Andhra Pradesh Disaster Recovery Project

(Proposed for World Bank Funding)

Environment and Social Management Framework

Department of Revenue and Disaster Management
Government of Andhra Pradesh

Volume I: Main Report
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Andhra Pradesh Disaster Recovery Project

Environment and Social Management Framework

This document includes

Environment Management Framework

as well as

Social Management Framework

(including Resettlement Policy Framework and Indigenous Peoples Management Framework)

Volume I

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Acronyms

AP	Andhra Pradesh
ASCI	Administrative Staff College of India
APSDMA	Andhra Pradesh State Disaster Management Authority
BCR	Benefit Cost Ratio
CBO	Community Based Organization
CRZ	Coastal Regulation Zone
CSMMC	Cyclone Shelter Management and Maintenance Committee
CBDRM	Community Based Disaster Risk Management
CDRRP	Coastal Disaster Risk Reduction Project
CSO	Civil Society Organization
DC	Direct Contracting
DEA	Department of Economic Affairs, Govt. of India
DPR	Detailed Project Report
DRM	Disaster Risk Management
DoRD	Department of Rural Development
EA	Environmental Assessment
EC	Empowered Committee
EOC	Emergency Operating Centre
ESMF	Environment and Social Management Framework
EDC	Eco Development Committee
EHSIA	Environment Social and Health Impact Assessment
EPDCL	Eastern Power Distribution Company of Andhra Pradesh Ltd
GIS	Geographic Information System
GoI	Government of India
GoAP	Government of Andhra Pradesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GVMC	Greater Visakhapatnam Municipal Corporation
HTL	High Tide Line
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
ICZM	Integrated Coastal Zone Management
IDA	International Development Association
IMD	India Meteorological Department
ISP	Implementation Support Plan

INCOIS	Indian National Centre for Ocean Information Services
ISRO	Indian Space Research Organization
LARRA	Land Acquisition, Resettlement and Rehabilitation Act
M&E	Monitoring & Evaluation
MHA	Ministry of Home Affairs, Govt. of India
MIS	Management Information System
NCRMP	National Cyclone Risk Mitigation Project
NDMA	National Disaster Management Authority
NIDM	National Institute of Disaster Management
PRD	Panchayati Raj Department
PPR	Periodic Performance Review
RAP	Resettlement Action Plan
RDNA	Rapid Damage and Needs Assessment
R&BD	Road and Building Department
SDMA	State Disaster Management Authority
SPMU	State Project Management Unit
SBD	Standard Bidding Document
SIL	Specific Investment Loan
SRM	Supervision, Reporting & Monitoring
SSC	State Steering Committee
ToR	Terms of Reference
TPQA	Third Party Quality Audit
UN	United Nations
VSCS	Very Severe Cyclonic Storm
VSS	Vana Suraksha Samiti
VUDA	Visakhapatnam Urban Development Authority
WB	The World Bank

Chapter 1: Project Background

1.1 Introduction

India is one of the most populated countries in the world with over one billion people and is vulnerable to a wide range of natural hazards particularly cyclones, floods, earthquakes, drought and landslides. The Global Climate Change and Vulnerability Index 2011, ranked India second in 'extreme risk' countries in the world1 vulnerable to natural and climate change hazards. It has a coastline of 7,516 km, of which approximately 5,700 km is exposed to cyclones of various degrees of intensity, and an estimated 40 percent of its total population living within 100 km of the coastline that can be potentially affected. As storm surges and climate change induced sea level rise become more pronounced, hazard events are set to grow in frequency and intensity. Economic losses due to disaster are also on the rise both from an increase in the number of disaster events and from an increase in the average loss associated with each disaster event, coupled with a greater concentration of exposed assets.

India's high level of poverty, rapid urban infrastructure growth, high population density, and limited community awareness, further increases the vulnerability of its people to the impacts of natural hazards and climate change. New residents, urban poor living in peri-urban areas, and informal settlements concentrated in high risk zones are particularly vulnerable to natural hazards due to lack of adequate infrastructure, insufficient enforcement of building codes, a near absence of financial and insurance mechanisms that help transfer risk, and limited access to basic emergency services. It is estimated that around 200 million city dwellers in India will be exposed to storms and earthquakes by 2050 (World Bank and United Nations 2010)[2].

Recognizing that Indian coasts are highly vulnerable to tropical cyclones and consequent recurrent loss of life and property, the Government of India has considered the hazard risk mitigation approach through short term and long term measures, which lays greater emphasis on prevention, preparedness and mitigation. With this in view, the Ministry of Home Affairs (MHA), Government of India (GoI) conceptualized a comprehensive National Cyclone Risk Mitigation Strategy through several consultations, ending with a National Workshop, in 2003, "Developing Strategy for Cyclone Mitigation in the Coastal and Island Regions of India".

India's commitment to disaster preparedness and risk reduction at the national and state levels prompted the enactment of the Disaster Management Act in 2005, establishing the NDMA and State Disaster Management Authorities (SDMAs). NDMA has proactively formulated guidelines and procedures for dealing with

1 Maplecroft's Climate Change Risk Atlas, 2011. Available at http://maplecroft.com/about/news/ccvi.html.

2 Natural Hazards and Unnatural Disasters: The Economics of Effective Prevention – Overview (2010) World Bank & United Nations, 2010. Available at http://www.gfdrr.org/sites/gfdrr.org/files/nhud/files/NHUD-Overview.pdf

specific natural disasters and is mandated with framing policies, plans and guidelines for Disaster Management.

To give effect to the strategic interventions, the Ministry of Home Affairs decided to put-in place the "**National Cyclone Risk Mitigation Project**" (NCRMP). After the formation of National Disaster Management Authority (NDMA), the management of the Project was transferred to NDMA in September 2006. This is the first such effort at the national level to cover 13 coastal states and Union Territories facing varying levels of risk from cyclonic events.

The National Cyclone Risk Mitigation Project has been drawn up with a view to address the cyclone risks in the country, with World Bank assistance. The NCRMP is a flagship program, the first Bank funded project in India exclusively focusing on ex-ante disaster risk mitigation. It is being implemented by the NDMA with support from the Ministry of Home Affairs (MHA), Government of India, focusing on cyclone prone coastal States and Union Territories.

For more than a decade, the Bank has been assisting GoI in effectively responding to disasters. This partnership between GoI and the Bank and their joint learning experience of disaster recovery and reconstruction are leading to an increased focus towards future oriented risk mitigation programs and strategies that will ultimately benefit millions of people vulnerable to natural disaster risks at the national, state and district - including village - level in India.

1.2 Cyclone Hudhud

On October 12, 2014, a Very Severe Cyclonic Storm (VSCS) 'Hudhud' made landfall on the coast of Andhra Pradesh, near the city of Visakhapatnam. At the time of landfall, the estimated maximum sustained surface wind speed associated with the cyclone was about 180 kmph and height of the waves up to 3 meters.3 The tide gauge at Visakhapatnam reported maximum storm surge of 1.4 meters above the astronomical tide. By October 14, Hudhud drifted northwards toward Uttar Pradesh and weakened into a well-marked low-pressure area over east Uttar Pradesh and neighborhood.[4]

The Government of Andhra Pradesh (GoAP) was proactive in preparing for the cyclone Hudhud. In addition to the updates from India Meteorological Department (IMD), the intensity and magnitude of the cyclone were continuously tracked at AP State Disaster Management Authority (AP SDMA) and a range of preparatory measures were launched to face the cyclone.

Relief and rescue team were deployed in the coastal districts most likely to be impacted and regular warnings to vulnerable populations were issued through various channels. This, supplemented by the evacuation of close to 250,000 persons, mostly living in vulnerable kutcha houses or low-lying areas, helped limit the death toll from the cyclone to 61.

[3] Data source: India Meteorological Department (IMD).

[4] Data source: India Meteorological Department (IMD). Bulletin No.: BOB03/2014/54

Cyclone Hudhud and the floods that followed the associated heavy rainfall caused extensive devastation in all the affected districts, uprooting vast number of trees, damaging roads, public buildings, livelihoods and disrupting telecommunications and power infrastructure.

1.3 Joint Rapid Damage and Needs Assessment

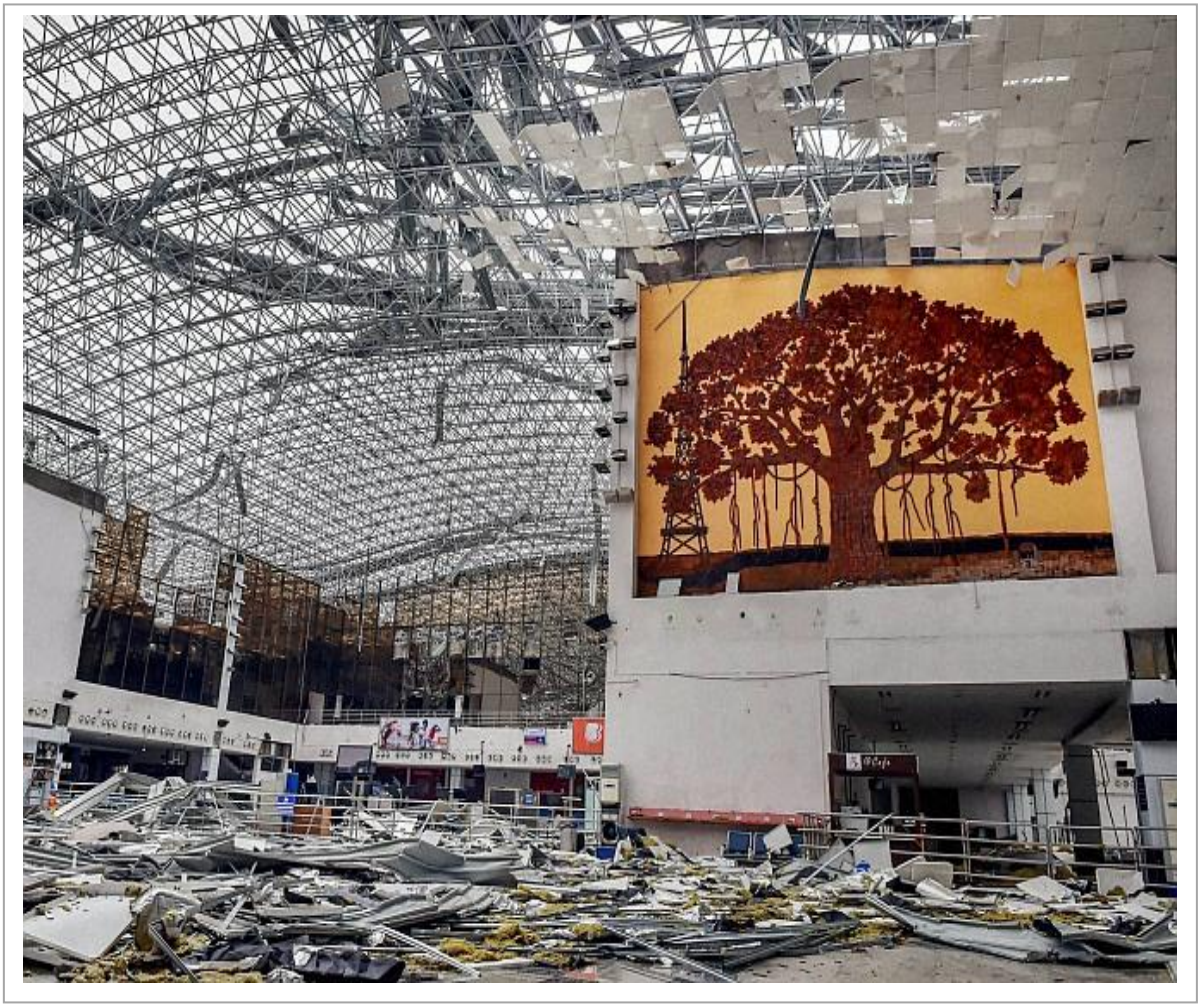
The World Bank and the Asian Development Bank (ADB), upon receiving a request from the Department of Economic Affairs (DEA), GoI, carried out a Joint Rapid Damage and Needs Assessment (JRDNA) during December 11 to December 17, 2014.

Cyclone Hudhud caused major damage in 26 cities and towns, in Visakhapatnam, Vizianagaram, Srikakulam, and East Godavari districts, and affected about 9.2 million persons including 3 million urban population. The JRDNA report estimated the cost of damage reconstruction to be about US$2.16 billion, of which the livelihoods sector was the most severely hit with recovery needs estimated to be around US$ 443 million, followed by housing sector (US$439 million) and the roads sector (US$ 375 million).

Based on the findings of the JRDNA, the DEA, and the World Bank agreed on providing assistance for disaster recovery and future risk reduction to the state of Andhra Pradesh.

1.4 Rationale for the Bank's Involvement and Recovery Strategy

The World Bank is a key partner of the GoI in general and of the GoAP in particular, in their risk mitigation and management efforts. The current National Cyclone Risk Mitigation Project-I (NCRMP-I) has been supporting the Governments of Andhra Pradesh and Odisha since 2010 with improving their capacity to manage hydro meteorological hazards. This contributed to the limited impact of Cyclone Phailin's damage in comparison with earlier events of comparable magnitude. The Bank is also supporting the GoI with reconstruction and risk mitigation efforts in states of Bihar, Tamil Nadu, Uttarakhand, and Odisha, as well as at the national level. The Bank is also well positioned to incorporate its global and regional experience in post-disaster projects in varying country and socio-economic contexts.



The proposed project, 'Andhra Pradesh Disaster Recovery Project' (APDRP), takes into account the lessons from other disaster events, NCRMP -I and the multi-sectoral needs assessment undertaken during the Andhra Pradesh Joint Rapid Damage and Needs Assessment (JRDNA). While restoring the damages the project also aims to improve the resilience of the State's infrastructure and its communities from impacts of future disasters and climate change.

1.5 Project Development Objective

The Project Development Objective (PDO) is to restore, improve and enhance resilience of public services, environmental facilities, and livelihoods in Targeted Communities of Andhra Pradesh, and increase the capacity of the State to respond promptly and effectively to an eligible crisis or emergency.

1.6 Project Coverage and Components

Coastal regions typically possess rich human and natural resources and are important economic, social, and developmental drivers of the region. However, the coastal population and economic assets are prone to multiple hazards such as high frequency and intensity of cyclones, storm surges, and coastal floods.

The project, through its different components, will provide both direct and indirect benefits to the State of Andhra Pradesh and its 49.4 million inhabitants. Direct beneficiaries include populations of the coastal areas affected, specifically the four heavily impacted districts of **Srikakulam, Vizianagaram, Visakhapatnam and East Godavari** with a total approximate population of 13.3 million residents.

The Project will have the following key components:

Component 1: Resilient Electrical Network

This component will finance investments to improve the electrical infrastructure in the city of Visakhapatnam. The port city, which is the largest in the State of Andhra Pradesh, was severely hit by the cyclone Hudhud. In particular, the power distribution system, which is over ground and thus it is prone to high winds, rains, thunderstorms, and storm surges and flooding, was heavily damaged. The objective of this component is to reduce the vulnerability of the city's electrical network by laying the power distribution system underground. The component will be implemented by Eastern Power Distribution Company of A.P. Ltd., (EPDCL).

The city is divided into four zones for the distribution network. Each zone has 33 KV /11KV substations. At present all the 33, 11 KV and LT distribution is by overhead lines. The 11 KV network feeds to various 11 KV/415 V transformers. From the outgoing side of the 415V overhead lines supply power to various consumers. These overhead lines will be converted to underground cable network.

In particular, three out of the four power distribution zones in the city will be converted to underground cable network. This will involve approximately 700 km of 33kV, 11 kV and 415 volts network lines and will cover a population of about 1.2 million and 300,000 connections. The implementation will be taken up from the consumers meter board and going to 11 and 33 kV feeders, starting from the beach road and going towards landside.

EPDCL has already appointed a consultant to carry out necessary survey of all the existing 33KV, 11 KV and 415 volts network (up to the consumer point) and prepare a detailed project report. An additional consultant will be appointed to carry out environment and social impact assessment (ESIA).

Component 2: Restoration of Connectivity and Shelter Infrastructure

This component will finance investments to permanently restore, upgrade Roads and Cyclone Shelters, increasing resilience towards future disasters. Scope of this component will include all four affected districts Visakhapatnam, Vizianagaram, Srikakulam and East Godavari. The Line Department for implementation for Rural Roads and cyclone shelters will be Panchayati Raj Department (PRD); and for Major District Roads (MDRs) it will be Roads and Building Department (R&BD). The affected rural areas will be benefitted by the restored access to the market thereby increasing the economic growth in these areas and more timely access to health and education, among other services. This component will also include repair of old cyclone shelters.

Sub-component 2.1: Restoration of rural roads and cyclone shelters: To finance permanent restoration, reconstruction, strengthening and bituminous surfacing of about 800km of damaged Rural Roads including cross-drainage structures, following the Indian Roads Congress (IRC), Ministry of Rural Development (MoRD) and Prime Minister's Gram Sadak Yojana (PMGSY) standards which will involve widening of the road embankments. It will also include repair of old cyclone shelters.

Sub-component 2.2: Restoration of major district roads (MDR): To finance permanent restoration, reconstruction, strengthening and widening (mostly single-lane to double-lane) of about 250 km of damaged MDRs including cross-drainage structures, following the IRC and Ministry of Road Transport and Highways (MoRTH) standards. Widened MDRs will help the state to conduct its operations at the time of any such disaster in future.

All Water Bound Macadam (WBM) surfaced, Gravel-surfaced and Earthen Rural Roads will be finished with appropriate Bituminous Surfacing for better protection against rain and floods. Most of the length of MDRs proposed to be included is presently having single-lane carriageway, and small lengths are having intermediate-lane or two-lanes. These are proposed to be widened to two-lanes. All road works will involve widening of existing road embankments. It will be necessary to confirm ownership of the required road land widths including for widening and realignments of the MDRs wherever required to improve poor existing geometrics. It has been assessed that, while widening the road embankments, privately-owned trees utility poles will be impacted. Some of the damaged roads or parts thereof are presently at the same level or little lower than their surroundings. All roads to be reconstructed, wherever required, considering the flood level in the area including provision of new / additional cross-drainage structures as well as arrangements for surface drainage, in order to withstand future floods / disasters. PRD and R&BD plan to construct new cross-drainage structures with wider waterway at a few locations damaged due to narrow existing waterway.

Survey, investigation, design and preparation of Detailed Project Reports (DPRs) for Sub-component 2.1 will be carried out by the PRD with its in-house resources. PRD may take assistance of external engineering consultant for design of Major Bridge(s) if any. R&BD or State Project Implementation Unit (SPIU) will employ external engineering consultant(s) for survey, investigation, design and

preparation of DPRs for the proposed MDR works which involves widening to two-lanes.

Component 3: Restoration and Protection of Beach Front

This component will support priority investments along the beachfront of the city of Visakhapatnam. The Greater Visakhapatnam Municipal Corporation (GVMC) and the Visakhapatnam Urban Development Authority (VUDA) will be responsible for implementation.

Sub-component 3.1: Shore Protection Works: To finance appropriate solutions for the protection of the shore. This intervention will be planned taking into account the impact it may have on the coastal environment and will based on the outcome of the high level study commissioned by GVMC.

Large sections along the Visakhapatnam coast have seen significant erosion in the recent past exposing the beach to direct waves and are in urgent need of coastal protection. There has also been significant erosion of beachfront during the recent storm incident in January 2015. A detailed joint study by the National Institute of Ocean Technology, National Institute of Oceanography, Indian Institute of Technology, Madras and Andhra University is already underway for a stretch of 8 km. Its recommendations shall be taken into account during implementation. The activity herein will support appropriate solutions for the protection of the shore from Coastal Battery to Kailashgiri Hills. Further sections will be incorporated as required till Bheemli in the north. This intervention will be planned taking into account the impact it may have on the fragile coastal environment including sandy beaches, sand dunes, coastal vegetation, as well as any adverse social impact.

Sub-component 3.2: Beach Front Restoration: To finance enhancement of urban public spaces and upgrading the beachfront. This will include pedestrian walkways, street furniture, street and beach lighting and landscaping along the beachfront. The component will also support rehabilitation of key damaged urban infrastructure including drainage and sewage treatment plants, selected historic buildings and landmarks; and coastal city roads. This subcomponent will be jointly implemented by the GVMC and VUDA.

The city of Visakhapatnam has seen extensive damage in the October 2014 Hudhud Cyclone including uprooted trees, disrupted services such as street lighting as well as extensive damage to the physical streetscapes along the waterfront areas. Several parks and public spaces have also been damaged. Most prominently, a large portion of the embankment walls supporting the coastal road were severely damaged and has resulted in poor and dangerous access to the public beaches. The waterfront road is a key thoroughfare and access route for the city and there could be susceptible locations (e.g. those that pass along hills and connecting key urban locations) that could be severely affected by storms and landslides which could lead to severe bottlenecks during future disasters.

In the aftermath of cyclone Hudhud, there is a need not only to focus on the creation of resilient infrastructure but also better planning in its creation and maintenance. This includes preparing and implementing a comprehensive integrated urban plan for the coast-front area to improve overall functionality and aesthetics. The infrastructure to be created and improved needs to be integrated

with mitigation techniques so that the vulnerabilities in future similar disasters are considerably reduced.

On the beach front some Olive Ridely turtle nesting sites (318 during 2014) have been recorded between the section from Naval Coast Battery to Bheemli (a zone of about 30km or more). As these sites fall under urban spaces restoration component, provisions and appropriate/sensitive designs will be necessary and covered as part of this component design

Component 4: Restoration of Environmental Services/Facilities and Livelihood Support

This component will finance the reconstruction of the severely damaged zoological park at Visakhapatnam and Eco Tourism Park at Kambalakonda Wildlife Sanctuary and help restore the lost shelterbelts, windbreaks and mangroves along the coast to build disaster resilience and support livelihoods opportunities by supporting nurseries supporting farm forestry. The Andhra Pradesh Forest Department with its partner agencies will be responsible for implementation and will spread across four districts.

Sub-component 4.1: Restoration of environmental services and facilities: To restore damaged environmental services facilities including: a) the Indira Gandhi Zoological Park and b) the Eco tourism park at Kambalakonda Wildlife Sanctuary.

