified as research gaps analysis. | National | 50 weeks | Undertake relevant studies identified in the Research Gap Analysis. |
| Output 1.3: System for Knowledge Management and exchange | Data base Manager for knowledge management centre | National | 48 weeks | Shall help in compiling all project and other relevant information related to coastal and marine management as part of knowledge management centre. |
| Output 1.3: System for Knowledge | Data base Assistant for knowledge management | National | 48 weeks | Shall help in compiling all projects and other relevant information related to |

| Output | Name of the position | National/ international | Period | Task |
|---|--|----------------------------|-----------|--|
| Management and exchange | centre | | | coastal and marine management as part of knowledge management centre. |
| Output 1.3: System for Knowledge Management and exchange | Specialist for long term institutional and financial study | National | 20 weeks | Shall prepare a long term institutional and financial sustainability strategy for the project and Godavari Foundation. |
| Output 1.3: System for Knowledge Management and exchange | Conservation Biologist (CB), Godavari - Foundation | National | 4months | CB shall assist the Specialist in the preparation of long term institutional and financial sustainability strategy for the project and Godavari Foundation and implementing the recommendations. |
| Output 1.3: System for Knowledge Management and exchange | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 4 months | SELS shall assist the Specialist in the preparation of long term institutional and financial sustainability strategy for the project and Godavari Foundation and implementing the recommendations. |
| Output 1.3: System for Knowledge Management and exchange | Communication and Outreach Specialist (COS), Godavari Foundation -- | National | 2 months | COS shall assist the Specialist in the preparation of long term institutional and financial sustainability strategy for the project and Godavari Foundation and implementing the recommendations. |
| Output 1.4: Strategies for mainstreaming biodiversity conservation into sector policies | Law Specialist for developing strategies for mainstreaming biodiversity conservation into sector policies. | National | 25 weeks | Law Specialist shall look into the existing sectoral policies operating the EGREE and shall suggest for mainstreaming biodiversity conservation into sectoral policies. |
| Output 1.4: Strategies for mainstreaming biodiversity conservation into sector policies | Conservation Biologist (CB), Godavari - Foundation | National | 2 months | CB shall assist the Law Specialist in developing strategies for mainstreaming biodiversity conservation into sector policies. |
| Output 1.4: Strategies for mainstreaming biodiversity conservation into sector policies | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 2 months | SLES shall assist the Law Specialist in developing strategies for mainstreaming biodiversity conservation into sector policies. |
| Output 1.4: Strategies for mainstreaming biodiversity conservation into sector policies | Communication and Outreach Specialist (COS), Godavari Foundation | National | 2 months | COS shall assist the Law Specialist in developing strategies for mainstreaming biodiversity conservation into sector policies. |
| Output 2.1BD-friendly sector plans (key commercial sectors) | Sector specialists for preparation of BD sector plans. | National | 100 weeks | Sector Specialists shall lead the preparation of biodiversity friendly sector plans for key sectors (such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans) |
| Output 2.1BD-friendly sector plans (key commercial sectors) | Conservation Biologist (CB), Godavari - Foundation | National | 2 months | CB shall assist the Sector Specialists in the preparation of biodiversity friendly sector plans. |
| Output 2.1BD-friendly sector plans (key commercial) | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 2 months | SLES shall assist the Sector Specialists in the preparation of biodiversity friendly sector plans. |