Indira Gandhi Zoological Park at Visakhapatnam: The objective of this is to restore and enhance the damaged infrastructure and facilities in the Zoological park and augment the facilities to international standards (including IUCN's ex-situ conservation guidelines in addition to the Guidelines and Strategy laid out by Central Zoo Authority, a statutory body under MoEFCC, Govt. of India). The Indira Gandhi Zoological Park, spread over 625 acres is one of the two Zoological Parks in Andhra Pradesh and has been designated as the nodal centre by the Central Zoo Authority (CZA) for ex-situ conservation of the Indian Wild Dog. It has also seen successful breeding of tigers, hog deer, black buck and other animals in its ex-situ conservation efforts. It also has an interpretation centre, which is used for creating awareness on environmental education and conservation of biodiversity of Eastern Ghats, including its wildlife, which now stands badly damaged. The Forest Department runs an Animal Rescue Centre located opposite the Zoological Park houses lions and tigers rescued from circuses.

Being located on the edge of the sea, the Indira Gandhi Zoological Park with an area of 625 acres has been experiencing many cyclones since its inception. However, the very severe cyclonic storm Hudhud on October 12, 2014 substantially damaged the fabric and structure of the vegetation and other property/infrastructure developed in the last four decades. Apart from loss of life of certain animals and birds, the losses include complete to substantial damage to permanent office buildings, vegetation, compound wall, bird aviaries, tiger enclosures, main gate, sagar gate, visitors facilities, Animal Rescue Centre, stand-off barriers, vehicles, vehicle sheds, rescue shed, canteen, zoo workshop, booking counter, zoo hospital, post-mortem room, incinerator room, in-patient ward, quarantine block, zoo staff quarters, fodder plot and fencing, pump sheds, signage and hoardings, electrical system, communication system, CCTV and security system, water supply, roads, etc. The proposal considers restoring and rebuilding

all the damaged facilities to international standards with a focus on education, nature interpretation and conservation. The selected implementation approach involves building a partnership with recognized international originations/NGOs to ensure knowledge sharing and promote implementation of best practice.

Eco Tourism Park at Kambalakonda Wildlife Sanctuary: The objective of this is to rebuild the damaged infrastructure at the Kamabalakonda eco-park and wildlife sanctuary and to make it disaster resilient. The Kambalakonda Wildlife Sanctuary, spread across 7,139 hectares was established in 2002 to protect the flora and fauna of the region. An Eco-tourism park covering about 100 hectares was established at a later date with the Eco Development Committee (EDC) of villages located within the Wildlife Sanctuary running it and benefitting from it. The entire park area was affected either fully or partially by Hudhud. A number of trees in the Sanctuary and in the Park fell due to the high intensity winds. The damage and loss includes vegetation, eco-tourism cottages, trek routes, etc. The present proposal includes a butterfly park, arboretum for medicinal plants and plant diversity in Eastern Ghats, view cum fire lines, fire watch towers, water harvesting trenches, check dams, treks/paths, bio-park interpretation centre, amphitheatre, water supply, tourist cottages, food court, visitor facilities, etc.

Sub-component 4.2: Livelihoods Support: To support livelihoods through reviving nurseries feeding to farm forestry and restoration of shelter belts along the coast and mangroves.

Nurseries and Farm Forestry (US$5 million): The objective of this sub-component is to rehabilitative the damaged nurseries and to developed four high-tech nurseries to support farm forestry to promote horticulture and plantations. It is proposed that 60 damaged nurseries will be made functional through provision of infrastructure such as buildings/ sheds, water supply, fencing and implements. Apart from this, to cater to the increasing demand from the farming sector and to supply saplings for farm forestry (vegetation under farm forestry was damaged during the Hudhud), four High-Tech Nurseries will be developed in each of the affected districts for supply of saplings and to do demonstrations. Training in improved nursery development and sapling planting and capacity building of the concerned department will be part of the project. Through the rehabilitated and new nurseries about 5 million saplings of various varieties will be supplied annually to the horticulture and farm forestry sector.

Plantations: The objective of this sub-component is to restore lost shelter belts and Palmyra brakes and mangroves along the coast, as they absorb wind speeds, reduce damage and loss and augment livelihoods. Plantations will be taken up in the reserve forest area along the coast. The plantations will be mixed types; some pure Palmyra (*Borassus flabellifer)*, some Palmyra with Casaurina, Cashew *(Anacardium occidentale)*, Gangaravi (*Thespesia populnea)*, Kanuga (*Millettia pinnata)*, Ponna (*Calophyllum inophyllum)*, Badam (*Terminalia catappa)*, and other native species that have shown good resistance to cyclonic winds in the recent cyclones including Hudhud. Demonstration plantations with mixed species resilient to cyclonic conditions similar to Hudhud will be taken up. An area of 4,000 Ha will be covered under these shelter belt plantations in the four districts. This includes pure Palmyra brakes and mixed species shelter belts in the four districts. These plantations, shelterbelts and mangroves would support the livelihoods of the

people along the coast. The plantations will be developed with the full engagement of Vana Samrakshana Samithis (VSS).

This sub-component will also include a study on natural coastal bio shelters, whether they are shelter belt plantations, mangroves, natural forms like sandy beaches, sand dunes other features including native vegetation like trees, shrubs, runners covering beaches, sand dunes, mangroves, and along the coasts. This would provide a long term inputs using the impact of Cyclone Hudhud as the testing ground.

Component 5: Capacity Building and Technical Assistance for Disaster Risk Management

This component will support investments to enhance the capabilities of GoAP entities in managing disaster risks, enhancing preparedness, and achieving resilient recovery. This component will entail the following interventions:

Sub-component 5.1: *Capacity Augmentation for Disaster Management*: This component will include strengthening the state's disaster response systems and mechanisms, as well as the capacity of the APSDMA in performing its core functions. This will entail the following

Setting up the State Advisory Committee, and State Resource Centre for Disaster Management - A state resource management centre on Disaster Management will be set up within the state, to assist and develop key training module, training material, policy guideline and other related activities of Disaster Management. The resources Centre also conduct studies with a critical and multidisciplinary perspective which enrich policy and practice processes. Another role of resource Centre would to be prepares skilled professionals and builds capacities of state and non-state agencies and communities. The pre-existing infrastructure within the state can act as state resource Centre on Disaster Management.

Strengthening the Emergency response capabilities and communication system of the state agencies such as fire department, the state disaster response force and other immediate key response agencies in responding adequately to disaster situations through better search and rescue equipment, wireless communication, enhanced training, etc.

Curriculum development on disaster risk reduction for schools and Governmental training institutions - As part of a wider program, DRR is being introduced and mainstreamed in school education and in training programs for different levels of Government functionaries. This will involve a review of the current status of the Board for Secondary Education Andhra Pradesh (BSEAP) school curriculum and Government training institutions curriculum, identify the shortfalls and gaps, and then based on international best practice in DRR education, devise DRR curriculum for schools and training institutions.

Community based disaster risk management program(CBDRM) targeted at the four cyclone affected districts which would entail mock drills, awareness programs and others which is designed to help communities better utilize risk mitigation infrastructure as well as be better to respond to any disaster event. The CBDRM program will be rolled out in two phases. The first phased approach will build partner NGO capacity, demonstrate the value and processes of CBDRM to local and

state governments and understand the challenges faced in implementation in the coastal communities. The second phase will involve scaling-up of this program to other districts. The CBDRM program will be hosted by the Department of Rural Development (DRD). Appropriately experienced NGOs will be identified for carrying out the CBDRM program either per district or a group of districts. The District Collectors office will be the responsible agency at the District level. State level Monitoring and Implementation will be with the RD Department which will coordinate with the Project Management Unit (PMU). The following different activities will be part of CBDRM program:

Risk and Vulnerability Assessments - The exercise will review and upgrade similar initiatives undertaken in the recent past. The participation of the most vulnerable sections will be prioritized. Participatory Rural Appraisal (PRA) tools and methodology will be used to carry out the assessments covering hazards, vulnerabilities, capacities, assets and disaster risk. Using a multi-stakeholder dialogue and negotiation process Disaster Risk Management Plans (DRMP) will be created at village level. The DRMPs will list and map the most vulnerable communities, their locations, the risk exposure, the action to be taken, the responsible agencies/persons, their contact numbers. The efficacy of the DRMPs will be checked using mock drill exercises. The DRMP will be periodically reviewed and updated. A bound hardcopy of this exercise will be deposited with the Panchayat office and a soft copy will be deposited with the District administration.

Community Mobilization and Capacity Building - This will include awareness on disaster risk and preparedness at village level. Village Development Management Committee (VDMC) with representation from vulnerable groups, SHG groups, each hamlet that comprises the village panchayat, school teacher, and village panchayat president will be formed. Task forces, Early Warning & Evacuation and Search, Rescue and First Aid with multiple activities and skills are proposed. Mock drills will be conducted annually or bi-annually. They will be linked to particular date in order to create a regular event that will continue to be undertaken even after the CBDRM program comes to an end. A comprehensive Safe School Initiative will be undertaken in all schools in the area covered by the program can be seen as a school CBDRM program. Linking Communities to Early Warning System (EWS) and Multi-purpose Cyclone Shelter (MPCS). EWS and MPCS-MMCs are being set up as part of the ongoing NCRMP I. All CBDRM activities will be conducted at the locations of the EWS and MPCS where possible. This will create awareness of these infrastructures and also establish a physical focal point for DRM related activities in the villages. The partner NGOs through the EWS & Evacuation task forces will inform the communities of the exact locations and functions of the EWS, Cyclone shelters & Evacuation Routes. Nominated NGOs for CBDRM will be engaged for coordination of shelter and EWS level activities.

Capacity Strengthening for Emergency Response - Special attention will be given to hazards that are district specific. The potential to bring on board the volunteer base of the Andhra Pradesh Red Cross will be explored and links with the current program can also be built. The training needs for emergency response of the NSS, NCC and Civil Defence volunteer base will be assessed. With adequate training they could become part of a larger task force that can play an important role in Emergency situations.

Sub-component 5.2: Technical Assistance for Risk Reduction and Response Preparedness: The component will include activities such as: (i) preparing a detailed vulnerability analysis of the cities and model various risks for effective mitigation planning and disaster response preparedness in consultation with community representatives and by applying local knowledge; (ii) carry out an in-depth assessment of the GoAP's Apathbandhu Insurance scheme (Accident Insurance Scheme for Below Poverty Line families) , Agriculture risk insurance, social safety nets and other such risk transfer mechanisms and develop recommendations for establishing an integrated program for risk transfer protecting the lives and livelihoods of the vulnerable populations , including widowed households, vulnerable female – headed households, poor households, SC and ST households, and low – income households; (iii) update the design guidelines for infrastructure in several key departments by evolving better design standards that factor in the expected peak wind speeds and rainfalls, including material specifications for the infrastructure in coastal region; etc.

Component 6: Project Implementation Support

This component will finance establishing and operating the Project Management Unit (PMU) and the Project Implementation Units (PIUs). In addition, the component will also finance consultancies required for the preparation and supervision of specific activities, monitoring and evaluation, trainings, exposure visits, studies on safety net practices in post–disaster situations, inclusive and gendered practices in disaster mitigation planning, preparedness and responsiveness, knowledge exchange programs etc.

Component 7: Contingency Emergency Response

Following an adverse natural event that causes a major natural disaster, the respective governments may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the government of Andhra Pradesh to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of an emergency.

Disbursements would be made against a positive list of critical goods or the procurement of works, and consultant services required to support the immediate response and recovery needs. All expenditures under this component, should it be triggered, will be in accordance with paragraph 11 of OP 10.00 and will be appraised, reviewed and found to be acceptable to the Bank before any disbursement is made.

In accordance with paragraphs 11 and 12 of OP 10.00, this component would provide immediate, quick-disbursing support to finance goods (positive list agreed with the Government), works, and services needed for response, mitigation, and recovery and reconstruction activities. Operating costs eligible for financing would include the incremental expenses incurred for early recovery efforts arising as a result of the impact of major natural disasters.

1.7 Project Financing

The total estimated project financing will be to the tune of USD 370 million, of which IDA financing will be USD 250 million. The component-wise break-wise of project financing estimates are provided in Table 1.1.

Table 1.1: Project Cost and Financing

Project Components	Total Cost (US$ M)	IDA Financing (US$ M)	Financing
Component 1: Resilient electrical network	120.0	81.0	67.6%
Component 2: Restoration of connectivity and shelter infrastructure	105.0	71.0	
• Sub-component 2.1: Restoration of rural roads and cyclone shelters	*60.0*	*40.5*	
• Sub-component 2.2: Restoration of major district roads (MDR)	*45.0*	*30.5*	
Component 3: Restoration and protection of beach front	65.0	44.0	
• Sub-component 3.1: Shore protection works	*25.0*	*17.0*	
• Sub-component 3.2: Beach front restoration	*40.0*	*27.0*	
Component 4: Restoration of environmental services facilities and livelihood support	20.0	14.0	
• Sub-component 4.1: Restoration of environmental services and facilities	*8.0*	*6.0*	
• Sub-component 4.2: Livelihoods support	*12.0*	*8.0*	
Component 5: Capacity building and technical assistance and for disaster risk management	35.0	24.0	
• Sub-component 5.1: Capacity augmentation for disaster risk management	*25.0*	*17.0*	
• Sub-component 5.3: Technical assistance for risk reduction and response preparedness	*10.0*	*7.0*	
Component 6: Project Implementation Support	25.0	17.0	

Project Components	Total Cost (US$ M)	IDA Financing (US$ M)	Financing
Component 7: Contingency emergency response	0	0	100%
Total	370.0	250.0	
Total Project Costs	***370.0***		
Total Financing Required	*250.0*		

Note: Total may not match due to rounding.

The lending instrument will be Investment Project Financing and the implementation period will be five years.

Chapter 2 : Need for Environment and Social Management

The Environment and Social Management Framework provides the guidance for the prevention, minimization and/or mitigation of environmental and social issues arising due to the implementation of the sub-project activities in the participating districts of Andhra Pradesh.

2.1 Need for Environmental and Social Management

The primary objective of the proposed project is supporting the State Disaster Management Authority and the Govt. of Andhra Pradesh in minimising disaster risks through selected structural and non-structural project interventions described in the preceding chapter. Any civil work, if carried out without adequate planning and diligence is likely to cause unwarranted/adverse impacts on environment and people/communities and thereby affect the intended project development outcomes and sustainability of the investment. The environmental and social impacts need to be carefully assessed and managed particularly when works are proposed in the areas that have high population density and sensitive or ecologically important features, such as that in the coastal realms of India.

More so, the implementation of cyclone risk mitigation interventions (with a varying nature and scale of activities) will be carried out across different topographical and coastal settings of the state. Consequently, the potential impacts on the environment and people will vary depending on the local geographical and environmental setting, socio-economic characteristics of the area/district in question and the scale of proposed project activities.

Hence, a need was felt to prepare a document that will serve as a 'guide' for the planning, design and construction of project interventions/sub-projects and help in harmonizing the principles/approaches for project preparation and execution. In this context, a Framework approach has been adopted and an Environment and Social Management Framework has been prepared for the project.

2.2 Objectives of Environment and Social Management Framework

Typically, the disaster Risk mitigation projects focus mainly on construction of physical infrastructure. However, the other side of minimizing risk and damage in case of future disasters is giving adequate consideration on preventive aspects or measures like proper siting of human settlements away from areas of vulnerable and environmental sensitive settings. Proximity to vulnerable environmental setting/s is one among various other factors responsible for loses of life and damage to property/assets.

The project therefore provides a right platform to imbibe preventive measures during planning and design of various project components, which will be more environmentally and socially sustainable (than the present/current baseline) and contribute to avoiding or at least minimizing the vulnerability of population residing in the coastal areas of four project targeted states to natural disasters like cyclone or associated flooding in addition to the larger reconstruction needs that emerged post cyclone Hudhud.

This requires adoption of an integrated approach during planning, preparation and implementation of various sub-projects/activities. The ESMF will act as an instrument providing necessary guidance and management process to attend to environmentally sound project planning, preparation and implementation through:

1. Establishment of clear process, procedures and methodologies (including screening) for environmental and social planning, review, approval and implementation of sub-projects to be financed under the Project.
2. Provision of practical guidance for planning, designing and implementing the environmental and social management measures as an integral part of sub-project planning, design and execution.
3. Specifying appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and related social concerns of the sub-projects and;
4. Determining any other specific arrangements, including those related to training, capacity building and technical assistance (if required) needed to successfully implement the provisions of the ESMF.

The application and implementation of the ESMF therefore, will:

1) Support the integration of environmental and social aspects into the decision making process at all stages related to planning, design, execution, operation and maintenance of sub-projects, by identifying, avoiding and/or minimizing adverse environmental and social impacts early-on in the project cycle.
2) Enhance the positive/sustainable environmental and social outcomes through improved/sensitive planning, design and implementation of sub-activities.
3) Minimize environmental degradation as a result of either individual sub-projects or through their indirect, induced and cumulative effects, as much as possible.
4) Protect human health and
5) Minimize impacts on cultural property, if any.

2.3 Key Contents - Environment and Social Management Framework

The framework details out the various policies, guidelines and procedures that need to be integrated during the planning, design and implementation cycle of the Bank-funded project. The framework describes the principles, objectives and approach to be followed for selecting, avoiding, minimizing and/or mitigating the adverse environmental and social impacts that are likely to arise due to the project. It also outlines the indicative management measures required to effectively address or deal with the key issues that have been identified. The required institutional arrangements for effective environment management have also been outlined as a part of this framework.

Specifically, the Environmental Management Framework includes the following:

- Information on GoI's/GoAP's environmental legislations, standards and policies and World Bank safeguard policies that are relevant in the over-all project context.
- Background information about the project area
- Process to be followed for environmental and social screening to guide decision-making (inclusion/exclusion) about proposed sub-projects.
- Steps and process to be followed for conducting environmental and social impact assessment and preparation of Environmental Management Plans/Resettlement Action Plans (as and if required) for selected sub-projects.
- Preliminary assessment of anticipated environmental and social impacts in the context of broad/known project interventions.
- Guidance on conducting consultations and ensuring participation of key stakeholders
- Generic environment management plans and measures to avoid, minimize and/or mitigate anticipated impacts.
- Entitlement matrix to guide the preparation of Resettlement Action Plans, as and when needed
- Assessment of indigenous/tribal population issues and steps to prepare necessary IPDPs.
- Grievance Redressal Mechanisms
- Institutional arrangements/provisions for environment and social management, including monitoring and reporting.

2.4 Application of the ESMF

The Environment and Social Management Framework needs to be integrated into the preparation and implementation stages of the various project components. It is an essential ingredient aligned with the project/sub-project activities and is to be followed through the entire project cycle from planning, including site identification; design; implementation and operation/ maintenance to attain the above outlined purpose and objectives.

The application and implementation of the Environment and Social Management Framework will also support the achievement of compliance with applicable laws and regulations as well as with the requirements of relevant Bank policies on environment aspects.

This ESMF has been developed based on the national and state laws & regulations and World Bank guidelines, as applicable on the date of this document. Any proposed laws & regulations or guidelines that were notified as 'draft' at the time of preparation of this document have not been considered.

2.5 Revision/Modification of the ESMF

The Environment and Social Management Framework will be an 'up-to-date' or a 'live document' enabling revision, when and where necessary. It is possible that certain aspects not envisaged at this stage during project preparation are not

included in this document. These may arise in the future, therefore should be assessed and appropriate management measures incorporated in to the ESMF. Unexpected situations and/or changes in the project or sub-component design would therefore be assessed and appropriate management measures will be incorporated by updating the said Framework. Such revisions will also cover and update any changes/modifications introduced in the legal/regulatory regime of the country/state. Also, based on the experience of application and implementation of this framework, the provisions and procedures would be updated by NDMA, as and if required, in consultation with the participating states. However, all proposed modifications/additions to the document are subject to the review and approval of the World Bank. The revised document will be re-disclosed both in-country/ locally and in the Info-Shop in line with disclosure policies/requirements of the Bank. The translated version of the executive summary of the ESMF in local language will also be updated, as necessary and re-disclosed in case ESMF is modified.

Chapter 3 : Existing Environmental and Social Conditions

India is highly vulnerable to natural hazards especially earthquakes, floods, drought, cyclones and landslides. Studies indicate that natural disaster losses equate to up to 2% of India's Gross Domestic Product (GDP) and up to 12% of Central government revenue.

A long mainland coastline of more than 7500 km, flat coastal terrain, high population density and the geographical location make India extremely vulnerable to cyclones and its associated hazards like storm surge, high winds and heavy rainfall. Approximately 5700 kms of the country's coast line is susceptible to severe cyclones. Recurrent cyclones account for a large number of deaths, loss of livelihood opportunities, loss of public and private property, and severe damage to infrastructure, thus reversing developmental gains at regular intervals.

While this chapter provides an overview of cyclones in the Indian Context, which is important to understand in the project perspective and a brief on baseline conditions across the different states, where investments under the National Cyclone Risk Mitigation Project II are proposed, the Volume II of this ESMF provides the detailed background information about the existing environment and social conditions in the participating states.

3.1 Cyclones - Indian Context

Cyclones are caused by atmospheric disturbances around a low-pressure area distinguished by swift and often destructive air circulation. Cyclones are usually accompanied by violent storms and bad weather. The air circulates inward in an anticlockwise direction in the Northern hemisphere and clockwise in the Southern hemisphere.

Cyclones are classified as: (i) extra tropical cyclones (also called temperate cyclones); and (ii) tropical cyclones. The word Cyclone is derived from the Greek word Cyclos meaning the coils of a snake. It was coined by Henry Peddington because the tropical storms in the Bay of Bengal and the Arabian Sea appear like coiled serpents of the sea. Cyclones are given many names in different regions of the world – They are known as typhoons in the China Sea and Pacific Ocean; hurricanes in the West Indian islands in the Caribbean Sea and Atlantic Ocean; tornados in the Guinea lands of West Africa and southern USA; willy-willies in north-western Australia and tropical cyclones in the Indian Ocean. The World Meteorological Organisation (WMO, 1976) uses the term 'Tropical Cyclone' to cover weather systems in which winds exceed 'Gale Force' (minimum of 34 knots or 63 kph).

Tropical cyclones are the progeny of ocean and atmosphere, powered by the heat from the sea; and driven by easterly trades and temperate westerlies, high planetary winds and their own fierce energy. Tropical cyclones typically form over large bodies of relatively warm water. They derive their energy from the evaporation of water from the ocean surface, which ultimately re-condenses into clouds and rain when moist air rises and cools to saturation. This energy source differs from that of mid-latitude cyclonic storms, such as nor'easters and European windstorms, which are fuelled primarily by horizontal temperature

contrasts. The strong rotating winds of a tropical cyclone are a result of the (partial) conservation of angular momentum imparted by the Earth's rotation as air flows inwards toward the axis of rotation. As a result, they rarely form within 5° of the equator.

In addition to strong winds and rain, tropical cyclones are capable of generating high waves, damaging storm surge, and tornadoes. They typically weaken rapidly over land where they are cut off from their primary energy source. For this reason, coastal regions are particularly vulnerable to damage from a tropical cyclone as compared to inland regions.

Heavy rains, however, can cause significant flooding inland, and storm surges can produce extensive coastal flooding up to 40 kilometres (25 mi) from the coastline. Though their effects on human populations are often devastating, tropical cyclones can relieve drought conditions. They also carry heat energy away from the tropics and transport it toward temperate latitudes, which may play an important role in modulating regional and global climate.

3.1.1 Classification of Cyclones

In India, cyclones are classified by:

- Strength of associated winds
- Storm surges and
- Exceptional rainfall occurrences

The criterion below has been formulated by the Indian Meteorological Department (IMD), which classifies the low pressure systems in the Bay of Bengal and the Arabian Sea on the basis of capacity to damage, which is adopted by the WMO.

Type of Disturbances	Wind Speed in Km/h	Wind Speed in Knots
Low Pressure	Less than 31	Less than 17
Depression	31-49	17-27
Deep Depression	49-61	27-33
Cyclonic Storm	61-88	33-47
Severe Cyclonic Storm	88-117	47-63
Super Cyclone	More than 221	More than 120

1 knot - 1.85 km per hour

Cyclones are classified into five different levels on the basis of wind speed. They are further divided into the following categories according to their capacity to cause damage:

Cyclone Category	Wind Speed in Km/h	Damage Capacity
01	120-150	Minimal
02	150-180	Moderate
03	180-210	Extensive
04	210-250	Extreme
05	250 and above	Catastrophic

3.1.2 Destruction Caused by Cyclones

There are three elements associated with cyclones which cause destruction during its occurrence. These are:

1) **Strong Winds/Squall:** Cyclones are known to cause severe damage to infrastructure through high speed winds. Very strong winds which accompany a cyclonic storm damages installations, dwellings, communications systems, trees etc., resulting in loss of life and property. Gusts are short but rapid bursts in wind speed are the main cause for damage. Squalls on the other hand, are longer periods of increased wind speed and are generally associated with the bands of thunderstorms that make up the spiral bands around the cyclone.

2) **Torrential rains and inland flooding**: The very high specific humidity condenses into exceptionally large raindrops and giant cumulus clouds, resulting in high precipitation rates. When a cyclone makes landfall, rain rapidly saturates the catchment areas and the rapid runoff may extensively flood the usual water sources or create new ones. Torrential rainfall (more than 30 cm/hour) associated with cyclones is a major cause of damage. Unabated rain gives rise to unprecedented floods. Rain water on top of the storm surge may add to the fury of the storm. Rain is a serious problem for the people which become shelter less due to cyclone. Heavy rainfall from a cyclone is usually spread over wide area and cause large scale soil erosion and weakening of embankments.

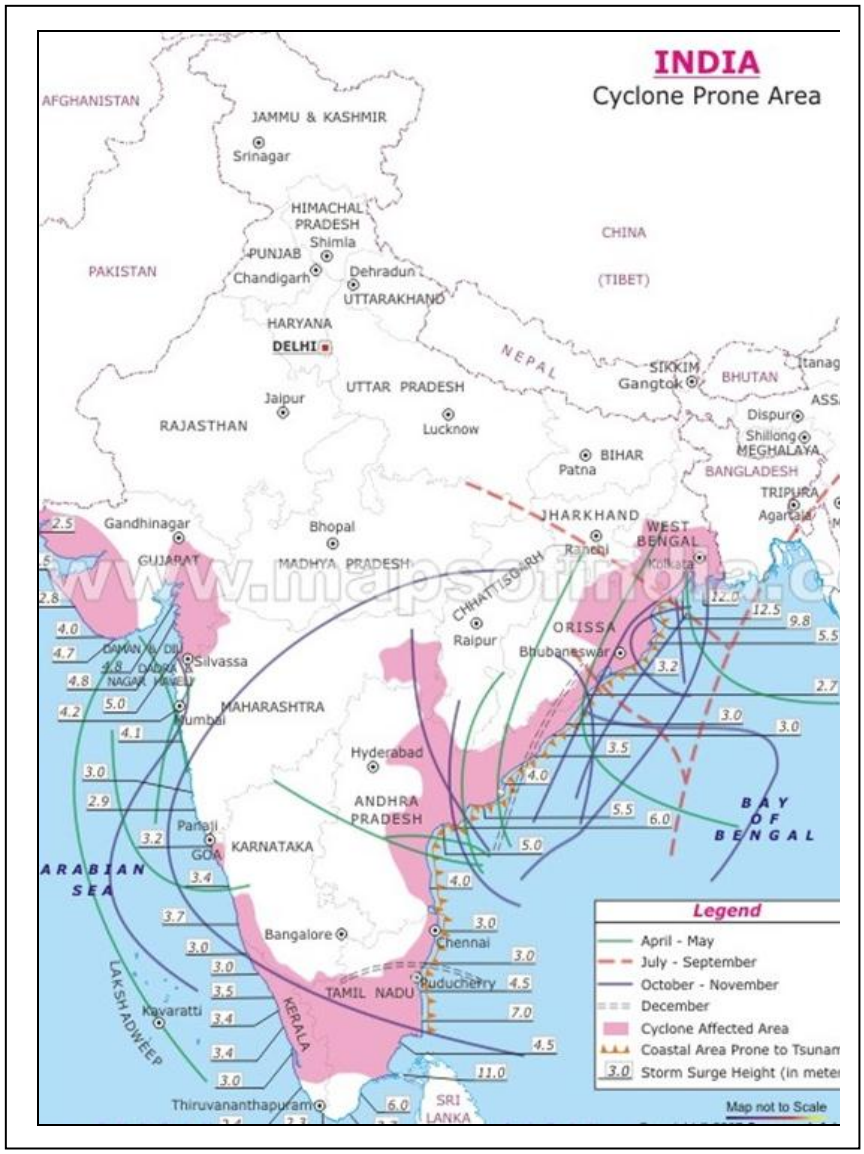
3) **Storm Surge**: A Storm surge can be defined as an abnormal rise of sea level near the coast caused by a severe tropical cyclone; as a result of which sea water inundates low lying areas of coastal regions drowning human beings and life stock, causes eroding beaches and embankments, destroys vegetation and leads to reduction of soil fertility.

Cyclones vary in diameter from 50 to 320 km but their effects dominate thousands of square kilometres of ocean surface and the lower atmosphere. The perimeter may measure 1,000 km but the powerhouse/eye is located within the 100 km radius. Nearer the eye, winds may hit at a speed of 320 km. Thus, tropical cyclones, characterized by destructive winds, torrential rainfall and storm surges disrupt normal life with the accompanying phenomena of floods due to the exceptional level of rainfall and storm surge inundation into inland areas.

Cyclones are characterized by their devastating potential to damage structures, viz. houses; lifeline infrastructure-power and communication towers; hospitals; food storage facilities; roads, bridges and culverts; crops etc. The most fatalities come from storm surges and the torrential rain flooding the lowland areas of coastal territories.

3.1.3 Vulnerability of Indian Coast

Indian sub-continent is the worst affected region of the world, having a coast line of 7516 km. (5400 kms along the mainland, 132 kms in Lakshadweep and 1900 kms in Andaman and Nicobar Islands) is exposed to nearly 10% of the world's Tropical Cyclones. Of these, the majority of them have their initial genesis over the Bay of Bengal and strike the East coast of India.



On an average, five to six tropical cyclones form every year, of which two or three could be severe. More cyclones occur in the Bay of Bengal than the Arabian Sea and the ratio is approximately 4:1. Cyclones occur frequently on both the coasts (the West coast - Arabian Sea; and the East coast - Bay of Bengal). An analysis of the frequency of cyclones on the East and West coasts of India between 1891 and 1990 shows that nearly 262 cyclones occurred (92 of these severe) in a 50 km wide strip above the East coast. Less severe cyclonic activity has been noticed on the West coast, where 33 cyclones occurred the same period, out of which 19 of were severe.There are 13 coastal states/UTs encompassing 84 coastal districts which are affected by cyclones. Four States (Andhra Pradesh, Odisha, Tamil Nadu and West Bengal) and one UT (Pondicherry) on the East Coast and One State (Gujarat) on the West Coast are more vulnerable to cyclone disasters.

Tropical cyclones occur in the months of May-June and October-November. Cyclones of severe intensity and frequency in the North Indian Ocean are bi-modal in character, with their primary peak in November and secondary peak in May. The disaster potential is particularly high during landfall in the North Indian Ocean (Bay of Bengal and the Arabian Sea) due to the accompanying destructive wind, storm surges and torrential rainfall. Of these, storm surges cause the most damage as sea water inundates low lying areas of coastal regions and causes heavy floods, erodes beaches and embankments, destroys vegetation and reduces soil fertility.

Recurring cyclones account for large number of deaths, loss of livelihood opportunities, loss of public and private property and severe damage to infrastructure, thus seriously reversing the developmental gains at regular intervals. Broad scale assessment of population at risk suggests that an estimated 32 crore people, which accounts for almost third of the country's total population, are vulnerable to cyclone related hazards. Climate change and its resultant sea-level rises can significantly increase the vulnerability of coastal population

3.1.4 Major Cyclones in India

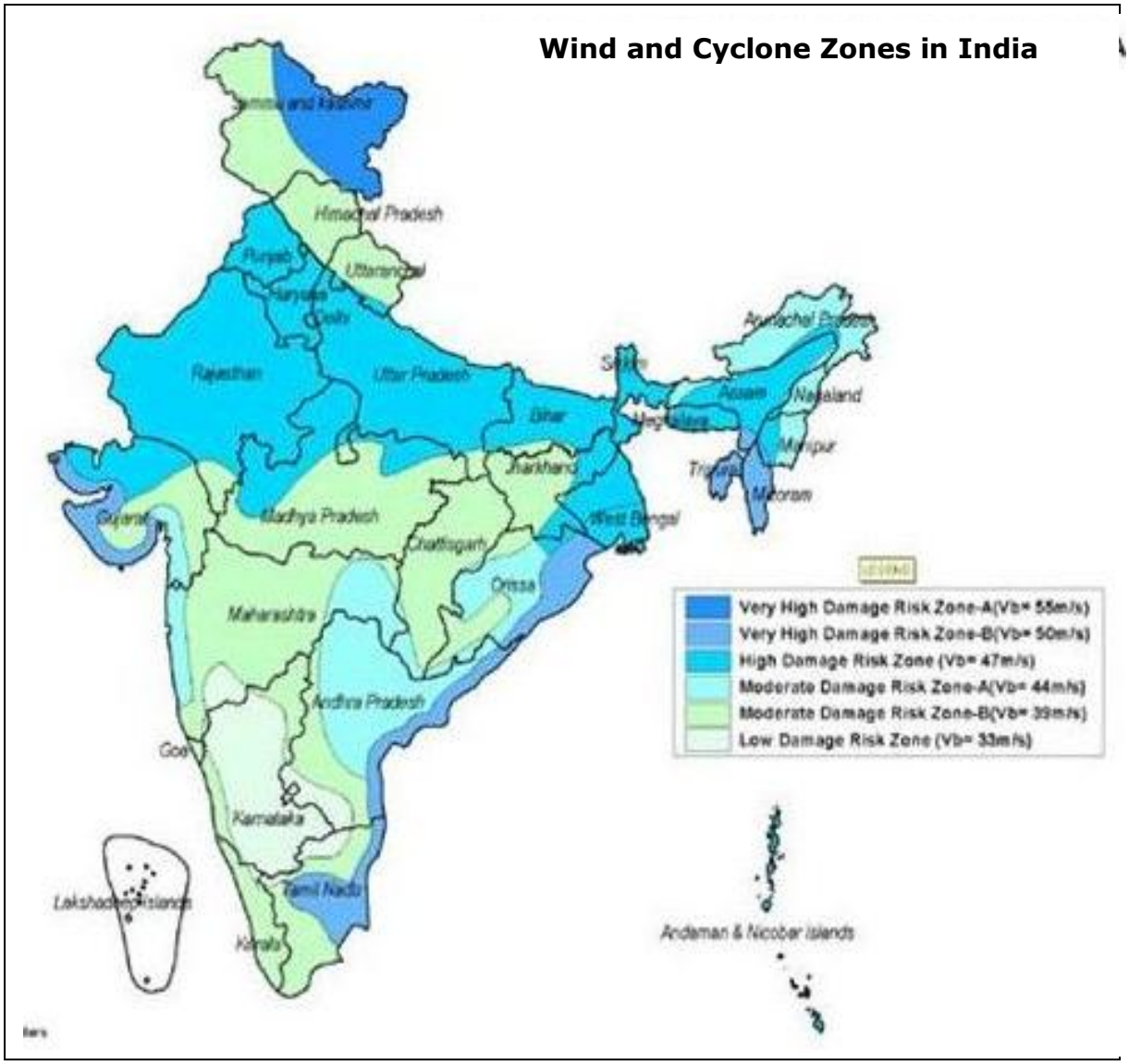
The major Tropical cyclones which struck the coastal districts in India during the period 1891-2006 are as under:

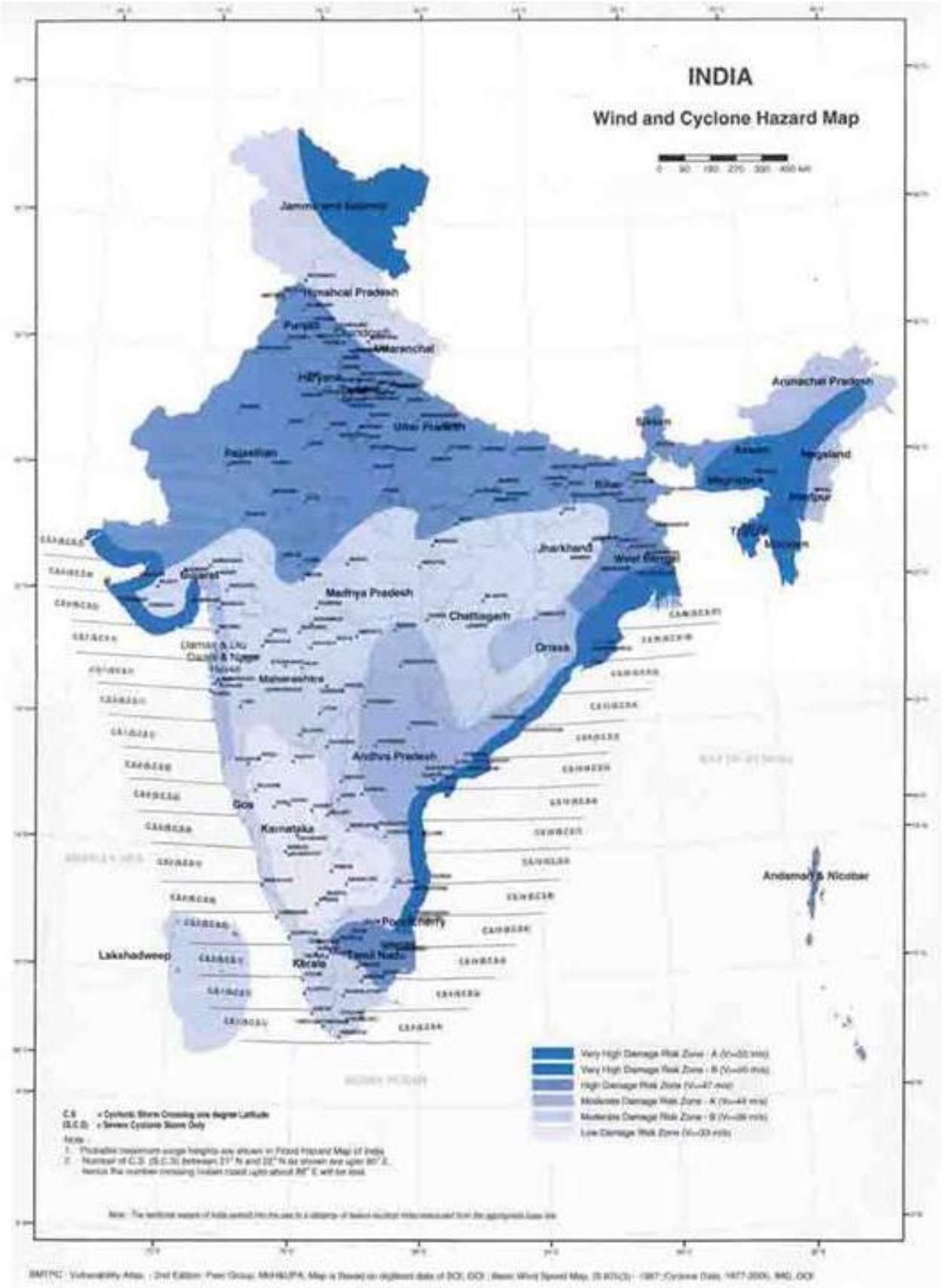
WEST COAST		
State	**Coastal District**	**No. of Cyclones**
• Kerala (3)	Malappuram	1
	Kozikode	1
	Kannur	1
• Karnataka (2)	Dakshina Kannada	1
	Uttar Kannada	1
• Maharashtra (13)	Sindhudurg	3
	Ratnagiri	3
	Mumbai	3
	Thane	4
• Goa (2)	Goa	2
• Gujarat (28)	Surat	1
	Kaira	1

WEST COAST		
State	**Coastal District**	**No. of Cyclones**
Gujarat	Bhavnagar	4
	Amereli	4
	Junangarh	7
	Jamnagar	6
	Kachchh	5

EAST COAST		
State	**Coastal Districts**	**No. of Cyclones**
Andhra Pradesh (79)	**Srikakulam**	**14**
	Vishakhapatnam	**9**
	East Godavari	**8**
	West Godavari	**5**
	Krishna	**15**
	Guntur	**5**
	Prakasam	**7**
	Nellore	**16**
West Bengal (69)	24 Paragana (North and South)	35
	Midnapur	34
Tamil Nadu (54)	Chennai	18
	Cuddalore	7
	Southarcot	5
	Tanjavur	12
	Pudukkottal	5
	Ramnathpuram	3

EAST COAST		
State	**Coastal Districts**	**No. of Cyclones**
Tamil Nadu	Tirunelveli	2
	Kanyakumari	2
Odisha (98)	Balasore	32
	Cuttack	32
	Puri	19
	Ganjam	15
Pondicherry (8)	Pondicherry (UT)	8





Of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis.

Disaster risks in India are further compounded by increasing vulnerabilities related to changing demographics and socio-economic conditions, unplanned urbanization, and development within high-risk zones, environmental degradation, climate change, geological hazards, epidemics and pandemics. Clearly, all these contribute to a situation where disasters seriously threaten India's economy, its population and sustainable development.

3.2 Existing Environmental Conditions – Indian Coast

The coast is a unique environment where land, sea and atmosphere interact and interplay continuously influencing a strip of spatial zone defined as coastal zone. In other words, coastal zones are the areas having the influence of both marine and terrestrial processes.

3.2.1 Key Characteristics

Coastal zones are the most fragile, dynamic and productive ecosystem and are quite often under pressure from both anthropogenic activities and natural processes. It supports a large amount of floral and faunal biodiversity. Coastal Zone is endowed with a very wide range of habitats such as coral reefs, mangroves, sea grasses, sand dunes, mudflats, salt marshes, estuaries, lagoons etc., which are characterized by distinct biotic and abiotic processes.

Boundaries of the coastal zones are defined in different ways depending on the focus of interest and availability of data. Typically, a combination of distance-to-coast and elevation data is used. Different countries use different distance criteria for defining the coastal zone. In India, 500 m distance from the high tide line (landward) is taken for demarcating the coastal zone.

Total coast line of the world is 35,6000 km and the coastal area covers more than 10% of the earth surface. Because of the economic benefits that accrue from access to ocean navigation, coastal fisheries, tourism, recreation and industrialization, human settlements are often more concentrated in the coastal zone than elsewhere. About 40% of the world's population lives within 100 km of the coast. About 10% of the world's population resides in low elevation coastal zone (<10 m) making their lives highly vulnerable to coastal disasters. About 35% of Indians live within 100 km of the country's coast line measuring 7517 km.

Coastal zones in India assumes importance because of high productivity of its ecosystems, concentration of population, exploitation of renewable and nonrenewable natural resources, discharge of waste effluents and municipal sewage, industrialization and spurt in recreational activities. Coastal zones are continuously changing because of the dynamic interactions between the ocean and land.

Erosion and accretion, inundation due to sea level rise and storm surge, shifting of shoreline caused by natural or anthropogenic forces, such as construction of artificial structure, port and harbors leads to changes in the coastal zone and its environment. More details have been presented in Annexure 1 (Volume II).

3.2.2 Sensitive Environments

Indian coasts have a large variety of sensitive eco-systems. Sand dunes, coral reefs, mangroves, sea-grass beds and wetlands are some that deserve special mention. Some of these are the spawning grounds and nurseries of a number of commercially important fishes, gastropods and crustaceans.

A critical feature of these ecosystems is the variety of bioactive molecules that they host. Recent mining of organisms from the tidal and inter-tidal zone have revealed large numbers of molecules with obvious application for human health and industrial applications. This could be the most commercially important aspect of the Coastal Zone. Molecules that show bioactivity from one ecosystem may not show the same activity, or level of activity, when mined from a different locale or different season. This feature alone should be reason enough for the protection of all such ecosystems, and not only representative isolated units in protected areas / parks. Losses of such areas are losses to the common good and future generations.

Sand dunes seem to be ecosystems that are most often destroyed, probably because their place in the scheme of dynamic coastal morphology, is not obvious. Suffice to say that dunes are the reserves that nature stores, dissipates energy on, and moves when needed.