| Output | Name of the position | National/ international | Period | Task |
|---|--|----------------------------|-----------|--|
| sectors) | | | | |
| Output 2.1BD-friendly sector plans (key commercial sectors) | Communication and Outreach Specialist (COS), Godavari Foundation | National | 2 months | COS shall assist the Sector Specialists in the preparation of biodiversity friendly sector plans. |
| Output 2.2 Training program and tools (commercial sector) | Training specialists | National | 50 weeks | Training Specialists shall prepare and conduct training for key sectors such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans on mainstreaming biodiversity conservation into production sectors. |
| Output 2.2 Training program and tools (commercial sector) | Conservation Biologist (CB), Godavari - Foundation | National | 2 months | CB shall assist the Training Specialists in preparing and conducting training for key sectors such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans on mainstreaming biodiversity conservation into production sectors. |
| Output 2.2 Training program and tools (commercial sector) | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 2 months | SELS shall assist the Training Specialists in preparing and conducting training for key sectors such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans on mainstreaming biodiversity conservation into production sectors. |
| Output 2.2 Training program and tools (commercial sector) | Communication and Outreach Specialist (COS), Godavari Foundation | National | 2months | COS shall assist Training Specialists in preparing and conducting training for key sectors such as oil and gas, fisheries, aquaculture, fertilizer and small manufacturing, salt pans on mainstreaming biodiversity conservation into production sectors. |
| Output 2.4: Revision of Management Plan for CWLS | Conservation Biologist (CB), Godavari - Foundation | National | 5 months | CB shall assist the FD in revising the Management Plan of CWLS (biological aspects) |
| Output 2.4: Revision of Management Plan for CWLS | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 5months | SELS shall assist the FD in revising the Management Plan of CWLS (economic and livelihood aspects) |
| Output 2.4: Revision of Management Plan for CWLS | Communication and Outreach Specialist (COS), Godavari Foundation | National | 5months | COS shall assist the FD in revising the Management Plan of CWLS (Awareness and outreach aspects) |
| Output 2.5 Training programme/tools (conservation sector) | Conservation Biologist (CB), Godavari - Foundation | National | 10 months | CB shall lead training of conservation sector in various aspects of landscape management (biological aspects) |
| Output 2.5 Training programme/tools (conservation sector) | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 10 months | SELS shall lead training of conservation sector in various aspects of landscape management (socio-economic aspects) |
| Output 2.5 Training programme/tools (conservation) | Communication and Outreach Specialist (COS), Godavari Foundation | National | 10 months | COS shall lead training of conservation sector in various aspects of landscape management (outreach and nature education aspects) |

| Output | Name of the position | National/ international | Period | Task |
|--|--|----------------------------|----------|---|
| sector) | | | | |
| Output 2.7: Preparation of compendium of best practices | International Expert on preparation of compendium on best practices | International | 10 weeks | The expert shall lead the preparation of best practices compendium on mainstreaming BD into production sectors |
| Output 2.7: Preparation of compendium of best practices | National Expert on preparation of compendium on best practices | National | 25 weeks | The expert shall assist the International Expert in the preparation of best practices compendium in mainstreaming BD into production sectors |
| Output 2.8 - M&E System | Conservation Biologist (CB), Godavari - Foundation | National | 4 months | CB shall help in putting together an effective M&E system and its subsequent monitoring and evaluation of the project |
| Output 2.8 - M&E System | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 4 months | SELS shall help in putting together an effective M&E system and its subsequent monitoring and evaluation of the project |
| Output 2.8 - M&E System | Communication and Outreach Specialist (COS), Godavari Foundation | National | 2 months | COS shall help in putting together an effective M&E system and its subsequent monitoring and evaluation of the project |
| Output 2.8 - M&E System | International Specialist - independent mid term evaluation | International | 4 weeks | International Specialist shall lead the independent mid-term evaluation of the project |
| Output 2.8 - M&E System | National Specialist - independent mid term evaluation | National | 6 weeks | National Specialist assist the International Specialist in the independent mid-term evaluation of the project |
| Output 2.8 - M&E System | International Specialist - independent final evaluation | International | 6 weeks | International Specialist shall lead the independent final evaluation of the project |
| Output 2.8 - M&E System | National Specialist - independent final evaluation | National | 6 weeks | National Specialist assist the International Specialist in the independent final evaluation of the project |
| Output 2.8 - M&E System | National Specialist – Development of Capacity Development Scorecard for various Sectors | National | 20 weeks | National Specialist shall lead the preparation of Capacity Development Scorecard for various sectors as part of the monitoring and evaluation Plan |
| Output 3.1: Capacity Development of community institutions | Conservation Biologist (CB), Godavari - Foundation | National | 9 months | CB shall help in the capacity development of community institutions (biological aspects) |
| Output 3.1: Capacity Development of community institutions | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 9 months | SELS shall help in the capacity development of community institutions (socio-economic aspects) |
| Output 3.1: Capacity Development of community institutions | Communication and Outreach Specialist (COS), Godavari Foundation | National | 9 months | COS shall help in the capacity development of community institutions (nature awareness and outreach aspects) |
| Output 3.2: Sustainable community natural resource use plan | Specialist - Biodiversity, Livelihoods and Resource Economics | National | 10 weeks | Specialists shall prepare sustainable community natural resource use plan for EGREE |
| Output 3.3: Livelihood diversification strategy | Conservation Biologist (CB), Godavari - Foundation | National | 9 months | CB shall help in the preparation and implementation of livelihood diversification strategy |