3.3 Andhra Pradesh – State Profile

Under the provisions of Disaster Management Act 2005, the Andhra Pradesh Disaster Management Rules 2007 were issued. As part of the rules, the GoAP has constituted the AP SDMA which is the nodal agency for disaster management at the state level and has two distinct objectives: i) develop and update plans and strategies to handle any type of disaster as pre-disaster efforts – this includes the development of disaster preparedness plans for the State, multi-hazard disaster response plans and district disaster management plans; and ii) undertake projects for restoration and strengthen of infrastructure damaged by disasters during post-disaster scenario.

The Andhra Pradesh Disaster Recovery Project will largely cater to the nine coastal districts of the state. It will be implemented over a large geographical area and has a large number of direct beneficiaries. However, the major works/ interventions will be concentrated in the four Hudhud affected districts. The project will be developed under a multi-sector framework with investment activities aimed at reducing risk and enhancing mitigation along coastal Andhra Pradesh. While a brief description is provided here, more details are in Volume II of this ESMF.

3.3.1 Over-view

Andhra Pradesh is one of the most natural hazard prone states in India because of its long coastline and geographical location. About 44 percent of the state is vulnerable to tropical storms and related hazards[5]. In addition to cyclones and related hazards, monsoon depressions bring heavy to very heavy rains causing floods in the inland rivers between June and September[6]. Many areas in the state adjacent to coastal districts are vulnerable to flash floods.

Coastal erosion is an important problem, out of the total coastal length of about 974 km, about 440 km faces coastal erosion[7]. Andhra Pradesh is also exposed to earthquakes, though the State lies in low relatively risk zones (Zone I, II and III)[8].

The state has a population of 49.4 million (population density – 308 persons/sq.km), out of which proportion of rural population is 70.4% while that of urban is 29.6%. Visakhapatnam is the most urbanized district of the state having 47.5% as urban population. Out of total 13 districts in the state, nine are coastal districts and account for approximately 69% (34.19 million) of its total population.

The coastal region of Andhra Pradesh comprises of around 980 km coastline and includes 9 districts of the state. The four districts of Vishakhapatnam, Vizianagaram, Srikakulam and East Godavari make up nearly half of the coastal region of the state. The geographic location combined with high population density makes these districts highly vulnerable to cyclones and its associated hazards like storm surge, high winds and heavy rainfall. Recurrent cyclones account for a large number of deaths, loss of livelihood opportunities, loss of public and private property, and severe damage to infrastructure, thus reversing developmental gains at regular intervals.

3.3.2 Geographical Profile of the Coastal Belt

The coastline of Andhra Pradesh is long and smooth with inundation only in the extreme south (in saltwater lagoon Pulicat lake) and between the Godavari and the Krishna delta. Andhra Pradesh coastline shows three distinct segregation of coast based on the relief, nature of the material and type of vegetation: Rocky coast (North of Godavari delta), Vegetated coast (Deltas of Godavari and Krishna and inter delta region) and sandy coast (South of Krishna delta up to Pulicat lake).

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[5] Andhra Pradesh State Disaster Management Plan. Volume 1. Revenue (Disaster Management II) Department, GoAP. August 2010. Available at http://disastermanagement.ap.gov.in/website/APSDMP.pdf

[6] Andhra Pradesh National Institute of Disaster Management (NIDM)-National Disaster Reduction Portal. Available at http://nidm.gov.in/PDF/DP/ANDHRA.PDF.

[7] Assessment Of Coastal Erosion Along Indian Coast On 1:25, 000 Scale Using Satellite Data, Rajawata et al, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-8, 2014 ISPRS Technical Commission VIII Symposium, 09 – 12 December 2014, Hyderabad, India

[8] According to seismic zoning of India, the country is divided into five seismic zones based on severity, with Zone I being the lowest risk zone and Zone 5 the highest risk zone.

The coastal area north of the Godavari delta comprises of tidal creeks, small patches of coastal wetlands at the mouth of rivers and inlets. The residual hills and ridges are close to the sea and some of ridges extend beyond the coast in to the sea. The rocky outcrops are observed in this area. Headland bay and small beaches are seen in the Vishakhapatnam district.

Though the rivers, Bahuda, Vamsadhara, Gosthani, Sarda are flowing in this region, but it does not have any major delta. The deltaic type of coastal area between Godavari and Krishna and inter-deltaic region comprises of bay, tidal creeks, mudflats, spits, mangroves swamps and marshes. Inter tidal mudflats are extensive to the east of Coringa. A number of tidal creeks dissect mudflats. Mangrove swamps occurs in abundance in the intertidal mudflats on both sides of creeks. Narrow beaches are found on the delta fronts except on both sides of the Vainateyam and the Vasisth-Godavari mouths. A spit has been developed at Kakinada and a bay has been developed between the shore land and the spit. Large block of dense mangrove can be seen near Coringa. Beaches, sand dunes and dune sands are widely distributed in the region of south of Krishna delta up to the Pullicat lake. It mainly occurs between Suryalanka to Tutipalem, Kuruvatipalem, durgarajupatanam and the Shriharikota Island. Sandy plain has spread over a wide area in Chirala Vetapalem and chinagunjam. Sand dunes occurred at Vetapalem, Krishnapatanam, Kotapalem and Gopallapalem. Sparse and scattered mangroves are found in the intertidal and high tidal mudflats at the mouth of the river zone. Marsh vegetation is also seen on the islands of the rivers.

The Krishna and Godavari deltaic regions harbour extensive mangroves that account for the major share of mangrove forests of Andhra Pradesh. These eastward flowing rivers bring along nutrients from the Eastern and Western Ghats and Deccan plateau and empty these into the sea, thereby, nourishing the estuarine habitats. Besides these, mangroves are mainly confined to Nellore and Guntur districts on the east coast and as few patches on the intertidal mud-flats at the mouth of Sarada river in Visakapatnam. About 600 km2 of mangrove area in the state has been notified as reserved forests which include mangrove covers, mud-flats and water bodies.

3.3.3 Key Statistics of Coastal Area in Andhra Pradesh

Total Land Area	275,069 km^2
Coastal Ecosystems	
Mangrove Areas	Godavari Mangroves Coringa Reserve Forest Bhairavapalem Reserve Forest Rathikalava Reserve Forest Masanitippa Reserve Forest Matlatippa Reserve Forest Kottapalem Reserve Forest

	Balusitippa Reserve Forest Kandikuppa Reserve Forest
Forest Area	44372 km^2
Total Population	84,665, 533
Ports and Harbours	
Major Ports	4
Minor Ports	1

3.3.4 Forests and Related Infrastructure

3.3.4.1 Shelterbelts

Shelterbelt plantations have been the major focus in Andhra Pradesh where about 100 hectares were planted jointly by the major NGO's in the state. Moreover, it has been observed that one of the major plantation activities along the coast is by private land owners who plant casuarinas and cashew as cash crops in the state.

The Forest Department implemented Shelterbelt Plantations Scheme for raising of plantations over Government lands in the coast within 0.5 Km width from the coast line and distribution of seedlings for planting in the private farm lands by the farmers within 5 Km width from the coast line to create the tree cover in the coast in the coast to mitigate the fury of cyclonic winds and reduce loss of property and human life. Out of the entire coastline available in nine Coastal Districts of Andhra Pradesh, 70-80 percent coastline was covered with shelterbelt plantations. The shelter belt plantations raised by Forest Department are provided below[9]:

Shelterbelt Plantations from 2006-07 to 2008-09

S.No.	Year	Area (Ha)
1	2006-07	136.50
2	2007-08	1861.50
3	2008-09	1002.00

Source: Annual Administration Report Andhra Pradesh Forest Department (2008-2009)

The details of district wise Shelter Belt plantation programs by Social forestry Division and Territorial forestry Division are provided below:

[9] Source: Annual Administration Report Andhra Pradesh Forest Department

Shelterbelt Plantations proposed to be raised by Territorial Division during 2009-10 planting programme

S.No.	District	Area proposed for planting (Ha)	Total no of seedlings proposed to be planted (lakhs)
1	Srikakulam	0	0
2	Vizianagaram	80.00	4.25
3	Visakhapatnam	0	0
4	East Godavari	94.00	2.820

Source: www. http://forest.ap.nic.in

Shelterbelt Plantations proposed to be raised by Social Division during 2009-10 planting programme

S.No.	District	Area proposed for planting (Ha)	Total no of seedlings proposed to be planted (lakhs)
1	Srikakulam	27.00	0.675
2	Vizianagaram	0.00	0.00
3	Visakhapatnam	35.00	0.875
4	East Godavari	25.00	0.625

Source: www. http://forest.ap.nic.in

3.3.4.2 Mangroves

River Godavari, the second longest river in India with its vast expanse of estuarine delta formed between the major tributaries of Gautami and Vasishta makes the bed for a variety of mangrove species. Considering the ecological significance and biological diversity of Godavari estuarine mangroves of East Godavari district, Coringa Reserved forest, Coringa Reserved forest Extension and Bhairavapalem Reserved forest were delimited as Coringa Wildlife Sanctuary in the year 1978. Coringa has a unique geomorphological setting that protects it from heavy sea surges and maintains a healthy and species rich ecosystem by freshwater flushes through intricate channels from upstream. Towards the north it is surrounded by the Kakinada Bay which has a long narrow sand spit that extends to about 16 km on the eastern side separating the bay from the open sea.

Gautami-Godavari and their tributaries, namely, Coringa, Gaderu, Matlapalem and Pillarava empty large amount of freshwater into Kakinada Bay throughout the year. In addition, these water bodies are subjected to considerable tidal action especially during non-monsoon period from January till the onset of monsoon during July, giving rise to luxuriant fringe mangroves with rich species diversity.

The sanctuary consists of Coringa Reserved forest, Coringa Reserved forest Extension and Bhairavapalem Reserved forest, located in East Godavari district. The unique features of the 3 reserved forests are as follows:

a) Coringa Reserved Forest: The Coringa Reserved Forest has a distinct zonation of mangrove species. Species like Avicennia alba and Sonneratia apetala exist along the open coast. Avicennia alba is seen as pure stands near Coringa and Matlapalem canal mouths facing Kakinada bay. Lying in the low tidal zone, they trap the sediments and help in land formation. Pure patches of Avicennia officinalis are noted in many areas towards landward side, especially between Matlapalem and Coringa creeks with an average height of about 7-9 m. Excoecaria agallocha is quite widespread throughout the sanctuary occurring either as pure patches or in association with Avicennia marina. Myriostachya wightiana and Fimbristylis ferruginea are found to border the creeks of Coringa river. Towards the landward side in certain areas Excoecaria agallocha, Lumnitzera racemosa and Avicennia marina are found to grow together. In degraded areas Suaeda maritima and S. nudiflora are found as extensive patches along with Excoecaria agallocha and Acanthus ilicifolis. Other than true mangroves, mangrove associates like Acanthus ilicifolis, Dalbergia spinosa, Thespesia populneoides, Hibiscus tiliaceus, Clerodendrum inerme and climbers like Ipomea tuba, Sarcolobus carinatus, Caesalpinia crista and Derris trifoliata are observed along the fringes of Coringa river.

b) Coringa Reserved Forest Extension: Kakinada bay occupies almost half the area of this reserved forest towards the northern side and thick mangrove vegetation of Matlapalem and Gaderu comprises the southern part. Excoecaria agallocha and Avicennia marina are the dominant species. Towards the eastern side of Gaderu river where there is tidal inundation, species like Rhizophora apiculata, Rhizophora mucronata etc. are found along with Avicennia species. Sesuvium portulacastrum, a succulent perennial herb is found abundantly in the sandy clayey soil of Gaderu bay side along with other true mangroves species of Avicennia and Bruguiera. Very distinct pure patches of Avicennia marina, known for its wide range of tolerance to salinity are observed in the seaward channels towards east coast. Salt marshes like Suaeda maritima, Suaeda monoica, Salicornia brachiata and grasses like Myriostachya wightiana, Aeluropus lagopoides, Porteresia coarctata, Fimbristylis ferruginea are also encountered.

c) Bhairavapalem Reserved Forest: Excoecaria agallocha, Avicennia marina, Avicennia officinalis and Aegiceras corniculatum are the common mangrove species found in this reserved forest. Along the creeks where there is constant inundation, species like Rhizophora apiculata, R. mucronata, Bruguiera gymnorrhiza, Bruguiera cylindrica, Ceriops decandra are found to occur abundantly. Other species like Derris trifoliata, Sarcolobus carinatus, Clerodendrum inerme etc. are also observed.

Mangrove Communities of Coringa and Adjoining Reserve Forests

Mangrove Communities	Area in Hectares
• Mixed mangroves – Degraded	1618.73
• Mixed mangroves – Sparse	1610.74
• Mixed mangroves - Moderately Dense	1798.11
• A.marina - E. agallocha - Moderately Dense	6475.15
• A.officinalis - Moderately Dense	3316.72
• E.agallocha - Moderately Dense	1067.7
• A.marina - Moderately Dense	1029.6
• A.alba - Moderately Dense	100.09
Total	**17016.84**

Source: Coastal zones of India by Space Applications Centre, ISRO Ahmedabad

3.3.4.3 Nurseries

The Andhra Pradesh Forest Department is maintaining nurseries all over the state. The details of nurseries in the four districts are provided below:

Andhra Pradesh Forest Department Nursery Stock Abstract

S No	District	Total Stock as on 1-4-2014	No of Seedlings Raised in 2014-15	No of Seedlings Utilized in 2014-15	Total Balance
1	Vishakhapatnam	25.36	17.74	15.25	27.85
2	Viziangaram	14.57	11.5	12.39	13.68
3	Srikakulam	15.89	0.24	13.13	3.01
4	East Godavari	10.16	9.5	4.91	14.75

Source: Andhra Pradesh Forest Department

The details of block and avenue plantations (2011 to 2013) - under social forestry, by Forest Department are provided below:

Block & Avenue Plantation – under Social forestry

District	Block Plantation(hectares)		Avenue Plantation (Km)	
	2011-12	2012-13	2011-12	2012-13
Visakhapatnam	14.60	20.00	85.00	16.00
Vizianagaram	10.00	0	40.00	4.00
Srikakulam	20.00	0	50.00	14.00
East Godavari	0	0	119.00	153.00

Source: Annual Administration Report 2012-13, Andhra Pradesh Forest Department

3.3.4.4 Vana Samrakshana Samities

The state also has a robust system of Vana Samrakshana Samities (VSSs). As of 2011, there were around 7,718 Vana Samrakshana Samities (VSSs) or Joint Forest Protection Committees (JFPCs) in. An area of 15,199.8 Km2 of notified forests, which is 23.8 % of the forest area, is under Community Forest Management (CFM). 15.39 Lakh members are involved in CFM. This includes 4.65 Lakh members belonging to Scheduled Tribes (S.Ts) and 3.23 Lakh members belonging to Scheduled castes (S.Cs).

The forest cover in the VSS areas based on the interpretation of IRS P6 LISS III 2011 data is 9265.13 Km2, which is 3.36% of the Geographical area. In terms of the forest canopy density classes the VSSs managed forests in the State consists of 76.78 Km2 of Very Dense Forest, 3773.06 Km2 of Moderately Dense Forest and 5384.27 Km2 of Open Forest. The area of the Scrub is 3786.43 Km2 , Non-Forest is 2131.07 Km2 and Water Bodies is 48.47 Km2 . Comparison of the forest cover of 2011 with that of 2010 shows a net loss of 30.63 Km2 of forest cover. It is seen that contribution of encroachments in the loss of forest cover in VSS areas is 12.30 Km2[10].

Special features of Joint Forest Management in Andhra Pradesh

- People are given 100% incremental rights over the forest produce, unlike in many other States where the sharing is limited to 25%, with a built in mechanism for recycling 50% of the revenue from timber and bamboo for sustainable management of the forests under their control
- VSS members are given 50% of the net revenue obtained from the Beedi Leaf collected from VSS area
- VSS members are also given a share of 50% in the "Compounding Fees" collected from the forest offenders apprehended by them

[10] Source: State of Forest Report, 2013

- Transparency in VSS operations by channeling the funds through Joint Account system, duly supported by the Managing Committee resolutions, and presenting the quarterly progress reports to the General Body
- 50% compulsory enrolment for women in the general body and > 50% in the Managing Committee
- Involvement of Non-Governmental Organizations in strengthening the Vana Samrakshana Samities through motivation, extension, training and other support activities
- SCs and STs are automatic members of VSS. This is to ensure that the poorer sections of the society are not left out.
- Forest areas under cultivation by the poor tribals are being brought under VSS so that the poor people can get employment during the regeneration phase and subsequently draw income from the usufruct. This will also stop the pernicious habit of shifting cultivation
- Medicinal plants occurring in Forest areas have been identified which the VSS members can harvest and market. Plan for regeneration of important medicinal plants, both insitu and exsitu, are being drawn linking with the market.
- Making requisite funds for implementation available by mobilising resources from Employment Assurance Scheme, Centrally Sponsored Schemes and the World Bank, so that work does not suffer for want of money
- With the initiative taken by Government of Andhra Pradesh, the Government of India has also issued guidelines to all states for earmarking funds for forestry sector under EAS and Jawahar Rojgar Yojana
- Effective inter departmental co-ordination for ensuring development of VSS villages as "Model Villages"

3.3.4.5 Kolleru Lake

Kolleru Lake is one of the largest freshwater lakes in India located in state of Andhra Pradesh 20 kilometers away from the city of Eluru. Kolleru is located between Krishna and Godavari delta. Kolleru spans into two districts - Krishna and West Godavari. The lake serves as a natural flood-balancing reservoir for these two rivers. The lake is fed directly by water from the seasonal Budameru and Tammileru streams, and is connected to the Krishna and Godavari systems by over 68 in-flowing drains and channels. This lake is a major tourist attraction. The lake was declared as a wildlife sanctuary in November 1999 under India's Wildlife Protection Act of 1972, and designated a wetland of international importance in November 2002 under the international Ramsar Convention. The wildlife sanctuary covers an area of 308 km^2.

Kolleru lake is suffering from the unsatisfied greed of people and selfish interests of mankind who exploit the lake's integrity. Thousands of fish tanks were dug up effectively converting the lake into a mere drain. This had great impact in terms of pollution, leading to difficulty in getting drinking water for the local people. This is in addition to the loss of ecological diversity and intrusion of sea water into the land masses and its fallout in terms of adverse influence on the rainfall pattern in this region. This imbalance has an adverse effect on the thousands of acres of

crop in the upper reaches of sanctuary in view of stoppages of water flow into the sea because of obstruction by bunds of the fish tanks that appeared illegally.

Satellite images taken on February 9, 2001 by the Indian remote sensing satellite found that approximately 42% of the 245 km^2 lake area was occupied by aquaculture, while agriculture had encroached another 8.5%. The area under aquaculture consisted of 1050 fish ponds within the lake and 38 dried-up fish ponds, which together covered an area of 103 km^2. The agricultural encroachments were mostly rice/paddy cultivation. Surprisingly no clear water could be found in the satellite image. The rest of the lake is being diminished by water diversions or was infested with weeds like elephant grass and water hyacinth. Rich in flora and fauna, it attracts migratory birds from northern Asia and Eastern Europe between the months of October and March. During this season, the lake is visited by an estimated two million birds. The lake was an important habitat for an estimated 20 million resident and migratory birds, including the Grey or Spot-Billed Pelican (*Pelecanus philippensis*). The resident birds include grey pelicans, Asian open-billed Storks (*Anastomus oscitans*), Painted Storks (*Mycteria leucocephala*), Glossy Ibises, White Ibises, Teals, Pintails and Shovellers. The migratory birds include Red-Crested Pochards, Blackwinged Stilts, Avocets, Common Red Shanks, Wigeons, Gadwalls, Cormorants, Garganeys, Herons and Flamingos.

Kolleru lake contains numerous fertile islets called **lanka's**, many of the small ones are submerged during floods. The origin of unusual depression which forms the bed of the lake is unknown, but it was possibly the results of an earthquake.

3.4 Profile of the Four Hudhud Affected Districts

The proposed project primarily covers four districts of Andhra Pradesh - **Vishakhapatnam, Vizianagaram, Srikakulam and East Godavar**i.

3.4.1 Vishakhapatnam District

Visakhapatnam District lies between 17°15' and 18°32' Northern latitude and 18°54' and 83°30' in Eastern longitude. It is one of the north eastern coastal districts of Andhra Pradesh; bounded on the North partly by Orissa State and partly by Vizianagaram District, on the South by East Godavari District, on the West by Orissa State and on the East by Bay of Bengal.

Geographically, the District can be separated into two distinct divisions; the plain division comprising of the strip of land along the coast & the interiors and the agency division which comprises of the hilly area of the Ghats on the North & West. The coast line is broken by a number of bald head lands, the important of them being the Dolphin's Nose and it has played major role in formation of natural harbor at Visakhapatnam, Rushikonda, Polavaram Rock and the big Narasimha Hill at Bheemunipatnam. The district has 4,64,255 hectares of Reserved Forest, 998 hectares of protected forests and 26424 ha under plantation. The district also has around 24988 ha of wetland area. There are around about 250 hectares of mangroves at Bangarammapalem village in Visakhapatnam district, which has been taken over by the Naval Alternate Operating Base.