| Output | Name of the position | National/ international | Period | Task |
|--|---|----------------------------|-----------|---|
| Output 3.3: Livelihood diversification strategy | Socio-economic and Livelihood Specialist (SELS), Godavari Foundation | National | 9 months | SLES shall help in the preparation and implementation of livelihood diversification strategy |
| Output 3.3: Livelihood diversification strategy | Communication and Outreach Specialist (COS), Godavari Foundation | National | 9 months | COS shall help in the preparation and implementation of livelihood diversification strategy |
| Project Management and Assurance | National Project Manager | National | 54 months | Project Manager shall coordinate the project at the national level |
| Project Management and Assurance | National Project Associate | National | 54 months | Project Associate shall assist the Project Manager at the national level. |
| Project Management and Assurance | Office Assistant (2 no) | National | 108months | Office Assistants shall provide necessary office assistance for the implementation of the project at the national level |
| Project Management and Assurance | State Project Coordinator | National | 54 months | State Project Coordinator shall coordinate the project at the state level |
| Project Management and Assurance | State Financial-cum- Administrative Assistant | National | 54 months | Project Associate shall do all the financial and administrative aspects of the project at the State Level. |
| Project Management and Assurance | Office Assistant (2 no) | National | 108months | Office Assistants shall provide necessary office assistance for the implementation of the project at the State level |

Annex 10: GEF-4 Tracking Tool for GEF Biodiversity Focal Area Strategic Objective Two: Mainstreaming Biodiversity Conservation in Production Landscapes /Seascapes and Sectors

I. Project General Information

1. Project Name: Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the Godavari River Estuary, Andhra Pradesh, India
2. Project Type (MSP or FSP): FSP
3. Project ID (GEF): 3936
4. Project ID (IA): 4257
5. Implementing Agency: UNDP
6. Country: India
7. Name of reviewers completing tracking tool and completion dates:

| | Name | Title | Agency |
|--------------------------------------|---------------------|---------------------------------|--|
| Work Program Inclusion | Prakriti Srivastava | National Project Director | MoEF |
| | Hitesh Melhotra | State Project Director | Andhra Pradesh Forest and Wildlife Department |
| | P. V. Karunakaran | National Consultant Team Leader | Center for Environment and Development, Trivandrum, Kerala |
| Project Mid-term | | | |
| Final Evaluation/ project completion | | | |

8. Project duration: Planned 5 years Actual _____ years
9. Lead Project Executing Agency: Ministry of Environment and Forests (MoEF)
10. GEF Strategic Program:
 - Strengthening the policy and regulatory framework for mainstreaming biodiversity (SP 4)
 - Fostering markets for biodiversity goods and services (SP 5)
11. Production sectors and/ or ecosystem services directly targeted by project:

Please identify the main production sectors involved in the project. Please put “P” for sectors that are primarily and directly targeted by the project and “S” for those that are secondary or incidentally affected by the project.