Vishakhapatnam District	
Geographic location	Latitude: Between 17°15' and 18°32' (northern latitude) Longitude: 18°54' and 83°30' (eastern longitude)
Geographic area	11,161 km^2
Demographic Indicators	
Total Population	4288113[11]
• Rural Population	2250655
• Urban Population	2037458
Population Density Sq. Km	384 people per sq. km
Literacy rate	82.66
Ports and Harbours	
Major Ports/Harbors	• Vishakhapatnam Port (Has 3 Harbors) • Gangavaram Port

Vishakhapatnam Port: The Vishakhapatnam Port is one of the 13 major ports of India and has three harbors, viz., outer harbour, inner harbour and the fishing harbour. The outer harbour with a water spread of 200 hectares has 6 berths and the inner harbour with a water spread of 100 hectares has 18 berths. It is a natural port endowed with deep water basins formed by a high promontory into the sea, i.e. Dolphin's Nose Hill to the south and Ross Hill to the North of the entrance channel. The port is ISO 14001 certified and has an Environmental Monitoring Committee in place with members representing Citizen Welfare Associations, NGOs, Academic Institutions, Industries/Defense, Trade, Observers from Andhra Pradesh Pollution Control Board(APPCB), Government Organizations and Senior Officers of the Port. The Committee reviews the implementation of long term and short term directives issued by APPCB and also review the environmental activities to be implemented by the Port. The Committee also inspects various operational areas of the Port and advises improvements on the Environmental activities carried out and gives suggestions for additional Environmental pollution mitigation measures as may be necessary based on the requirements from time to time[12]. The port authority has established an Environmental cell to monitor the

[11] Source: 2011 Census

[12] Source: www.vizagport.com

environmental activities of the Port. The measures taken by the Port to mitigate Environmental Pollution include[13]:

- Monitoring of Ambient Air Quality at six locations in and around the Port area by Port and third parties like Andhra University Development Center and APPCB.
- Monitoring of harbour water quality at regular intervals through Andhra University Development Center.
- Monitoring of STP waters before and after treatment at regular intervals.
- Regular monitoring of pollution control measures in and around Port area and residential areas.
- Preparation of Environmental Management Action Plan and Comprehensive Environmental zoning and land use plan for all occupied and unoccupied areas for the next ten years through M/s. MECON, Ranchi.
- Distribution of pamphlets and display of message boards on Environment Management.
- Development of Environmental Parks/ Nurseries and maintenance of Islands in and around Port areas.
- Continuous development of Green Belt in and around Port area.
- Mechanization of Cargo Handling Operations in phases.
- Monitoring effluent of Port based industries before discharging into Port Waters and ensuring that they possess consent of APPCB for their activities.

In addition to the above measures, the Port is (i) modernizing the cargo handling facilities for coal, iron ore, fertilizers etc., (ii) re organizing stack yards (iii) insulating coal stack yards by providing high rise walls along with dust suppression system as long term measure to avoid dust pollution.

Gangavaram Port: The Gangavaram Port is an all-weather, multipurpose port with water depth upto 21 meters (deepest all weather port in India) and capable of handling fully laden Super Cape size vessels of upto 200,000 DWT. The port is located around 15 kms south of Vishakhapatnam Port. The Port provides cargo handling services for a variety of bulk and break bulk cargo groups including Coal, Iron Ore, Fertilizer, Limestone, Bauxite, Raw Sugar, Project Cargo, Alumina, Steel products etc. The port has deployed eco-friendly Berths and Yard Equipment, initiated Clean Truck Program (Specific programs developed to reduce air pollution from port related truck emission by 80 per cent), makes use of low sulphur diesel for diesel powered equipment and provides shore based electricity to ships, so that engines can be shut off to have considerable environmental benefits[14].

Kambalakonda Wildlife Sanctuary: The Kambalakonda Wildlife Sanctuary, located within city limits of Visakhapatnam is a dry evergreen forest mixed with scrub & meadows and covers an area of 70.70 sq. km; it is home to Panthers and

[13] Source: www.vizagport.com

[14] Source: www.gangavaram.com

other wildlife. The terrain is hilly with steep slopes. It is under the control of Andhra Pradesh Forest Department since March 10, 1970. Earlier the land was under the control of Maharajah of Vizianagaram. It was named after the local hillock Kambalakonda. The sanctuary is located between latitudes of 17.34° N to 17.47° N and longitudes of 83.04° E to 83.20° E. The location corresponds to an area west of National Highway 5 (India) on the northern side of Visakhapatnam and Pendurthi in Vizianagaram district. It can be reached by road about 20 km from Visakhapatnam.

The indicator species is the Indian Leopard. There is diverse flora and fauna in this sanctuary representing the Eastern Ghats. The diverse flora includes Tectona grandis, Catunaregam spinosa, Grewia tiliaefolia, and Abrus precatorius. The fauna present in the sanctuary is Russell's Viper (Daboia russelii), Indian Cobra (Naja naja), Chameleon, Asian Paradise-flycatcher (Terpsiphone paradisi), Treepie, quails, partridges, Indian Leopard (Panthera pardus fusca), Indian Muntjac (Muntiacus muntjak), Indian Pangolin (Manis crassicaudata), Chital (Axis axis), and Indian Jackal (Canis aureus indicus).

Zoological Park: The Indira Gandhi Zoological Park, spread over 625 acres is one of the two Zoological Parks of the state and is located within Visakhapatnam city. It is presently one of the largest zoo located in the natural settings of a reserve forest about 4 km. from the Visakhapatnam railway station on the National Highway at Mathurawada. It houses 92 Species and about 851 numbers of animals and birds in around 63 enclosures with open moats in near natural simulated environments. It has been designated as the nodal center by the Central Zoo Authority (CZA) for ex-situ conservation of the Indian Wild Dog and has also seen successful breeding of tigers, hog deer, black buck and other animals. The salient features of the zoological park are provided in table below:

Area	250 Ha (625 acres)	
Captive Animals	Mammals: 29 species	272 numbers
	Birds: 52 Species	488 numbers
	Reptiles: 11 species	91 numbers
Total	92 species	851 numbers
Number of Animal Enclosures	63 Nos.	
Staff	81 Nos.	
Visitors	7.85 lakhs (2012-13)	

The zoo is flanked by hills on either side and the Bay of Bengal on the east and attracts many visitors from all over the country. Indira Gandhi Zoological Park was declared open to the public on the 19th of May, 1977. The park extends over an area of 635 acres, and is the premier visiting spot for Visakhapatnam's citizens

and other tourists visiting the city. The scenic rugged terrain provides a natural setting to animals and birds in their large nature simulated enclosures.

This modern zoological park was established for fulfilling the following objectives.

1. Conservation of critically endangered fauna with special attention on the endemic fauna of the Eastern Ghats
2. To propagate the values of wildlife and its conservation through education and interpretation aimed at a wide public appreciation.
3. Wildlife research for its conservation and management

The Zoological Park has different sections for primates, carnivores, lesser carnivores, small mammals, reptiles, ungulates, and birds. Primates section houses various species of monkeys - the common Langur, Rhesus monkey, Bonnet Monkey and other exotic fauna like Mandrills, Olive Baboons and Sacred Baboons. Carnivores section has Panthers, Tigers, Lions, and lesser carnivores like the Wolves, Jackals, Wild Dogs, Hyenas, etc., The Himalayan Black Bear and the Sloth Bear are housed in large moated enclosures. The Hippopotamus is a special attraction at the zoo. The Crocodile Complex has all the three Indian Crocodile species. The Reptile section has Pythons, Snakes, Land Tortoises, Terrapins, Water Monitor Lizards, Monitor Lizards etc., Herbivores section has Elephant, Bison, Sambar, Spotted Deer and Thamin Deer. A varied collection of birds from the Eastern Ghats in the large walk-through aviaries was a special attraction of the zoo. The Grey Pelicans, Rosy Pelicans, Pied Horn Bills, Painted Storks, Peacocks, Ducks, Love Birds, Budgerigars and Cockateels formed the bird collection of the Zoo.

The health care system of the zoo is monitored by zoo veterinarian assisted by junior veterinary officer, biologist and lab technician. Zoo hospital is equipped with isolation ward, operation theatre, laboratory, post mortem room and incinerator.

The Indira Gandhi Zoological Park was affected severely due to the cyclonic storm Hudhud on October 12, 2014; it not only substantially damaged property/ infrastructure developed in the last four decades, but also the associated vegetation. The park has suffered extensive damage particularly to vegetation, compound wall, bird aviaries designed by Salim Ali, tiger enclosures and other structures like main gate and visitors facilities besides the Animal Rescue Centre. More than 40 percent of trees have been completely uprooted in the park and the remaining 60 percent have also suffered heavy damages. A total of 11 animals died and about 180 birds/reptiles escaped from the damaged enclosures.

Majority of the enclosures (out of total 63) have suffered damages due to roof getting blown by high velocity winds and from fallen trees. Three large bird aviaries have been completely damaged and the White Tiger, Tiger, Blue bull, Barking deer and Python enclosures were badly damaged. The other 57 enclosures were also partially damaged requiring strengthening/repair works.

Permanent structures/properties like Office Buildings of the Curator, Range Officer, Veterinarian, Stand-off barriers, vehicle shed, rescue shed, entrance gate, canteen, zoo workshop, booking counter, sagar gate, zoo hospital, post-mortem

room, incinerator room, in-patient ward, quarantine block, zoo staff quarters, fodder plot and fencing, pump sheds, were either damaged completely or substantially.

Out of about a total of 6700mt/ of peripheral compound wall of the zoo (constructed in early 1970's), a length of about 1000mt. collapsed at 22 places due to the cyclone. A few other stretches of the wall have weakened/partially damaged with the fall of trees. The visitor amenities like shelters, benches, public conveniences, signage and hoardings and six battery operated vehicles were badly damaged. Additionally, electrical utilities, wireless & CCTV Communication, water Pipeline systems, CC Pathways and internal kutcha and BT roads were damaged.

A month after Cyclone Hudhud left it in shambles, the Indira Gandhi Zoological Park (IGZP) finally reopened its doors for the general public on Tuesday, albeit sans some of its star attractions like the white tiger, tiger and the butterfly park, which was completely destroyed by the cyclone.

Leaving aside the huge infrastructural and ecological damage, the zoo incurred a loss of around Rs 25 lakh due to lack of ticket sales as it was forced to remain closed for one month after the cyclone. The reopening day saw a large number of students as well as visitors from other states, including a group of around 30 zoology students and professors from Burdwan Women's College, West Bengal, touring the zoo. Anil Chatterjee, professor of zoology, Burdwan Women's College, who was on his 10th visit to the zoo said he could see the impact Hudhud has had on the zoo. "Every year, I come with my students to Vizag as part of an educational tour. We select Vizag because the biodiversity of the Eastern Ghats are worth studying and Vizag zoo is one of the most beautiful zoos in the country amidst a natural setting. It's really sad to see such signs of destruction everywhere, especially with thousands of trees fallen."

Beach Front: Visakhapatnam city, where the eye of the storm made landfall, has around 50 kms of beach front from Bhimili to the Fishing Harbour. It is famous for its natural harbour, Dolphin's Nose hills and Ramakrishna beach. The cyclone caused damage to the beach front area, when it made landfall at Vishakhapatnam on October 12, 2014. There is need for beach front restoration and nourishment.

The shoreline near Visakhapatnam port has a rocky headland with narrow beaches. At present, the Vishakhapatnam Port authorities are pumping around 4 lakhs cu. mts. of sand into the beach north of Visakhapatnam Port, as measure towards beach nourishment every year. This activity of beach nourishment is being carried out for over the last 3 decades[15]. Further, sand trap has been provided in a gap between western tip of the south breakwater and Dolphin Nose headland.

Large sections along the Visakhapatnam coast have seen significant erosion in the recent past exposing the beach to direct waves and are in urgent need of coastal protection. There has also been significant erosion of beachfront during the recent storm incident in January 2015.

[15] Source: www.vizagport.com

Turtle Nesting Sites: The Vishakhapatnam forest range is an important sporadic nesting ground for Olive Ridley Turtles (which are protected species in Schedule-I of Wildlife Protection Act, 1972 and listed as Vulnerable in IUCN red list). The Visakha society for protection and care of Animals (VSPCA), Vishakhapatnam Foundation jointly with Andhra Pradesh Forest Department has been jointly working towards protection of the sea turtles along the sea coast of Vishakhapatnam to Bheemili.

The year wise nests identified, eggs collected and hatchlings released in to the sea are detailed in table below:

Year	Name of location	No. of Nestings	No. of eggs	No. of hatchlings released	Protection method
2010-11	Yoga village	54	5832	4886	Ex-Situ
2011-12	Yoga Village	73	9888	5460	Ex-Situ
	Jodugullapalem	62	7526	4534	Ex-Situ
	Rushikonda	29	3319	1656	Ex-Situ
	Bheemili	23	2429	2072	Ex-Situ
Total		**187**	**23162**	**13722**	**-**
2012-13	Jodugullapalem	133	16744	10214	Ex-Situ
	Yoga Village	201	24359	14858	Ex-Situ
Total		334	41103	25072	-
2013-14	Jodugullapalem	178	21098	19291	Ex-Situ
	Yoga Village	140	15980	13921	Ex-Situ
Total		**318**	**37078**	**33212**	**-**

Source: Divisional Forest Officer, Vishakhapatnam

However, there are major challenges in the form of increased tourist footfalls, beach activities, pollution and predators, towards protecting the nesting grounds, as well as sea turtles eggs & hatchlings.

Urban Parks and Services: The city of Visakhapatnam has seen extensive damage in the October 2014 Hudhud Cyclone including uprooted trees, disrupted services such as street lighting as well as extensive damage to the physical streetscapes along the waterfront areas. Several parks and public spaces have also been damaged. Most prominently, a large portion of the embankment walls supporting the coastal road were severely damaged and has resulted in poor and dangerous access to the public beaches. The waterfront road is a key thoroughfare

and access route for the city and there could be susceptible locations (e.g. those that pass along hills and connecting key urban locations) that could be severely affected by storms and landslides which could lead to severe bottlenecks during future disasters.

In the aftermath of cyclone Hudhud, there is a need not only to focus on the creation of resilient infrastructure but also better planning in its creation and maintenance. This includes preparing and implementing a comprehensive integrated urban plan for the coast-front area to improve overall functionality and aesthetics. The infrastructure to be created and improved needs to be integrated with mitigation techniques so that the vulnerabilities in future similar disasters are considerably reduced.

One such urban park is the Kailashgiri located on a hill top. The Kailagiri Passenger Rope Way gives a perfect glimpse of entire Visakhapatnam city. The Park features include the following, of which several were damaged or affected by the cyclone:

- Shiva Parvathi Statue
- Shanku Chakra Naama
- Titanic View Point
- Jungle Trails
- Seven Wonders of Vizag
- Shiva Temple
- Shanti Ashram
- Floral Clock
- Landscape Gardens / View Points
- Road Train
- Gliding Base Point
- Children Play Park
- Art Gallery
- Conference Hall
- Telescopic Point
- Food Court

Demography, including Tribal/ST Population: As per census 2011, the total population of Visakhapatnam district is 4,290,589 out of which the ST population is 618,500. The percentage of ST population is 14.42 % to the total population. Male population comprises of 3,02,905 individuals and females are 3,15,595. The sex ratio of ST population is 1042 females for 1000 males. Total literacy rate of STs in the district is 44.9%. Male and female literacy is 55.6 and 34.7 respectively. As per the census 2011, population of tribal workers according to activity in Visakhapatnam district is as follows: cultivators 178376, agriculture labours 53396 and manufacturing 3676. Total main workers (ST) are 250838 and

marginal workers total to 57007. Annexure 1 (Volume 2) presents the population of various division and sub-divisions of tribal communities in the district.

3.4.2 Vizianagaram District

Vizianagaram District lies between 18°07'N latitude and 83°25'E longitude. The District is bounded by Srikakulam District on the East, by Visakhapatnam District on the West and South, by the Bay of Bengal on the South East and by Orissa State in the North West. The district has a coastal belt of around 28 km, as well as 6 principle rivers flowing through it (Nagavali, Vegavathi, Gomukhi, Suvarnamukhi, Champavathi and Gostani). The Nagavali is the main river, which flows in about 112 Km within the district covering an area of 2,832 Hectares. The district has 114104.43 hectares of Reserved Forest, 6088.88 ha under plantation and 303 ha of shelter belts. The district also has around 23674 ha of wetland area. The district has an eco-tourism park at Thatipudi, which is run by the Van Samrakshan Samiti (VSS) of Nakkalavalasa, Rallagaruvu, Panasalapadu, Addatheega and Diguvakondaparti villages.

Vizianagaram District	
Geographic location	Latitude: 18°07'N Longitude: 83°25'E
Geographic area	29.27 Km^2
Demographic Indicators	
Total Population	2342868[16]
• Rural Population	1852446
• Urban Population	490422
Population Density Sq. Km	358 people per sq. km
Literacy rate	81.85%
Ports and Harbours	
Major Ports/Harbors	NIL

Demography, including Tribal/ST Population: As per census 2011, the total population of Vizianagaram district is 2,344,474 out of which the ST population comprises of 235,556 individuals. The percentage of ST population is 10.05% to the total population. Male population comprises of 1,14,687 people and females are 1,20,869. The sex ratio of ST population is 1054 females for 1000 males. Total literacy rate of STs in the district is 46.6%. Male and female literacy is 55.2 and 38.4 respectively. As per the census 2011, population of tribal workers

[16] Source: 2011 Census

according to activity in Vizianagaram district is as follows: cultivators 31302, agriculture labour 51291 and manufacturing 3046. Total main workers (ST) are 96317 and marginal workers are 27682. Annexure 1 (Volume 2) presents the population of various division and sub-divisions of tribal communities in the district.

3.4.3 Srikakulam District

The Srikakulam district is situated in north eastern part of Andhra Pradesh, lying between 18o20'-19o10' N latitude and 83o50'-84o50' E longitude. The district shares borders with Odisha state in the north, Vijayanagaram district in the west & south and the Bay of Bengal lies on the eastern side. The District can be geographically divided into two regions viz., the Hilly Region called Agency Area (which is mostly inhabited by Tribal Population) and the Plain Area. The District has a shoreline of 54 kms. The predominant geomorphic feature of the district is floodplain on both sides of rivers where the agriculture activity is prominent. Another striking feature is red-sand beds stabilized mainly by the cashew plantations. Beaches are very narrow with dunes ranging from 3-5 m.

The Nagavali, Vamsadhara, Suvarnamukhi, Vegavathi, Mahendratanaya, Gomukhi, Champavathi, Bahuda and Kumbikota Gedda are the important rivers of the District. The district has 70747.18 hectares of Reserved Forest, 26689.55 ha scrub forests, 8627ha under plantation and 6538 ha of shelter belts.

Srikakulam District	
Geographic location	18°5'-19°12' N latitude 83°32'-84°47' E longitude
Geographic area	5837 Km^2
Demographic Indicators	
Total Population	2699471
• Rural Population	2263124
• Urban Population	436347
Population Density Sq. Km	462 people per sq. km
Literacy rate	62.3%
Ports and Harbours	
Major Ports/Harbors	Bhavanapadu Port (Greenfield Port, status – Fishing Harbor constructed, no commercial harbour/activity yet)

The district also has around 34849 ha of wetland area. Mangroves are found along the coast in Srikakulam district at Nuvvalarevu and Bhavanapadu - both of these fall within Coastal High Vulnerability Zone (as defined by INCOIS). These patches fall under the jurisdiction of Revenue Department. There are two 'Important Bird Areas', namely Telikunchi and Telineelapuram, located in Srikakulam district. Telikunchi is the largest heronry in India with about 10,000 Asian Open bills nesting. Telineelapuram has Pelicans and Painted storks with the Kakrapally Creek playing an important role. The Bhavanadu Port is a Greenfield port, located around 80 nautical miles from Vishakhapatnam. At present, only fishing harbor has been constructed. It is close to the ecologically fragile Naupada swamp which houses migratory birds and several villages are located in the vicinity of the green field location. The inhabitants depend on the local salt fields and the fishing harbour.

Demograhy, including Tribal/ST Population: As per census 2011, the total population of Srikakulam district is 2,703,114 out of which the ST population comprises of 166,118. The percentage of ST population is 6.5% to the total population. Male population comprises of 81,382 and females are 84,736. The sex ratio of ST population is 1041 females for 1000 males. Total literacy rate of STs in the district is 53.4%. Male and female literacy is 63.5 and 43.7 respectively. As per census 2011, population of tribal workers according to activity in Srikakulam district is as follows: cultivators 14775, agriculture labour 32804 and manufacturing 1005. Total main workers (ST) are 55207 and marginal workers are 24309. Annexure 1 (Volume 2) presents the population of various division and sub-divisions of tribal communities in the district.

3.4.4 East Godavari District

The East Godavari district was formed in 1925 and is closely associated with the river Godavari. The district lies on the North - East Coast of Andhra Pradesh and bounded on the North by Visakhapatnam District and the State of Orissa, on the East and by the Bay of Bengal the South and on the West by Khammam and West Godavari Districts.

In terms of forest area, the Kakinada Forest Division (of the State Forest Department) covers the entire district of East Godavari. The Division can be broadly classified into 3 natural regions namely the Delta, upland and Agency or hill tracts. The general elevation of the district varies from a few meters near the sea-coast to about 300 M above MSL in the hills of the agency. The notified forest area of the Division is 3235.39 sq.km which is 32.71% of the geographical area. Reserved and Protected Forests constitute 2701.31 sq.km (83.3%) and 531.13 sq.km (22.7%) of the forest area respectively. The forest types found in the Division are Tropical Moist Mixed Deciduous Forests and Tropical Dry Deciduous Scrub Forests.

The Division has Coringa Wild Life Sanctuary- the largest surviving patch of Mangrove forests in the State with more than 65 Mangrove tree species and a home for the rare and endangered Smooth Indian Otter, Fishing Cat and Estuarine Crocodile; and a part of Papikonda Wild Life Sanctuary in its fold. Out of the 3235.39 Km2 of forest area, the Coringa WLS occupies an area of 235.7 sq.km and Papikonda Wild Life Sanctuary 591 sq.km. There are 529 Vana Samrakshana

Samities (VSSs) in the Division with an area of 1148.05 sq.km of forests, which is 35.4% of the forest area.

There are two major ports in the district, located in Kakinada; the Kakinada Anchorage Port and Kakinada Deep Water Port and Kakinada Fishing Harbor. While the Kakindada anchorage port is an all-weather Lighterage Port (developed in a naturally sheltered bay called as Godavari Sand Spit) and is almost hundred years old, the Government of Andhra Pradesh developed a Deep Water Port at the cost of 300 Crores. This deep water port was built with the ADB loan assistance and named Kakinada Sea Ports Limited. It is a Special Purpose Company set up in 1999 as a part of its privatization initiatives by the government.

The Kakinada Deep water port is all weather, deep water port, having channel depth of 12 meters and is an ISO and ISPS certified port. In addition, there is a minor port called Kakinada SEZ port located 15 km North of Kakinada deep water port and is proposed to handle refinery products and cryogenic LPG. The land required for the Kakinada SEZ port is already acquired and technical studies are being conducted prior to construction.