Agriculture --
 Fisheries P
 Forestry and Wildlife P
 Tourism S
 Mining --
 Oil and Gas P
 Transportation --
 Other (please specify):
 Aquaculture P
 Salt panning P
 Sea ports S

Other manufacturing units such as (automobile components, biodiesel, cotton yarn, edible oil, fertilizers, liquid petroleum gas bottling, natural gas and oil, power generation, carbon dioxide bottling, iron ore fines, quartz crystals, rice & rice products, steel re-rolling) P

II. Project Landscape Coverage

12. What is the extent (in hectares) of the landscape or seascape where the project will directly or indirectly contribute to biodiversity conservation or sustainable use of its components? An example is provided in the table below.

| Area Coverage | Total hectares targeted at the following intervals during the project cycle: | | |
|---|--|------------------------|---------------------|
| | At project start | At Mid-term Evaluation | At Final Evaluation |
| Landscape area directly covered by the project (ha) | 46,450 ha | | |
| Landscape area indirectly covered by the project (ha) | 33,550 ha | | |

Explanation for indirect coverage numbers:

The land/seascape directly abutting the mangrove forests (46,450 hectares) is the area that will directly be influenced by project activities. An additional 33,550 hectares will be indirectly impacted by the project through awareness, capacity development and outreach.

13. (b) Are there Protected Areas within the landscape covered by the project? If so, names these PAs, their IUCN or national PA category, and their extent in hectares.

| | Name of Protected Areas | IUCN and/or national category of PA | Extent in hectares |
|----|-----------------------------------|-------------------------------------|--------------------|
| 1. | Coringa Wildlife Sanctuary (CWLS) | Category IV | 23,570 |

14. (c) Within the landscape covered by the project, is the project implementing payment for environmental service schemes?

No, the project will not be implementing such a scheme. However, as part of the capacity development and knowledge management activities, emphasis will be placed on valuation of ecosystem services. This will provide the technical information and background for potential establishment of such a scheme in the future.

III. Management Practices Applied

15. Within the scope and objectives of the project, please identify in the table below the management practices employed by project beneficiaries that integrate biodiversity considerations and the area of coverage of these management practices. Please also note if a certification system is being applied and identify the certification system being used. Note: this could range from farmers applying organic agricultural practices, forest management agencies managing forests per Forest Stewardship Council (FSC) guidelines or other forest certification schemes, artisanal fisherfolk practicing sustainable fisheries management, or industries satisfying other similar agreed international standards, etc.

Note to table below: Under this project, the first step for promoting mainstreaming of biodiversity conservation considerations into production sector activities will be the development of a landscape-level, biodiversity-friendly Strategic Plan. This will look at current land use in the project area and will then provide a plan for how land uses by the different sectors can be made more compatible with the conservation needs of the EGREE. Once background studies and assessments are completed and the Strategic Plan (including sector-by-sector plans) are defined, specific changes to management practices of the production sectors will become clear. This is especially true of the various manufacturing units that operate in the EGREE. Therefore, at this stage, the table below is only indicative.

| | Specific management practices that integrate BD | Name of certification system being used | Area of coverage foreseen at start of project | Achievement at Mid-term Evaluation of Project | Achievement at Final Evaluation of Project |
|----|--|--|--|---|--|
| 1 | <u>Conservation sector</u> : E.g., Eco-restoration of degraded mangrove areas. ⁴¹ | Management Effectiveness Evaluation Scorecard (developed by WII) | Around 50,000 ha. Further 1700 ha will be taken up for mangrove restoration. | | |
| 2 | <u>Livelihoods/ subsistence sector</u> : sustainable fisheries management system defined under the micro plan; sustainable grazing regime, sustainable fuel wood extraction | NA | 50,000 ha | | |
| 3 | Production Sectors: | | | | |
| 3a | <u>Fisheries</u> : E.g., Modification to catch size, fishing tools (nets, etc), better management of fishing activity to minimize associated waste, etc | NA | 174,000 ha | | |
| 3b | <u>Aquaculture</u> : E.g., Promotion of organic aquaculture practices | NA | 4,000 ha | | |
| 3c | Manufacturing sector: This could range from stricter enforcement of national air and water pollution standards to specific additional measures for reducing the impact on the EGREE that will be determined as part of the Strategic Plan (and constituent sectoral plans) | ISO | 10,000 ha | | |
| 4 | <u>Ports</u> : E.g., how does management of the Kakinada port need to be modified to be made more biodiversity compatible? | NA | 1000 ha | | |

IV. Market Transformation

16. For those projects that have identified market transformation as a project objective, please describe the project's ability to integrate biodiversity considerations into the mainstream economy by measuring the market changes to which the project contributed.

Not applicable.

⁴¹ During the first year of the project, a revised management plan will be prepared for CWLS that may recommend additional management interventions. These will be documented and included in this tracking tool when available.

V. Policy and Regulatory frameworks

For those projects that have identified addressing policy, legislation, regulations, and their implementation as project objectives, please complete the following series of questions: 17a, 17b, and 17c.

17. (a) Please complete this table at CEO endorsement for each sector that is a primary or a secondary focus of the project. Please answer YES or NO to each statement under the sectors that are a focus of the project.

The entry-point for this project is at the landscape level in the project site. In this landscape, the project will aim to strengthen the enabling environment for biodiversity mainstreaming by developing a landscape level Strategic Plan that includes individual sector plans for the key sectors that impact biodiversity. This site-level experience will provide important lessons that can progressively be integrated into national policy and regulatory frameworks.

| Statement: Please answer YES or NO for each sector that is a focus of the project. | Sectors targeted by the project | | | |
|--|---------------------------------|--|---------------------|-------|
| | Fisheries | Agriculture (aspects related to aquaculture and salt pans) | Manufacturing Units | Ports |
| Biodiversity considerations are mentioned in sector policy | Yes | No | Yes | Yes |
| BD considerations are mentioned in sector policy through specific legislation | No | No | No | No |
| Regulations are in place to implement the legislation | Yes | No | Yes | Yes |
| The regulations are under implementation | Yes | No | Yes | Yes |
| The implementation of regulations is enforced | No | No | No | No |
| Enforcement of regulations is monitored | No | No | No | No |

17. (b) Please complete this table at the project mid-term for each sector that is a primary or a secondary focus of the project.

| Statement: Please answer YES or NO for each sector that is a focus of the project. | Sectors targeted by the project | | | |
|--|---------------------------------|--|---------------------|-------|
| | Fisheries | Agriculture (aspects related to aquaculture and salt pans) | Manufacturing Units | Ports |
| Biodiversity considerations are mentioned in sector policy | | | | |
| BD considerations are mentioned in sector policy through specific legislation | | | | |
| Regulations are in place to implement the legislation | | | | |
| The regulations are under implementation | | | | |
| The implementation of regulations is enforced | | | | |
| Enforcement of regulations is monitored | | | | |

17. (c) Please complete this table at project closure for each sector that is a primary or a secondary focus of the project.

| Statement: Please answer YES or NO for each sector that is a focus of the project. | Sectors targeted by the project | | | |
|--|---------------------------------|--|---------------------|-------|
| | Fisheries | Agriculture (aspects related to aquaculture and salt pans) | Manufacturing Units | Ports |
| Biodiversity considerations are mentioned in sector policy | | | | |
| BD considerations are mentioned in sector policy through specific legislation | | | | |
| Regulations are in place to implement the legislation | | | | |
| The regulations are under implementation | | | | |
| The implementation of regulations is enforced | | | | |
| Enforcement of regulations is monitored | | | | |

All projects please complete question 17(d) at the project mid-term evaluation and at the final evaluation, if relevant:

17. (d) Within the scope and objectives of the project, has the private sector undertaken voluntary measures to incorporate biodiversity considerations in production? If yes, please provide brief explanation and specifically mention the sectors involved. An example of this could be a mining company minimizing the impacts on biodiversity by using low-impact exploration techniques and by developing plans for restoration of biodiversity after exploration as part of the site management plan.

VI. Other Impacts

18. Please briefly summarize other impacts that the project has had on mainstreaming biodiversity that have not been recorded above.