East Godavari District	
Geographic location	16o 30" to 18o 20" North Latitude 81o 30" to 82o 36" East Longitude
Geographic area	10,807 Km^2
Demographic Indicators	
Total Population	5151549
• Rural Population	3836952
• Urban Population	1314597
Population Density Sq. Km	477 people per sq. km
Literacy rate	71.35%
Ports and Harbours	
Major Ports/Harbours	• Kakinada Anchorage Port • Kakinada Deep Water Port
Minor Port	• Kakinada SEZ Port (Captive Port)

Demography, including Tribal/ST Population: As per census 2011, the total population of East Godavari district is 5,154,296 out of which the ST population comprises of 213,195 individuals. The percentage of ST population is 4.14% to the total population. Male population comprises of 1,04,422 individuals and females are 1,08,773. The sex ratio of ST population is 1042 females for 1000

males. Total literacy rate of STs in the district is 54.2%. Male and female literacy is 59.8 and 48.7 respectively. Annexure 1 (Volume 2) presents the population of various division and sub-divisions of tribal communities in the district.

Chapter 4 : Policy and Regulatory Framework

The implementation of the activities proposed under the AP DRP must be consistent with all applicable laws, regulations, and notifications. It is the responsibility of the SDMA and the concerned Implementing Agency to ensure that project activities are consistent with the national/state/municipal/local regulatory and legal framework. Additionally, it is also to be ensured that activities are consistent with World Bank policies and guidelines.

This chapter deals with the laws, regulations of Government of India and policies of the World Bank. Only the key laws, regulations and policies relevant and applicable to the project have been covered here. It doesn't present a legal opinion on the applicability of the law but serves as guidance for the application of the legal and regulatory provisions to the current project context. This chapter needs to be updated as when new laws, regulations and policies are made and enforced or the existing ones are revised.

4.1 Environment - National Policy and Regulatory Framework

This sub-section deals with various policies, acts, rules and regulations promulgated by the central and state governments related to environment and relevant to present project. The scope of key relevant environment regulations and their relevance, benefitting from the experience of on-going NCRMP I in the state, is presented in the table below for the users of this ESMF:

4.1.1. Key Environment Regulations and their Applicability

S.No	Act	Scope of the Act	Relevance
1	The Environment (Protection) Act, No. 29 of 1986	Under this Act, the central government is empowered to take measures necessary to protect and improve the quality of the environment by setting standards for emissions and discharges; regulating the location of industries; management of hazardous wastes, and protection of public health and welfare. This encompasses all legislations providing for the protection of environment in the country. It includes the power to direct the closure, prohibition or regulation of any industry, operation or process by the government.	**Relevant.** The proposed project intervention involves construction activities that will have indirect or direct impact on the overall quality of the environment. Though the stipulations laid under this umbrella act will govern most activities of the proposed project, Environment Clearance will not be required for most of the proposed project interventions.

S.No	Act	Scope of the Act	Relevance
2	Water and Air (Prevention and Control of Pollution) Act, 1974 & 1981 (Central Act 6 of 1974) and amendments thereafter	This Act prohibits the discharge of pollutants into water bodies beyond a given standard and lays down penalties for noncompliance. Water act includes the maintenance or restoring the wholesomeness of the water. Air act restricts the operation of any industrial plant in an air pollution control area without a valid consent.	**Relevant.** The construction activities involved to attain the project objective may create localised deterioration in air and water quality, if executed without proper diligence.
3	Forest (Conservation) Act No. 69 of 1980 and amended in 1988	This Act restricts the powers of the state in respect of de-reservation of forests and use of forestland for non-forest purposes. All diversions of forestlands to any non- forest purpose, even if the area is privately owned, require approval of the central government. Leases of forest land to any organization or individual requires approval of the central government. Proposals for diversion of forest land for construction of dwelling houses are not to be entertained.	**Relevant.** To be ascertained for each sub-project during screening/ preparation process By and large project interventions will not be located in notified or protected forest area/s and therefore will not require diversion of forest land. Such areas will be avoided as far as possible during the selection of sites and through screening exercise.
4	The Wildlife (Protection) Act I972, Amendment 1991	This Act provides for protection to listed species of Flora and Fauna in the declared network of ecologically important protected areas such as wild life sanctuaries and national parks. The wildlife protection act has allowed the government to establish a number of national Parks and Sanctuaries, over the past 25 years, to protect and conserve the flora and fauna of the state.	**Relevant.** Some project interventions may be located in/near designated or notified protected areas, such as Wildlife Sanctuaries. This will be identified through Screening Exercises.

S.No	Act	Scope of the Act	Relevance
5	Biological Diversity Act 2002 and Biological Diversity Rules 2004	The Biological Diversity Act, which came into force in February 2003, aims to promote conservation, sustainable use and equitable sharing of benefits of India's biodiversity resources. It provides for establishment of a National Biodiversity Authority at national level, State Biodiversity Boards at state level and Biodiversity Management Committees at the level of Panchayats and Municipalities	**Relevant.** To be ascertained for each sub-project during screening/ preparation process. Some sites/activities may be located close to ecologically sensitive areas/nesting areas that are beyond the protected domain.
6	The Ancient Monuments, Archaeological sites and Remains Act, 2010	The Ancient Monuments and Archaeological sites should be protected from any developmental activity. The area within the radial of 100 m and 300m from the Protected Property are designated as Protected area and Controlled Area respectively. No development activity (including building, mining, excavating, blasting etc.,) is permitted in the Protected Area and developmental activities likely to damage the protected property are not permitted in the Controlled Area without prior permission of the Archaeological Survey of India.	**Relevant.** While project activities are not envisaged in such areas, considering the possibility of chance finding of objects of historical importance (given the state's and project areas cultural setting) during implementation of sub-projects, this is being considered relevant.
7	Coastal Regulation Zone (CRZ) Regulations, 1991 (amended upto 2011)	The purpose of CRZ–2011 is to ensure livelihood of fisher communities and other communities living in the coastal areas and conservation and protection of coastal stretches and its unique environment and marine environment.	**Relevant.** Many of sub-projects are situated in CRZ areas and will require obtaining permission before start of construction.

***Note**:* Should there be any changes enacted by the Government of India in the provisions in the various acts or notifications under the Environment Protection

Act, Environment Rules during the course of implementation of the project, then compliance to the amended rules and regulations, as applicable under the revised notification, will become mandatory.

4.1.2 Key Requirements under the Applicable Regulations

The process and the key procedural features for the applicable regulations are summarised below:

Environment (Protection) Act, 1986 & EIA Notification S.O. 1533 dated September 14, 2006 (and amendments thereof)

The Environment (Protection) Act, 1986 was introduced as an umbrella legislation that provides a holistic framework for the protection and improvement to the environment. In terms of responsibilities, the Act and the associated Rules requires environmental clearances to be sought for specific types of new / expansion projects (addressed under Environmental Impact Assessment Notification) and for submission of an environmental statement to the State Pollution Control Board annually.

As per section 3 of EIA Notification S.O. 1533 dated 14th September 2006, the Central Government forms a State Level Environment Impact Assessment Authority (SEIAA). All projects and activities are broadly categorized into two categories as Category A and B. All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification

All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfill the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In the absence of a duly constituted SEIAA or SEAC, a Category 'B' project shall be treated as a Category 'A' project;

Application of the Act

Cyclone Shelters

Cyclone shelters being proposed under the project are less than 20,000 sq.mt. in size. If there is a Cyclone shelter/ building or a construction projects with ≥20,000 sq. m and <150,000 sq. m of built-up area, it will require prior Environmental Clearance as per the EIA notification of 2006.

Components 1 to 4, including activities such as Shore Protection; Beach Development; Road/Culvert/Bridge; Underground Electric Cabling Works; Shelter Belt Plantation

Assuming that the road/culvert/bridge work will be mainly on the rural network / link roads meant to provide access to the cyclone shelters, it will not require a prior environmental clearance. However, if the proposed road passes through or in close proximity to any ecologically sensitive area, it may require prior Environmental Clearance under EIA notification of 2006. For this and other category of investments mentioned above, the "environmental clearance" requirement shall be established on a case to case basis. However, other than the clearance aspect, general the stipulations laid under this umbrella act to protect environment will govern most activities of the proposed project.

Coastal Regulation Zone Notification (CRZ), 2011

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:

Classification of the CRZ – For the purpose of conserving and protecting the coastal areas and marine waters, the CRZ area shall be classified as follows, namely:

(i) CRZ-I

A. The areas that are ecologically sensitive and the geomorphological features which play a role in the maintaining the integrity of the coast,-

a) Mangroves, in case mangrove area is more than 1000 sq. mts, a buffer of 50 meters along the mangroves shall be provided;

b) Corals and coral reefs and associated biodiversity;

c) Sand Dunes;

d) Mudflats which are biologically active;

e) National parks, marine parks, sanctuaries, reserve forests, wildlife habitats and other protected areas under the provisions of Wild Life (Protection) Act, 1972 (53 of 1972), the Forest (Conservation) Act, 1980 (69 of 1980) or Environment (Protection) Act, 1986 (29 of 1986); including Biosphere Reserves;

f) Salt Marshes;

g) Turtle nesting grounds;

h) Horse shoe crabs habitats;

i) Sea grass beds;

j) Nesting grounds of birds;

k) Areas or structures of archaeological importance and heritage sites.

B. The area between Low Tide Line and High Tide Line.

(ii) CRZ-II

The areas that have been developed up to or close to the shoreline.

Explanation - For the purposes of the expression "developed area" is referred to as that area within the existing municipal limits or in other existing legally designated urban areas which are substantially built-up and has been provided with drainage and approach roads and other infrastructural facilities, such as water supply and sewerage mains.

(iii) CRZ-III

Areas that are relatively undisturbed and those do not belong to either CRZ-I or II which include coastal zone in the rural areas (developed and undeveloped) and also areas within municipal limits or in other legally designated urban areas, which are not substantially built up.

(iv) CRZ-IV

A. The water area from the Low Tide Line to twelve nautical miles on seaward side;

B. Shall include the water area of the tidal influenced water body from the mouth of the water body at the sea upto the influence of tide which is measured as five parts per thousand during the driest season of the year.

(v) Areas requiring special consideration for the purpose of protecting the critical coastal environment and difficulties faced by local communities

A. (i) CRZ area falling within municipal limits of Greater Mumbai;

(ii) the CRZ areas of Kerala including the backwaters and backwater islands;

B. Critically Vulnerable Coastal Areas (CVCA) such as Sunderbans region of West Bengal and other ecologically sensitive areas identified as under Environment (Protection) Act, 1986 and managed with the involvement of coastal communities including fisher folk.

The development or construction activities in different categories of CRZ area shall be regulated by the concerned authorities at the State/Union Territory level, in accordance with norms stipulated in the CRZ regulation and in the state / UT coastal zone management plan.

Application of the Act

Components 1 to 4, including activities such as Shore Protection; Beach Development; Road/Culvert/Bridge; Underground Electric Cabling; Cyclone Shelter

- No new construction is permitted in CRZ-I. Exceptional activities will be followed as per S.O.19(E), [06/01/2011]-Coastal Regulation Zone Notification, 2011)

- In CRZ-II areas, new buildings are permitted only on the landward side of the existing (or approved) road or authorized structures. Exceptional activities will be followed as per the S.O.19(E), [06/01/2011] - Coastal Regulation Zone Notification, 2011)
- In CRZ-III areas: The area from 0-200 mt from the HTL is the 'No Development Zone'. The proposed sub-projects under the NCRMP are permissible in this zone subject to approvals from the Coastal Zone Management Authority or the Central Government, as the case may be. (As per S.O.19(E), [06/01/2011] - Coastal Regulation Zone Notification, 2011).

Forest (Conservation) Act, 1980

Forest (Conservation) Act, 1980 pertains to the cases of diversion of forest area and felling of roadside plantation. Depending on the size of the tract to be cleared, clearances are applied for at the following levels of government:

- If the area of forests to be cleared or diverted exceeds 20 Ha (or, 10 Ha in hilly area) then prior permission of Central Government is required;
- If the area of forest to be cleared or diverted is between 5 to 20 Ha, the Regional Office of Chief Conservator of Forests is empowered to approve;
- If the area of forest to be cleared or diverted is below or equal to 5 HA, the State Government can give permission; and,
- If the area to be clear-felled has a forest density of more than 40%, permission to undertake any work is needed from the Central Government, irrespective of the area to be cleared.

Restrictions and clearance procedure proposed in the Forest (Conservation) Act applies wholly to the natural forest areas, even in case the protected/designated forest area does not have any vegetation cover. Provisions under the Act also require seeking tree felling permissions that may be required for specific sub-projects.

Application of the Act

Components 1 to 4, including activities such as Shore Protection; Beach Development; Road/Culvert/Bridge; Underground Electric Cabling; Cyclone Shelter

If the proposed work under the project requires temporary and or permanent use/diversion of forest resources to non-forest activities, then the implementing agency/line department needs to take the necessary clearances from the Forest Department/MoEF.

Water, Air and Noise (Prevention & Control of Pollution) Acts

Water Act and Air Act provides for the prevention and control of water, air and noise pollution respectively. These Acts empower the State Pollution Control Boards to collect effluent and emission samples, entry to industrial units for inspection, power to prohibit on use of any water bodies for waste disposal and creation of new discharge outlets, provide consent to set-up and operate certain

facilities likely to create air and water pollution including power to give directions and prosecuting offenders.

Application of the Act

Components 1 to 4, including activities such as Shore Protection; Beach Development; Road/Culvert/Bridge; Cyclone Shelter and Underground Electric Cabling Works

The Air and Water Act are particularly applicable to all civil works activities. All construction contractors need to obtain the consent-to-establish and consent-to-operate for plants i.e. concrete batching, stone crushing and other plants that they may be required for the purpose of construction. The NOC certificates need to be obtained from the nearest regional offices of the SPCB. Wherein the existing plants are used, the contractor shall ensure that all applicable consents are obtained for operating the plant.

- Ambient air quality standards should be followed as per the National Ambient Air Quality Standards, Central Pollution Control Board Notification – November 18, 2009.
- Noise pollution level should be followed as per the norms of Noise pollution (Regulation and control) Rules including the Ministry of Environment and Forest Notification dated January 11, 2010.

Ancient Monuments and Archaeological Sites and Remains Rules, 1959

As per the Act, area within a radius of 100m and 300m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (including mining operations and construction) is permitted in the "protected area" and all development activities likely to damage the protected property are not permitted in the "controlled area" without prior permission of the Archaeological Survey of India (ASI). Protected property entails the site/remains/ monuments are protected by ASI or the State Department of Archaeology.

Application of the Act

Shore Protection; Beach Development; Road/Culvert/Bridge; Underground Electric Cabling Works, Cyclone Shelters and Shelter Belt Plantation

Activities in the protected area shall not be undertaken. If activities are to be done in the controlled area of protected properties, then the implementing agency/line department need to take the necessary clearance from ASI.

The Ramsar Convention on Wetlands of International Importance, 1971

The Ramsar Convention is an international treaty for the conservation and sustainable utilization of wetlands i.e. 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.

Application of the Act

According to the Ramsar list of Wetlands of International Importance, there are 26 designated wetlands in the country which are required to be protected. Of these, only one site, Kolleru Lake (spans over two districts – Krishna and West Godavari) is located in the state pf Andhra Pradesh. No proposed activities under the project are envisaged to be carried out in the proximity of this wetland. However, in the event that an intervention is planned/required in its vicinity towards achieving the objectives set for this operation, guidelines of the convention need to be followed.

IUCN Technical Guidelines on the Management of Ex-situ Populations for Conservation + Policy, Guidelines and Strategy – 2014 for Zoos in India issued by Central Zoo Authority (CZA), MoEFCC, Govt. of India

Ex-situ conservation is defined as per IUCN, as "the conservation of components of biological diversity outside their natural habitats". Ex-situ collections include whole plant or animal collections, zoological parks and botanical gardens, wildlife research facilities, and germplasm collections of wild and domesticated taxa (zygotes, gametes and somatic tissue). Some of the key principles laid under the IUCN guidelines include:

1. Increasing public and political awareness and understanding of important conservation issues and the significance of extinction;
2. Coordinated genetic and demographic population management of threatened Taxa;
3. Institutional strengthening and professional capacity building;
4. Appropriate benefit sharing;
5. Fundraising to support all of the above.

The key requirements under the CZA guidelines, which are specific and quite comprehensive, include the following:

a) All ex situ populations must be managed so as to reduce risk of loss through natural catastrophe, disease or natural/man-made disasters. Safeguards include effective quarantine procedures, disease and pathogen monitoring.

b) Consideration to be given to institutional viability and capacity before embarking on a long term ex situ project.

c) While some ex situ populations may have been established prior to the formulation of the guidelines, all ex-situ and in-situ populations should be managed in an integrated, multidisciplinary manner, and in accordance with the principles and provisions of CZA norms.

d) Extreme/Emergency situations, where taxa/populations (both within the zoo and in the wild) are in imminent risk of extinction, must be dealt with on priority basis. This action must be implemented with the full consent and support of the State.

e) The management of ex situ populations must minimize any damaging effects of ex situ management, such as loss of genetic diversity, artificial selection, pathogen transfer and hybridization, in the interest of maintaining the genetic integrity and viability of the population.

The zoo, through ex situ conservation should aim to increase public awareness, concern and support for biodiversity, and to support the implementation of conservation management, through education, fundraising and professional capacity building programmes

Application of the Guidelines

Reconstruction of Zoological Park, including planning and design of new facilities therein

4.1.3 Other Statutory Clearance/s Required

The project needs to comply with the various existing statutory requirements and it is envisaged that certain permission/s and clearance/s will be obtained from the competent authority/authorities as part of sub-project preparation and/or execution. This will depend mainly on the area, type, size and scope of the sub-project. The broad requirements envisaged at this point of time are summarized below:

List of Statutory Clearance Requirement

S.No.	Clearance/ Authorization	Relevant Act	Competent Authority	Responsibility
1	Tree Cutting Permission	Forest Conservation Act, 1980	State Forest Department	SPMU/Line Department
2	Plants such as Crushers and/or Batching Plants	Air (Prevention and Control of Pollution) Act, 1981 and Noise Pollution (Regulation and Control) Rules, 2000	State Pollution Control Board	Concerned Contractor
3	Storage, handling and transport of hazardous material/s	Hazardous Waste (Management and Handling) Rules, 1989 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor
4	Location/ layout of workers camp, equipment and storage yards	Environment Protection Act, 1986 and Manufacturing, Storage and Import of Hazardous Chemicals Rules, 1989	State Pollution Control Board	Concerned Contractor

S.No.	Clearance/ Authorization	Relevant Act	Competent Authority	Responsibility
5	Discharges from Labour Camp	Water (Prevention and Control of Pollution) Act, 1974	State Pollution Control Board	Concerned Contractor
6	Permission for sand mining from river bed	Environment Protection Act, 1986	State Mines and Geology Department	Concerned Contractor

Environmental, health and safety issues during construction stage generally involve equity, safety and public health issues. The construction agencies require complying with laws of the land, which include inter alia, the following:

Payment of Wages Act, 1936: It lays down as to by what date the wages are to be paid, when it will' be paid and what deductions can be made from the wages of the workers;

Equal Remuneration Act, 1979: The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees;

Child Labour (Prohibition and Regulation) Act, 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labour is prohibited in Building and Construction Industry;

Minimum Wages Act, 1948: The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act;

The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996: All the establishments who carry on any building or other construction work and employs 10 or more workers are covered under this Act; the employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for Workers near the workplace, etc.;

Workmen's Compensation Act 1923: The Act provides for compensation in case of injury by accident arising out of and during the course of employment;

Contract Labour (Regulation and Abolition) Act, 1970: The Act provides for certain welfare measures to be provided by the contractor to contract labour;

Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979: The inter-state migrant workers, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, travelling expenses from home to the establishment and back, etc.;

The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 and Rules, 1996

Hazardous Wastes (Management and Handling) Rules, 1989: Occupiers generating hazardous wastes given in the list shall take all practical steps to ensure that such wastes are properly handled, i.e. collection, reception, treatment, storage, and disposed of without any adverse effects to human health and environment (Rule 4 Such occupier shall apply for authorization in prescribed format to the State Pollution Control Board).

4.2 Social - National Policy and Regulatory Framework

This section deals with the regulation promulgated by the central government related to land acquisition and resettlement aspects and is relevant to the proposed project.

The Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement Act 2013

The RFCTLARR, 2013 is an umbrella Act, which has been enacted to address the aspects on both land acquisition and resettlement and rehabilitation of the project affected population. This Act supersede all the previous act of Land Acquisition (LA) of 1894 amended in 1985 and National Rehabilitation and Resettlement Policy, 2007 and is applicable to the whole of India except the state of Jammu and Kashmir. The key provisions of this Act relating to land acquisition, compensation, rehabilitation and resettlement, briefed below:

- Government acquires land for its own use, hold and control, including land for Public sector undertakings.
- Government acquires land with the ultimate purpose to transfer it for the use of private companies for stated public purpose
- Government acquires land for Public Private Partnership Projects.
- Schedule I outlines the proposed minimum compensation based on a multiple of market value.
- Schedule II through VI outlines the resettlement and rehabilitation entitlements to land owners and livelihood losers, which shall be in addition to the minimum compensation per Schedule I.

Below elaborates some important provisions:

- Section 16 of the Act briefs on the preparation of RAP, publication and public hearing of RAP. Upon the publication of the preliminary notification by the collector, the Administrator for Rehabilitation and Resettlement shall conduct a survey and undertake a census of the affected families.
- A draft Rehabilitation and Resettlement Scheme shall be prepared by the Administrator which shall include particulars of the R&R entitlements of PAPs. The draft shall include time limit for implementing the Scheme. The Scheme shall be discussed in the concerned Gram Sabha or Municipalities.
- A public hearing shall be conducted after adequate publicity about the date,

time and venue in the affected area. Following the public hearing, the Administrator shall submit the draft Scheme along with a specific report on the claims and objections raised in the public hearing to the Collector.

- As per Section 25, the Collector shall make an award within a period of twelve months from the date of publication of the declaration and if no award is made within that period the entire proceedings for the acquisition of the land shall lapse, provided that the appropriate Government shall have the power to extend the period in circumstances justifying the same and any such decision to extend the period shall be recorded in writing and be notified and uploaded on the website of the authority concerned.
- Section 25, 29 and 30 of the Act briefs on the methodology of determining the market value of the land and other properties.
- After determining the total compensation to be paid, a "Solatium" as prescribed in the Act shall be added to the compensation.