Annex 11: Incremental Cost Matrix

| Benefits/ Outcomes | Baseline (B) | Alternative (A) | Increment (I = A-B) |
|--|--|--|---|
| Domestic Benefits | <p>Biological Diversity (coastal and marine) in the EGREE provides livelihood support to local people though this is declining due to loss of habitat and destructive anthropogenic activities.</p> <p>The production sectors and other resource consumption based sectors do not address environmental conservation in their sectoral activities.</p> <p>Skill and capacity of the stakeholders of different sectors in the EGREE are not sufficient to practice sustainable use of coastal and marine resources.</p> | <p>More sustainable management of biological diversity in the EGREE benefits local communities over the long term including continued long-term access to sustainable livelihood opportunities.</p> <p>The key production sectors and other resource consumption based sectors develop strategies and incorporate biodiversity concerns in their sectoral activities.</p> <p>Necessary skill and capacity of different stakeholders are improved for fostering sustainable natural resource utilization.</p> | <p>Enhanced ability of stakeholders in government institutions, local communities and NGOs to conserve biodiversity through sustainable use.</p> <p>Enhanced protection/ conservation of coastal and marine natural resources and biological diversity for sustainable development of EGREE.</p> <p>Effective and sustainable utilization of coastal and marine biological resources.</p> |
| Global Benefits | The coastal and marine biological resources of EGREE, more specifically CWLS, including globally significant species is declining. | About 80,000 ha of landscape/seascape in the EGREE is brought under strategic planning for mainstreaming biodiversity conservation into production sectors; Lessons learned contribute to the development of mainstreaming biodiversity conservation in productive landscape/seascape across India. | Godavari mangrove ecosystem including CWLS, the second largest in the country, brought under improved conservation, in turn improving the conservation prospects of globally vulnerable, threatened and/ or endangered species harbored there in. |
| | Baseline (US\$; est. over 5 years) | Alternative | Increment |
| Outcome 1: Sectoral planning in the EGREE mainstreams biodiversity conservation considerations | <p>GoAP's sector-based programmes/ schemes for:</p> <ul style="list-style-type: none"> - research - monitoring - training of sector staff <p>Sub total baseline 1,700,000</p> | <p>The Alternative will include the following add-on measures to strengthen the enabling environment for mainstreaming</p> <ul style="list-style-type: none"> - cross-sectoral institutional mechanism - biodiversity-friendly Strategic Plan - knowledge management system - strategies for mainstreaming biodiversity conservation considerations in sector policies and guidelines <p>Sub total Alternative 6,805,900</p> | <p>GoAP-Dept of Env, Forests, Science, Technology</p> <p>4,500,000 GEF 605,900</p> <p>Sub total Increment 5,105,900</p> |
| Outcome 2: Enhanced capacity of sector institutions for | GoAP's sector-based programmes/ schemes for village/ settlement level activities to further sectoral objectives | The Alternative will include the following add-on measures to strengthen the capacity of institutions to further mainstreaming objectives | GoAP-Dept of Env, Forests, Science, Technology |

| Benefits/ Outcomes | Baseline (B) | Alternative (A) | Increment (I = A-B) |
|---|--|--|--|
| implementing biodiversity-friendly sector plans including monitoring and enforcement of regulations | | <ul style="list-style-type: none"> - Biodiversity-friendly sector plans - Training program and tools for the production sectors - Implementation support to selected activities of the biodiversity-friendly sector plans - Compendium of best practices on mainstreaming biodiversity for each key production sector - Revised management plan for the CWLS - Training program and tools for the conservation sector - Implementation support to the conservation sector - M&E of the Strategic Plan and the Sector Plans | <p>6,000,000 GEF</p> <p>2,937,900</p> |
| | Sub total baseline 500,000 | Sub total Alternative 9,437,900 | Sub total Increment 8,937,900 |
| Outcome 3: Community livelihoods and natural resource use are sustainable in the EGREE | GoAP's sectoral department budgets for development of alternate livelihood opportunities and enhancement of existing opportunities to reduce dependency on natural resources | <p>The Alternative will include the following add-on measures to make community livelihoods and natural resource use more sustainable</p> <ul style="list-style-type: none"> - capacity development of community institutions - development and implementation of a sustainable community natural resource use plan - implementation of livelihood diversification strategy and related socio-economic interventions based on market and community needs | <p>GoAP-Dept of Env, Forests, Science, Technology</p> <p>6,000,000 GEF</p> <p>2,053,236</p> |
| | Sub total baseline 3,300,000 | Sub total Alternative 11,353,236 | Sub total Increment 8,053,236 |
| Project Management | Sub total baseline 0 | Sub total Alternative 1,926,600 | GoAP-Dept of Env, Forests, Science, Technology (contribution to proj. mgmt.) 1,500,000 GEF (contribution to proj. mgmt.) |

| Benefits/ Outcomes | Baseline (B) | Alternative (A) | Increment (I = A-B) |
|--------------------|-----------------------------|---------------------------------|--|
| | | | 426,600 Sub total Increment 1,926,600 |
| | TOTAL BASELINE 5,500,000 | TOTAL ALTERNATIVE 29,523,636 | TOTAL INCREMENT 24,023,636 TOTAL COFIN 18,000,000 TOTAL GEF 6,023,636 |