The new Act emphasizes elaborate social assessment and resettlement planning even prior to issuance of the preliminary notification and proposes to provide a range of R&R benefits along with the compensation package. Some of the highlights are as follows:

- Offers compensations up to 4 times the market value in rural areas and 2 times the market value in urban areas.
- The Act applies retrospectively to cases where land acquisition award has not been made.
- LA in Scheduled Areas will require consent of the local general assembly (Gram Sabhas).
- No displacement or dispossession until full payment of compensation and RR benefits are made and alternative sites for the resettlement and rehabilitation have been prepared.
- Bill requires the consent of no less than 70 per cent and 80 per cent respectively (in both cases) of those whose land is sought to be acquired in case of PPP or private projects.
- To safeguard food security and to prevent arbitrary acquisition, the Bill directs States to impose limits on the area under agricultural cultivation that can be acquired.
- In case land remains unutilized after acquisition, the new Bill empowers states to return the land either to the owner or to the State Land Bank.
- No income tax shall be levied and no stamp duty shall be charged on any amount that accrues to an individual as a result of the provisions of the new law.
- Where acquired land is sold to a third party for a higher price than 40 per cent of the appreciated land value (or profit) will be shared with the original owners.
- In every project those losing land and belonging to the SC or ST will be provided land equivalent to land acquired or two and a one-half acres,

whichever is lower (this is higher than in the case of non-SC/ST affected families) -Where the affected families belonging to the SC and the ST are relocated outside of the district then they shall be paid an additional 25% rehabilitation and resettlement benefits to which they are entitled in monetary terms along with a one-time entitlement of 50000 rupees.

Minimum R&R Entitlements under this Act

The following are the minimum R&R entitlements under this Act:

1. Subsistence allowance at Rs. 3000 per month per family for 12 months;
2. The affected families shall be entitled to: (a) Where jobs are created through the project, mandatory employment for one member per affected family or (b) Rupees 5 lakhs per family; or (c) Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation; The option of availing (a) or (b) or (c) shall be that of the affected family
3. If a house is lost in rural areas, a constructed house shall be provided as per the Indira Awas Yojana specifications. If a house is lost in urban areas, a constructed house shall be provided, which will be not less than 50sqmts in plinth area. In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family;
4. One acre of land to each family in the command area, if land is acquired for an irrigation project if possible BUT the same shall be in lieu of Compensation;
5. Rs 50,000 for transportation;
6. A one-time Resettlement Allowance of Rs 50,000;

Special Provisions for SCs and STs

In addition to the R&R package, SC/ST families will be entitled to the following additional benefits:

1. Land to be given to each family in every project even in the case of irrigation projects;
2. One time financial assistance of Rs. 50,000 per family;
3. Families settled outside the district shall be entitled to an additional 25% R&R benefits;
4. Payment of one third of the compensation amount at very outset;
5. Preference in relocation and resettlement in area in same compact block;
6. Free land for community and social gatherings;
7. In case of displacement, a Development Plan is to be prepared.
8. Continuation of reservation and other Schedule V and Schedule VI area benefits from displaced area to resettlement area.

Application of the Act

Components 1 to 4, including activities such as Underground Cabling Works; Roads and Bridges, Cyclone Shelters; Restoration and development of beach front, including urban services.

Gap Analysis between RFCTLAR&R Act 2013 and WB Social Safeguard Policies

India's recently enacted National Act on Right to Fair Compensation and Transparency in Land Acquisition, Resettlement and Rehabilitation Act, 2013 (RFCTLAR&R Act 2013) marks the beginning of a new era in the developmental history of India. The RFCTLAR&R Act, 2013 for the first time included the provisions of rehabilitation and resettlement as integrated components in the legal process of land acquisition for public purposes in a unified legislation. The onus of responsibility for rehabilitation and resettlement of project affected people has been directly shifted to the State. The new Act mostly incorporates or exceeds many of the World Bank's long-standing policy and practice requirements on social safeguards.

Synergies with World Bank's Resettlement Policies and Practice: The new Act has more synergies and largely in consistent with the provisions of the OP 4.12 and 4.10. The critical synergies and provisions in common between the two are presented below.

a) Mandatory ex-ante social assessments to determine whether an acquisition serves a public purpose;

b) Requirements to ascertain the minimum land requirements, assess the impact of the acquisition on livelihoods, shelter, public infrastructure, and community assets;

c) Provisions to minimize adverse impacts, assessment of cost and benefits of acquisition, enhanced land-loss compensation formulas; livelihoods support for affected persons; comprehensive resettlement and rehabilitation benefits and assistance; census of the affected families to record their socio-economic profile and potential losses, and inventory of affected public and community assets, options and choices for affected families and special provisions for disadvantaged groups; and a legal mandate that affected persons must receive compensation and assistance before their property is taken; and;

d) Consultations and disclosure, and post-implementation audits.

Key Differences: At the same time, there are a few notable differences between the Act and the World Bank's policy requirements:

a) Persons who live or depend on rights-of-way or public lands excluded from the Act's benefits and entitlements;

b) A three-year residency requirement for persons losing livelihood, to receive resettlement and rehabilitation benefits. World Bank's Ops is not specific on this but the objective and the principles of OPs broadly supports for

extending the entitlements to these persons if they are notified on the date of the census survey;

c) The valuation of assessing buildings and structures under the act remains based on depreciation method as under previous Act.

d) Provision for Negotiated settlement is not included in the new Act. Negotiated settlement is one of the key provisions in World Banks OPs.

The National Tribal Policy (2006)

The tribal communities/STs traditionally live as isolated entities in about 15% of the country's geographical areas, mainly forests, hills, undulating inaccessible terrain in plateau areas, rich in natural resources. The problems and difficulties being faced by the scheduled tribes and tribal areas in the country are to be addressed by the National Tribal Policy, 2006.

Objectives of the Policy

- **Regulatory Protection**

- Providing an environment conducive to the preservation of traditional and customary systems and regime of rights and concessions enjoyed by different ST communities, and reconciliation of modes of socio-economic development with these.
- Preventing alienation of land owned by STs and restoring possession of wrongfully alienated lands.
- Protection and vesting of rights of STs on forestlands and other forest rights including ownership over minor forest produce (MFP), minerals and water bodies through appropriate legislations and conversion of all forest villages into revenue villages.
- Providing a legislative frame for rehabilitation and resettlement in order to minimize displacement, ensure that affected persons are partners in the growth in the zone of influence, provide for compensation of social and opportunity cost in addition to market value of the land and rights over common property (NPV).
- Empowerment of tribal communities to promote self-governance and self-rule as per the provisions and spirit of the Panchayats (Extension to the Scheduled Areas) Act, 1996.
- Protection of political rights to ensure greater and active participation of tribal peoples in political bodies at all levels.

- **Alienation of Tribal Land**

Alienation of tribal land is the single most important cause of pauperization of tribal peoples, rendering their vulnerable economic situation more precarious. Poor land record system in tribal areas coupled with the illiteracy, poverty and ignorance of tribal peoples and the greed of others have resulted in the continuous transfer of resources from tribals to non-tribals for several decades. Lands lost are usually

the most productive, leaving the tribals to cultivate poor quality land, the total effect of land transfers has been devastating to the fragile tribal economy. Competent legal aid will be made available timely to tribals at all stages of litigation.

Application of the Act

Components 1 to 4, including for activities such as Roads/Bridges and Cyclone Shelter.

Panchayats Extension to the Scheduled Areas Act, 2006 (PESA)

The Provisions of the Panchayats **(Extension to the Scheduled Areas) Act, 2006 (PESA)** came into force on 24th December, 2006 with the objective of safeguarding and preserving the traditions and customs of the people living in the Fifth Schedule areas, their social, religious and cultural identities, and traditional management practices of community resources.

- **Displacement, Rehabilitation and Resettlement**

  The process of legally extinguishing traditional rights of the ST communities over the natural resource base began during the colonial period and continued unabated in independent India because of steady exploitation of natural resources from tribal areas for the purpose of nation building.

  - Displacement is a multi-dimensional trauma, with far reaching impacts, which cannot easily be compensated.
  - The principle of least displacement would be mandatorily followed.
  - An exhaustive **social impact assessment** would be conducted before initiating a development project.
  - Displacement would be after mandatory consultation with the community as provided in the **PESA Act**.
  - The principle of **'land for land'** in the command area or zone of influence would be followed scrupulously.
  - There will be mandatory consultations with **Tribes Advisory Councils** in case of displacement of STs from the Scheduled Areas.
  - STs displaced from Scheduled Areas shall be allotted alternative lands in Scheduled Areas only.
  - Compensation would be computed not merely on the basis of the replacement value of the individual land rights lost, but on the market value of land, the concept of **net present value**, loss of opportunity cost, community rights, and livelihoods.
  - The **PAFs** would have first right to get employment in the project. Training should be organized for the induction of PAFs even before the project is initiated.
  - The implementation of R&R would be upfront to make the process of displacement more humane.

- A ground level monitoring mechanism, involving representatives of the PAFs and post implementation social audit will also be ensured.

Application of the Act

Components 1 to 4, including for activities such as Roads/Bridges and Cyclone Shelter.

4.3 World Bank Policies

The World Bank's environmental and social safeguard policies (ten of them) are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and the environment in the development process. These policies provide guidelines for the identification, preparation, and implementation of programs and projects.

4.3.1 Applicability/Relevance

The table below describes their relevance/applicability in the context of the project along with the justification.

Policy	Key Features	Applicability to this project
OP/BP 4.01 **Environmental Assessment**	Potential environment consequences of projects identified early in project cycle. EAs and mitigation plans required for projects with significant environment impacts or involuntary resettlement. EAs to include analysis of alternative designs and sites, or consideration of "no project option". Public participation and information disclosure before Board approval required.	**Applicable.** Out of the seven proposed components under the project, five components, namely creation of resilient electrical network (Component 1); restoration of connectivity and shelter infrastructure (Component 2); restoration/protection of beach front (Component 3); restoration of environmental services and livelihood support (Component 4) and some capacity building and technical assistance activities for disaster risk management (Component 5), have a bearing on the approach and design of environment management and safeguard aspects of the project. While the project is expected to benefit coastal communities by reducing their vulnerability to cyclone and other hydro-meteorological hazards through restoration/creation of more resilient infrastructure and strengthening of disaster risk management capabilities, the proposed investments are likely to generate some adverse environmental impacts.

Policy	Key Features	Applicability to this project
		Since proposed activities/works would be largely carried out in the coastal realms of the state that is marked by various degrees of vulnerability and sensitive environmental features, there are some issues that need to be managed through appropriate planning and upfront care during the sub-project selection and preparation phase.
OP/BP 4.04 **Natural Habitats**	Prohibits financing of projects/ activities involving "significant conversion of natural habitats unless there are no feasible alternatives". Requires environmental cost benefit analysis. Requires environmental assessment study with appropriate mitigation measures.	**Applicable.** While the proposed project interventions are not likely to cause significant conversion or damage to natural habitats, OP 4.04 has been triggered as some of the sub-projects are likely to be located within/very close a critical natural habitat (owing to the fact that the coast line is dotted with several ecologically sensitive areas, including those defined as 'critical' under the policy). Management measures, particularly diligence in appropriate site selection would also be required for avoiding/minimizing disturbances, particularly during the planning and design stage. The screening exercise to be taken-up for each sub-project will ensure that activities that are likely to cause undesirable impacts are largely not supported by the project. Only interventions that strengthen protection and regeneration of damaged environmental areas and facilities or those that are needed to protect a large number of people (such as shore protection works required due to heavy coastal erosion in certain stretches making a large population vulnerable) would be taken-up following requirements of Bank policies, including those related to consultations with general public/experts and preparation of comprehensive sub-project mitigation /management plan/s.

Policy	Key Features	Applicability to this project
OP/BP 4.36 **Forestry**	Prohibits financing for commercial logging operations or acquisition of equipment for use in primary moist tropical forests.	**Applicable.** OP 4.36 has been triggered for this project as some interventions are envisaged in/around forest areas, including some mangrove plantations that are categorized as Forests by the Govt. of Andhra Pradesh. While no significant conversion/degradation of this natural resource is expected to occur, screening mechanism that has been formulated for the project enables in early identification of such issues. Based on the screening result, site assessment and the availability of alternative sub-project site/s, further decision about inclusion/exclusion of a specific sub-project/s will be made.
OP/BP 4.11 **Physical Cultural Resources**	Purpose is to assist in the preservation of cultural property, such as sites having archaeological, paleontological, historical, religious and unique cultural values. Generally seeks to assist in their preservation and avoid their elimination. Discourages financing of projects that will damage cultural property.	**Applicable.** A few project interventions may be located close to sites, structures, natural/man-made features that have historical, archaeological, religious or other cultural significance. Through screening process, the project's potential impacts on physical cultural resources will be determined and management measures, as required will be taken and integrated into the sub-project cycle. The ESMF provides guidance on dealing with chance finds during sub-project implementation, which remains a possibility.

Policy	Key Features	Applicability to this project
OP 4.09 **Pest Management**	Supports environmentally sound pest management, including integrated pest management, but does not prohibit the use of hazardous pesticides. Pest management is borrower's responsibility in the context of a project's EA.	**Applicable.** OP 4.09 is being triggered for this project as use of biological/ environmental control methods is being envisaged for shelterbelt plantations, landscaping and nursery support interventions. Primary reliance on synthetic chemical pesticides is not being encouraged and if required, shall be governed by requirements set forth under the Bank policy. An IPM plan (basic guidance/elements included in the ESMF) will be prepared and implemented for all such activities.
OP/BP 7.50 **Projects on International Waterways**	Covers riparian waterway that forms a boundary between two or more states, as well as any bay, gulf, strait or channel bordered by two or more states. Applies to irrigation, flood control, dams, water, sewage, navigation and industrial projects. Requires notification and agreement between states, detailed maps, and feasibility surveys.	**Not Applicable.** OP 7.50 will not be triggered for this project as there are no interventions planned/ proposed over or around an international waterway that could cause a potential conflict. There are also no activities that may affect the use or pollute such a waterway.
OP/BP 4.37 **Safety of Dams**	Applies to large dams (15 meters or more in height). Requires review by independent experts throughout the project cycle. Requires preparation of EA and detailed plans for construction and operation, and periodic inspection by the Bank.	**Not Applicable.** Not being triggered for this project as there is no construction of new dams or activities that are concerned with safe functioning of existing dams.

Policy	Key Features	Applicability to this project
OP/BP 7.60 **Projects in Disputed Areas**	Applies to projects where there are territorial disputes present. Allows Bank to proceed if governments agree to go forward without prejudice to claims. Requires early identification of territorial disputes and descriptions in all Bank documentation.	**Not Applicable.** OP 7.60 is not being triggered as the project is not proposed in any disputed area.
OP 4.12 **Involuntary Resettlement**	The policy covers not only physical relocation but any loss of land or other assets resulting in relocation or loss of shelter; loss of assets or access to assets; loss of income sources or means of livelihoods, whether or not the affected people must move to another location. Intended to avoid or minimize involuntary resettlement; improve former living standards, income earning capacity and production levels of affected population. Requires identification of "those who have formal legal rights to the concerned land (including customary and traditional rights recognized under the laws of the country); and public participation in resettlement planning as part of SA.	**Applicable.** Some project interventions such as road works, resilient electrical network, beach front development works likely to trigger issues such as those related to land acquisition, loss of assets and impact on livelihood sources. Identification of any potential impacts and mitigation measures to address likely impacts is proposed. Transfer of Government land under different tenure systems could trigger adverse impacts such as loss of access to natural resources – firewood, fodder, water etc and loss of sources of income/ livelihood/ shelter/ homestead.
OP 4.10 **Indigenous People**	Purpose is to ensure indigenous peoples benefit from Bank financed development and to avoid or mitigate adverse effects on indigenous peoples.	**Applicable.** OP 4.10 has been triggered in view of the presence of scheduled tribe groups living in the project districts,

Policy	Key Features	Applicability to this project
	Applies to projects that might adversely affect indigenous peoples or when they are targeted beneficiaries. Requires participation of indigenous peoples in creation of "indigenous people's development plan".	where some of the activities will be undertaken.

Other important World Bank Policy is the OP 17.50. This policy deals with Disclosure of Operational Information. The Bank's Policy on Disclosure of Information, has been incorporated in the project implementation plan.

4.3.2 Key Requirements under Applicable Policies

1. Environmental Assessment (OP 4.01)

Environmental Assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations early in the project cycle. The policy states that EA and mitigation plans are required for all projects having significant adverse environmental impacts or involuntary resettlement.

EA's should include analysis of alternative designs and sites, or consideration of "no option" requiring public participation and information disclosure before the Bank approves the project. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted and their concerns addressed. The World Bank's environmental assessment policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment.

2. Natural Habitats (OP 4.04)

Natural habitats are land and water areas where (i) the ecosystems' bio-logical communities are formed largely by native plant and animal species, and (ii) human activity has not essentially modified the area's primary ecological functions. The policy implementation ensures that Bank-supported development projects give proper consideration to the conservation of natural habitats, in order to safeguard their unique biodiversity and ensure the sustainability of the environmental services and products which natural habitats provide to human society.

The key objectives are to: (a) Protect, maintain, restore natural habitats and their biodiversity; and (b) Ensure sustainability of services and products which natural habitats provide to human society.**This policy is applicable when a project** (including any sub-project under a sector investment or financial intermediary loan) **with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly** (through construction) **or indirectly** (through human activities induced by the project).

3. Forests (OP 4.36)

This policy establishes minimum standards on the types of forest projects that the Bank will finance. Forests OP 4.36 applies to all types of natural forests, as well as plantation forests. Both OP 4.36 and OP 4.04 apply to all types of projects that would affect forests and natural habitats (respectively), but OP 4.36 has additional requirements for forestry projects.

- All projects must avoid significant damage to critical forests (= forested critical natural Habitats), same as under the Natural Habitats OP 4.04.
- All projects must minimize and mitigate damage to other (non-critical) natural forests, same as OP 4.04.
- Critical forests are forest areas that qualify as critical natural habitats under OP 4.04:
  - Existing and officially proposed protected areas, including areas protected by traditional local communities (e.g., sacred forests).
  - Sites that maintain conditions vital for these protected areas.
  - Sites of known importance for biodiversity conservation (identified on the basis of high endemism, species richness, rarity or vulnerability of component species, etc.).

4 Pest Management (OP 4.09)

This policy promotes the use of biological or environmental control methods and reduces reliance on synthetic pesticides and sets conditions on the acquisition and use of pesticides. Key provisions include: (1) Pest population to be controlled through Integrated Pest Management (IPM); (2)Selection and use of pesticides must have negligible adverse human health effects and must have minimal effect on non-target species and the natural environment; and (3) Pesticides to be manufactured, packaged, labelled, handled, stored, disposed of and applied according to standards prescribed in the policy.

Pest Management is a comprehensive approach to pest control that uses combined means to reduce the status of pests to tolerable approaches levels while maintaining a quality environment.

The following criteria apply to the selection and use of pesticides in Bank-financed projects:

- Acceptable WHO classification (depending also on formulation and use)
- Approved for use for the intended purpose
- Approved for use by country's phyto-sanitary regulations and agency
- Simple use-ready containers that does not require much additional handling, cutting or mixing of chemicals
- Containers that are easily and safely disposable.

5. Physical Cultural Resources (OP 4.11)

The World Bank Policy OP/BP 4.11 defines Physical cultural resources as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above or below ground, or under water. Their cultural interest may be at the local, provincial or national level, or within the international community.

The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements.

The borrower addresses impacts on physical cultural resources in projects proposed for Bank financing, as an integral part of the environmental assessment (EA) process.

6. Involuntary Resettlement (OP 4.12)

The Bank's Operational Policy 4.12 - Involuntary Resettlement is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas.

The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. It promotes participation of displaced people in resettlement planning and implementation, and its key economic objective is to assist displaced persons in their efforts to improve or at least restore their incomes and standards of living after displacement. The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to Bank appraisal of proposed projects.

7. Indigenous Peoples (OP 4.10)

This policy establishes standards and procedures when projects affect indigenous communities. It recognises limited procedural rights of indigenous community to confer or deny support to proposed projects. Key provisions include avoidance of potentially adverse effects on indigenous communities or when such avoidance is not feasible, minimise/mitigate or compensate for such effects and deliver culturally appropriate social and economic benefits to such communities. Free, prior and informed consultation is required under the policy.

Chapter 5: Potential Environmental and Social Impacts

While the Andhra Pradesh Disaster Recovery Project is expected to benefit the coastal communities by reducing the vulnerability from cyclone risks, the implementation of proposed interventions/ activities of the project could lead to some adverse environmental and social impacts. The anticipated impacts arising on account of proposed project interventions are summarised in this chapter.

As a part of the reconstruction and recovery needs, a few sub-project activities have been proposed/identified. Not all activities will be implemented in each participating district. The category, list and location of proposed works is being identified by the line departments/agencies and complete documentation on specific sub-projects will be captured in the Screening Reports.

5.1 Activities Proposed Under the Project

The Andhra Pradesh Disaster Recovery Project has seven components has seven components: i) Resilient electrical network; ii) Restoration of connectivity and shelter infrastructure; iii) Restoration and protection of beach front; iv) Restoration of environmental services facilities and livelihood support; v) Capacity building and Technical assistance for disaster risk management; vi) Project implementation support; and vii) Contingency emergency response.

Out of these, four components, namely, Underground Cabling, Roads and Cyclone Shelters; Restoration of Beach Front and Urban Services; Restoration of Environmental Services/Facilities and Support to Livelihoods are hard components and the remaining three are soft interventions. **Components 1 to 4 are specifically relevant from an environment and social management** since they have a potential to cause both positive and adverse impacts. In addition, Component 5 (capacity building) is also relevant but this is expected to largely bring positive impacts. A brief over-view of key activities envisaged under Components 1 to 4 is presented below:

Component 1: Underground Electric Cabling Works - The objective of this component is to reduce the vulnerability of the city's electrical network by laying the power distribution system underground. Eastern Power Distribution Company of Andhra Pradesh Ltd. (EPDCL) will be the implementing agency for the component. Approximately 700 km of 33kV, 11 kV and 415 volts network lines will be converted to underground cable network staring from consumers meter board and going to 11 and 33 kV feeders, from the beach road and going towards landside.