Annex 12: “Threat-scape” Analysis of various threats in the EGREE

Threats assessed:

1. Felling of mangroves for fuel wood and poles;
2. Grazing;
3. Unsustainable fishing;
4. Pollution from industries;
5. Pollution from aqua farms and agriculture;
6. Oil leakage from marine vessels and ports;
7. Conversion of land to other uses (such as aquaculture and industrial establishments)
8. Collection of shells; and
9. Pollution from Urban agglomerations

Severity ranking (table below) is developed based on a one-to-one comparison of each threat against the other and indicating the number of the more severe threat in each pair of threats that has been compared. The score indicates the number of occurrences of that threat in the row, and the rank indicates the overall ranking of the threats based on highest score.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Score | Rank |
|---|---|---|---|---|---|---|---|---|---|-------|------|
| 1 | | 1 | 3 | 4 | 1 | 6 | 7 | 1 | 9 | 3 | |
| 2 | 1 | | 3 | 4 | 5 | 6 | 7 | 2 | 9 | 1 | |
| 3 | 3 | 3 | | 3 | 3 | 3 | 7 | 3 | 3 | 7 | 2 |
| 4 | 4 | 4 | 3 | | 4 | 4 | 7 | 4 | 4 | 6 | 3 |
| 5 | 5 | 5 | 3 | 4 | | 6 | 7 | 5 | 9 | 3 | |
| 6 | 6 | 6 | 3 | 4 | 6 | | 7 | 6 | 9 | 4 | |
| 7 | 7 | 7 | 7 | 7 | 7 | 7 | | 7 | 7 | 8 | 1 |
| 8 | 1 | 8 | 3 | 4 | 5 | 6 | 7 | | 9 | 1 | |
| 9 | 9 | 9 | 3 | 4 | 9 | 9 | 7 | 8 | | 4 | |

The analysis suggests that threats from production sectors and fishing are the major ones that need to be given priority under the project. Conversions of land to other uses (such as aquaculture and industrial establishments/ estates), unsustainable fishing, and pollution from manufacturing units are the three highest ranked threats. The criteria used for ranking threats include geographical spread of the impact, potential of occurrence, severity of impact, importance of sector production to economy, and responsiveness of sector. Sectors have been given a threat-ranking (from highest threat to least) as follows: Manufacturing Sector, Fisheries, Aquaculture, Livelihoods/ subsistence, Tourism, Ports and Shipping, Salt pans. Based on the above analysis, a threat ranking has been given to various sectors operating in the landscape. The criteria used for this are geographical spread of the impact, potential occurrence; severity of impact; importance of sector production to economy; responsiveness of sector, etc. Further, within the manufacturing sector, a ranking was given to different units (see tables below).

| Sector | Threat ranking | Units | Threat ranking |
|--------------------------|----------------|-------------------------------|----------------|
| Manufacturing Sector | 1 | Natural Gas and Oil | 1 |
| Fisheries | 2 | Fertilizers | 2 |
| Aquaculture | 3 | Liquid Petroleum Gas bottling | 3 |
| Livelihoods/ subsistence | 3 | Iron Ore fines | 4 |
| Tourism | 4 | Power generation | 4 |
| Ports and Shipping | 5 | Automobile Components | 5 |
| Salt pans | 6 | Quartz Crystals | 6 |
| | | Edible Oil | 6 |
| | | Cotton Yarn | 6 |
| | | Rice & Rice products | 6 |
| | | Carbon Dioxide Bottling | 7 |
| | | Steel Re rolling | 7 |
| | | Bio-Diesel | 8 |