Component 2: Restoration of connectivity and shelter infrastructure - This component will finance investments to restore, upgrade, and increase resilience towards future disasters of Roads and Cyclone Shelters. Activities under Sub-component 2.1 includes reconstruction, strengthening and widening of about 800km of damaged Rural Roads including cross-drainage structures, following the Indian Roads Congress (IRC), Ministry of Rural Development (MoRD) and Prime Minister's Gram Sadak Yojana (PMGSY) standards. It will also include repair of old cyclone shelters with friendly design features for the elderly, women, and children where possible. *Sub-component 2.2, which involves Restoration of major district*

roads (MDR) will include reconstruction, strengthening and widening (mostly single-lane to double-lane) of about 250 km of damaged MDRs including cross-drainage structures, following the IRC and Ministry of Road Transport and Highways (MoRTH) standards.

Component 3: Restoration and protection of beach front - This component will support priority investments along the beachfront of the city of Visakhapatnam. Shore protection sub-component will finance appropriate solutions for the protection of the shore. This intervention will be planned taking into account the impact it may have on the coastal environment (including any sensitive habitats) and will be based on the findings/outcome of the high level study commissioned by GVMC that includes specialists from multiple disciplines, include coastal/marine engineering. The study has been recently commissioned and any clarity on possibilities and/or options on the nature of such works will emerge only when the draft report is prepared/available.

Under the second sub-component, enhancement of urban public spaces and upgrading the beachfront has been propsed. This will include, creation of pedestrian walkways, street furniture, street lighting, public toilets, parking arrangements and landscaping along the beachfront. The component will also support rehabilitation of key damaged urban infrastructure including drainage and sewage treatment plants, selected historic buildings and landmarks; and coastal city roads. While restoring and developing the beach front, design features that are environmental friendly (on account of natural/ecological features that includes nesting sites of Olive Ridleys) and suited to the needs of women, children, elderly and differently-abled will be given due consideration.

Component 4: Restoration of environmental services facilities and livelihood support - This component will finance the reconstruction of the severely damaged Indira Gandhi Zoological Park (IGZP) at Visakhapatnam and eco-tourism park at Kambalakonda Wildlife Sanctuary, located within the city limits. Apart from the environmental functions (ecological/conservation and environmental education/awareness related), both these areas/facilities witness substantial footfall of visitors/tourists from within and outside the state and serve as vital green/recreational spaces for the city's population. Both parks and facilities therein, have suffered from substantial damage as the eye of the storm crossed over this part of the city.

While the reconstruction needs of these vital public spaces is clear on account on the damages caused by the cyclone and usage of these facilities by a large number of people, an opportunity to redevelop these facilities/areas in tune with international standards and practices (including IUCN's ex-situ conservation guidelines) exists. The support under this sub-component will include creation of necessary public amenities along with a state of the art interpretation centre. The selected implementation approach involves building a partnership with recognized international originations/NGOs to ensure knowledge sharing and promote implementation of best practice.

Support under this component also includes restoration/creation of shelterbelts/ windbreaks; support to farm forestry/plantations through nursery support) for poor/vulnerable coastal families and; regeneration of critical patches of

mangroves along the coast to build disaster resilience and restore/support livelihood opportunities in the affected areas.

Component 5: Capacity building and technical assistance for disaster risk management – Activities under this component will include investments to enhance the capabilities of GoAP entities and other stake holders in managing disaster risks, enhancing preparedness, and achieving resilient recovery.

The component will include activities such as: i) strengthening the state's disaster response systems and mechanisms, as well as the capacity of the APSDMA in performing its core functions by setting up the State Advisory Committee, State Resource Centre for Disaster Management, strengthening the emergency response and communication system of the state agencies such as fire department, the state disaster response force and other immediate key response agencies in responding adequately to disaster situations through better search and rescue equipment, wireless communication, enhanced training, etc.; ii) curriculum development on disaster risk reduction for schools and governmental training institutions; and iii) establishing a Community Based Disaster Risk Management (CBDRM) program that would entail periodic mock drills, awareness programs, etc. to help communities better utilize risk mitigation infrastructure as well as be better to respond to any disaster event.

The Technical assistance for risk reduction and response preparedness will include activities such as:

(i) Preparing a detailed vulnerability analysis of the cities and model various risks for effective mitigation planning and disaster response preparedness in consultation with community representatives andby applying local knowledge;

(ii) Carry out an in-depth assessment of the GoAP's Apathbandhu Insurance scheme (Accident Insurance Scheme for Below Poverty Line families)[17], Agriculture risk insurance, social safety nets and other such risk transfer mechanisms and develop recommendations for establishing an integrated program for risk transfer with emphasis on vulnerable populations: widowed households, vulnerable female – headed households, poor households, SC (Scheduled Cast) and ST (Scheduled Tribe) households, and low – income households;

(iii) Updating of the design guidelines for infrastructure in several key departments by evolving better design standards that factor in the expected peak wind speeds and rainfalls, including material specifications for the infrastructure in coastal region.

To summarise, the four hard components proposed under the project will include the following key sub-projects/activities.

[17] Apathbandhu Scheme was launched to implement accident insurance scheme for the families living under Below Poverty Line in Andhra Pradesh to provide insurance coverage in case of accidental deaths. The Policy year starts on 2nd October of every year and ends by 1st October of subsequent year.

Project Components and Envisaged Activities

S.No.	Component	Sub-Projects/ Activities
1	Underground Electrical Cabling Works	• Underground Network Design • Construction • Operation and Maintenance
2	Roads and Cyclone Shelters	Reconstruction and rehabilitation, including drainage and safety works covering : • Rural Roads • Major District Roads • Bridges and Culverts • Cyclone Shelter Repair
3	Restoration of Beach Front and Urban Services	• Shore Protection Works (will be determined once the on-going Technical Assessments are completed). • Pedestrian Walkways • Street furniture • Street and Beach Lighting • Landscaping along Beachfront • Rehabilitation of Drainage • Rehabilitation of Sewerage Treatment Plants • Rehabilitation of Historic Buildings and Landmarks • Rehabilitation of City Roads
4	Ecological Restoration and Support to Livelihoods	• Reconstruction and redevelopment of the Zoological Park, Visakhapatnam • Reconstruction and redevelopment of the Eco-park at Kambalakonda • Reviving Nurseries for Farm Forestry • Restoration of Shelter Belts along the Coast • Restoration of Mangroves

While, these sub-projects/ activities will bring several benefits the coastal communities and Visakhapatnam city by reducing the vulnerability from cyclone risks, the implementation of proposed sub-projects/ activities could potentially lead to some adverse environmental and social impacts. The anticipated impacts

arising on account of proposed project interventions are mentioned ahead in this chapter.

5.2 Existing Environmental Issues

Coastal environmental issues in the state context are influenced by anthropogenic factors such as population growth, pollution, habitat degradation, multiple resource use conflicts and over exploitation of resources. All of these have contributed to increase in coastal degradation in the last few decades, which have witnessed the growing importance of coastal areas as areas of economic and industrial growth. This has created pressure on coastal resources, adversely affecting flora and fauna in these fragile coastal ecosystems. Major resources under stress are sand, lime, shell, fish and other bio resources.

Activities such as unregulated tourism, port activities, discharge of untreated sewage and pollution from industries into the near-shore waters, infrastructure growth/coastal development, aquaculture, sand mining, overexploitation of fisheries, eutrophication has led to physical destruction of marine coastal habitats and health of these ecosystems. These impacts exacerbate with coastal construction activities such as sea walls, alteration of drainage pattern and rapid urbanisation. Such activities also adversely affect livelihoods of coastal communities and cause hydrological imbalances leading to severe impacts during cyclonic conditions. Additionally, encroachment and reclamation of wetlands, for various activities along with unauthorized occupation is continuing and cumulatively adding to adverse impacts, especially during storm conditions.

The coastal areas are subjected to high tidal variations ranging from 2-4m, with higher variations recorded in the east coast during cyclonic conditions. Recurring cyclones (especially along east coast) causes physical destruction, flooding and saline intrusion. This sea erosion and a surge of sea water cause heavy loss to agricultural production and dislocates large number of agricultural and fishermen population. Vulnerable population affected by cyclones include people below poverty line, the fisherman families, etc.

Grass root level infrastructure at the community and panchayat level such as dispensaries, primary schools, village roads and plantation area, standing kharif crops which constitute the backbone of the rural economy and community support system are equally vulnerable to sometimes irreversible damage. Besides, cyclones contribute to shoreline changes and littoral drift.

5.3 Likely Environmental Impacts due to the Project

In the foregoing context, the AP DRP focuses on reducing the vulnerability of coastal districts through creation of appropriate and more resilient infrastructure in the process of addressing immediate reconstruction needs that came-up post Hudhud. In the process of doing so, the project seeks to ensure that ecological resources are not further stressed due to proposed interventions/activities.

This section identifies the potential environmental impacts of the sub-project activities, considering coastal environmental context as described above, with a view to facilitate early evaluation of such impacts and integrate suitable mitigation measures. The environmental impacts identified are broad in nature and need to

be assessed in detail for each of the sub-project as part of preparatory activities. The impacts identified have also been used for preparing Generic Environmental Management Plans for the sub-projects not requiring detailed environmental assessments.

Considering the nature of the sub-project activities, the positive and negative impacts of the various sub-projects project components have been identified. The negative impacts are further classified as:

(a) sub-project specific impacts; and

(b) generic impacts, especially related to construction activities, applicable to all the sub-projects.

Potential Environmental Impacts – Activity/Sub-project wise

The following table summarizes the potential or likely impacts - both positive and negative envisaged from the execution of proposed project interventions.

Potential Environmental Impacts (Positive as well as Adverse)
Specific to Sub-Project/ Activity

S.No.	Sub-Project/ Activity	Positive Impacts	Adverse Impacts
1	Underground Cable Laying	• Safety during cyclones and floods • Early resumption of power after natural disasters • No overhead hanging cables • Aesthetic streets and lanes	• Risk of accidents during excavation and laying and connecting of cables • Accidental contact with cables during digging by others after completion • Disruption to public from temporary closure of access to properties/facilities/utilities/ • Issues of safety and increased risk of accidents to public and workers when in repairs/ maintenance • Disruption to traffic movement • Impacts on physical environment in the local context from dust/debris etc. • Improper restoration of site/facility after completion of the cabling work
2	Roads, Bridges and Culverts	• Better and improved connectivity • Fuel savings • Time savings • Likely increase in income	• Impacts on natural drainage due to inadequate cross drainage works • Impacts on coastal flora/ fauna due to inadequate drainage provisions • Issues of road safety and increased risk of accidents due to faster movement of vehicles/increased traffic

S.No.	Sub-Project/ Activity	Positive Impacts	Adverse Impacts
		• Aesthetic roads, bridges and culverts	• Some impacts of physical environment (air, water and noise) due to increased traffic
3	Cyclone Shelter Repair	• Safety and security during disasters • Important community landmark in the area • Multipurpose uses • Community cohesion	• Lack of regular maintenance leading to misuse and vandalizing shelters • Lack of adequate water supply, sanitation, and site drainage with adequate connectivity to existing facilities, and maintenance provisions could lead to unwarranted impacts • Unsanitary conditions due to improper use/misuse or facility not in use • Solid waste and littering around the building • Leakage/seepage of septic tank contents into groundwater • Inadequate provision of SWM measures (during cyclone period as well as non-cyclone period) could lead to unhygienic conditions, public health issues, and land pollution • During non-cyclone period, lack of periodic maintenance could lead to misuse of shelters and surrounding areas (such as illegal waste dumping)
4	Shore Protection Works (nature and type of works to be finalized).	• Safety to properties/ structures near Shore • Reduced sea intrusion and erosion	• Impacts of sediment and tidal flows to inappropriate planning and design of embankments • Impacts on coastal flora/fauna due to changes in movement of water • Impacts on the adjoining areas due to inappropriate planning and design of Shore Protection Works • Potential of increased erosion/ sedimentation in the adjoining areas exacerbated on account of inappropriate site selection and design of engineering structures, particularly when hard interventions are chosen for shore protection • Impacts on coastal flora/fauna

S.No.	Sub-Project/ Activity	Positive Impacts	Adverse Impacts
5	Beach Front Restoration (Pedestrian Walkways, Street furniture, Street Beach Lighting and Landscaping along Beachfront	• Safety and security to visitors/ tourists • Recreational and leisure benefits for a large number of Visakhapatnam's citizens • Aesthetic and clean beach front	• Impacts on coastal flora / fauna due to disturbance to the habitat • Impacts of flooding and changes in local drainage pattern • Littering and dumping of solid wastes leading to unhygienic conditions and public health issues • Pollution • Lack of regular maintenance could lead to misuse of facilities
6	Rehabilitation of Drainage and Sewerage Treatment Plants	• Health benefits for visitors/ tourists at the beach • Clean and odour free beach front	• Lack of regular maintenance could lead to sea water pollution • Health impacts on those who come into contact with the effluents • Affects marine flora and fauna • Unpleasant smell at plants and at discharge points/outfalls
7	Rehabilitation of Historic Buildings and Landmarks	• Safer and more resilient structure • Preservation of architectural values and historical heritage • Educational and recreational value for public	• Heritage buildings, even though damaged have to be repaired in a manner that restores their inherent character - if the strengthening and repair is not properly carried out under expert advice/guidance, the historic character and values may get affected.
8	Rehabilitation of City Roads and Services/ Utilities	• Improved driving conditions • Improved drainage • Time savings • Improved and resilient facilities for general public/users • Reduced disruption from future cyclones and flooding	• Issues of road safety • Design/works without consultation may not adequately address concerns of general public • Tree cutting and damage to road side vegetation • Disturbance to aesthetics

S.No.	Sub-Project/ Activity	Positive Impacts	Adverse Impacts
9	Rebuilding the Indira Gandhi Zoological Park and Eco Park at Kambalakonda	• Resilient infrastructure to prevent losses during future disasters • Safety and security for animals • Improved facilities for animals, general public/visitors and staff • Improved design and upkeep from international exposure	• Regular repair works may not prevent losses from future natural disasters • Risk of animals getting disturbed • Tree cutting • Improper planning may lead to insufficient or improper public utilities/amenities
10	Reviving Nurseries for Farm Forestry and restoration of shelterbelts	• Continuous supply of saplings to Farm supporting medium and long term livelihoods • Reduced soil erosion • Livelihood and income opportunities, especially for vulnerable groups.	• Cash yielding varieties may compete with real wind resistant shelterbelt species • Reduced crop/ horticulture diversity; Mono-cropping in horticulture may cause disease and pest problems • Competition for water and nutrient level may increase • Increase in use of chemical fertilizers and pesticides • Risk of fertilizers and pesticides finding their way into soil and surface and groundwater • Soil fertility loss due to withdrawal of excess nutrients from soil
11	Restoration of Mangroves	• Protection during cyclones • Livelihood opportunities to coastal communities • Increase in income	• Inappropriate selection of species

Potential Impacts - Construction Stage

Note: General Construction Impacts envisaged from works are listed here – not all listed impacts here will apply to all proposed components and activities envisaged therein.

Activity	Likely/Potential Impact/s
Site Clearance and Preparation	
(i)	Loss of top soil at critical coastal locations
(ii)	Loss or disturbance to local habitat
(iii)	Impacts on movement of local habitat
(iv)	Impacts on local drainage due to disposal of debris and other waste matter in the local water bodies
Setting up Construction Camps / Other facilities	
(i)	Loss of vegetation and sensitive coastal land for various construction facilities
(ii)	Impacts on coastal ecology due to the increased human activity in the influence area
(iii)	Impacts on local water resources due to increased demand for water and discharge of untreated domestic sewage
(iv)	Deterioration of Ambient air (including dust) and noise levels due to various activities at the construction facilities and increased vehicular movement
(v)	Impacts on local resources such as fire wood, fuel, etc. due to construction workers
(vi)	Soil and water contamination due to spillage of lubricants and other substances from the construction facilities
(vii)	Damage of local access roads due to movement of increased and / or heavy vehicular traffic
(viii)	Conflicts with the local community due to impacts on local resources and activities
(ix)	Impacts on local land use and environment due to quarrying and development of borrow areas for the project

Construction Activities	
(i)	Deterioration of Ambient Air and Noise levels in the project area due to construction activities and associated vehicles
(ii)	Disruption to the movement of local habitat (seasonal migration sites, breeding ground for birds and fish, etc.) due to construction activities
(iii)	Impacts on natural drainage pattern due to temporary diversion or blockage of local water bodies
(iv)	Temporary disruption of movements of traffic and people in the influence area of construction activities
(v)	Impacts on quality of surface water resources due to disposal of debris and other construction waste
(vi)	Safety and Accident risks due to construction activities to the population in the neighbourhood
Occupational Health and Safety Issues	
(i)	Health Impacts on construction personnel due to exposure to increased dust, noise and other construction risks
(ii)	Accident risks to Construction Personnel

However, significant/major impacts owing to sub-project location that could lead to damage/disruption of sensitive environmental processes or features are expected to be screened out as part of the environmental screening process and therefore not listed here.

Conclusion/Remarks

Out of the seven proposed components under the project, components 1 to 5 have a bearing on the approach and design of environment management and safeguard aspects of the project.

While the project is expected to benefit the coastal communities in the state of Andhra Pradesh by reducing their vulnerability to cyclone and other hydro-meteorological hazards, the proposed investments are also have potential to generate some adverse environmental impacts. Given the geographical setting, risks need to be managed through appropriate planning and upfront care during the sub-project selection and preparation phase. Specifically, due diligence during site selection and appropriate engineering/design is required for most sub-projects/activities owing to their location on/along the beach front; close to the shoreline or high tide line influence area; and/or in low lying area/s.

Potential adverse impacts on account of activities/works proposed under Components 1 to 4 of the project may include: (i) direct/indirect environmental

and social impacts resulting from poor site selection and inappropriate engineering/designs (beach restoration and shore protection works are specifically critical); (ii) impact on sediment and wave movement, including the risk of erosion or accretion in surrounding areas (in case of hard shore protection works, which may be piloted based on recommendations from a comprehensive study currently being undertaken by a large team of ocean and coastal engineering experts to address the heavy erosion of the Visakhapatanam city beach); (iii) impact on the drainage pattern of the area, including impact on coastal flora and/or fauna due to changes in tidal water flow; (iii) felling of trees and clearance of vegetation for sub-project construction; (iv) impact on certain/specific endangered species like the Olive Ridley Turtles, including on their nesting areas (from inappropriate design of shore protection work and beach development activities); (v) safety and health concerns for general public, both urban (more vulnerable due to higher densities) and rural from construction activities; (vi) occupational health and safety concerns for workers involved in construction; (vii) inconvenience and temporary disruption to services and access to certain public places and facilities; (viii) impacts due to construction material (sand, water, earth, aggregate) sourcing and transportation and; (ix) concerns arising out of improper disposal of debris and other construction wastes.

On the other hand, there are several opportunities to build better, more resilient and environmentally sensitive/appropriate infrastructure and other facilities, which is being given equal importance in the design of the project. The project interventions will directly benefit more than 13 million residents in the four Hudhud affected districts of Srikakulam, Vizianagaram, Visakhapatnam and East Godavari in addition to the communities in the other five coastal districts of the state. Restoration of roads and cyclone shelters (to restore/improve access to markets, health and education facilities and facilitate evacuation/emergency response during disaster/s); shore protection (critical given the high rates of erosion making several communities/residents/properties vulnerable in the city of Vishakhapatnam); development of beach front and environmental services/areas (used by a large number of local residents and visitors/tourists and linked to livelihoods as well); creation and restoration of shelterbelts (to act as wind breaks and reduce damage in future events); support to farm forestry/ (to help restore losses and augment livelihoods of several families, including farmers, women-headed and socially marginalized families who are economically dependent on income from plantations); building of resilient power distribution system (currently over the ground and prone to high winds, rains, thunderstorms, and storm surges) and; enhancing the capabilities of GoAP and other agencies in managing disaster risks and enhancing preparedness – all directly and indirectly would help in improving services for the affected urban and other coastal communities and in building a more resilient path to economic and environmental recovery.

In view of the potential impacts on the environment, Bank's OP 4.01 on Environmental Assessment, OP 4.04 on Natural Habitats, OP 4.36 on Forests, OP 4.09 on Pest Management and OP 4.11 on Physical Cultural Resources have been triggered, and the project is designated as Category A. On the whole, with proper planning/design and implementation of management measures, any large scale, significant and/or irreversible damage to natural and/or physical environment can be avoided/ minimized and managed. Therefore, an appropriate combination of

avoiding and minimizing negative impacts on one hand and tapping on opportunities to enhance and increase positive impacts on the other, will remain central to environmental management and safeguards for the project.

5.4 Likely Social Impacts due to the Project

The Project aims to reconstruct and strengthen cyclone resilient infrastructure that includes, resilient electrical network; beach front infrastructure; roads and bridges; environmental services improvement; restoration of livelihoods and strengthening disaster risk management capacity, leading to overall improvement of quality of life in the habitations of the project costal area. From the project development objective, it can be seen that this project and the sub-projects would yield positive and beneficial impacts on the target population. However, any and all development interventions will also have some adverse impacts. The significance of these impacts would vary depending on the individual sub-project, its size and location. The size of the sub-projects would normally be small both physically and financially. Due to the likely small size of the sub-projects, adverse impacts, if any, would be minimum, localized and reversible.

Potential Positive Impacts

These potential positive impacts are:

- Reduced sufferings during cyclones and adverse climatic conditions
- Improved public safety and security
- Cyclone resilient infrastructure and connectivity
- Improved access to services
- Productive use of time
- Improvements in income patterns
- Improvements in quality of life
- Improved community participation and sense of ownership

Potential Adverse Social Impacts

The proposed works may not have significant social impacts due to the nature, type and size of the works. However, the following social impacts could possibly arise out of the proposed sub-projects:

Deprivation and Displacement

  - Due to acquisition of private residential or agricultural or commercial land
  - Loss of assets/ infrastructure
  - Loss of Common Property Resources/ Community Assets
  - Loss of Livelihoods
  - Loss of access to houses/ businesses

- Inconvenience and temporary disturbances to Public

- Due to accumulation of excavated earth
- Disturbance to traffic and resulting congestion
- Disruption of utilities such as water, electricity, telephone, cable, etc.

- Safety Hazards
  - To the households in the neighborhood during construction
  - Due to impact of vehicles on land outside RoW
  - Due to risk of accidents

Implementing an R&R policy and entitlement framework along with proper implementation of the Environmental Social Management Framework could mitigate the above mentioned adverse social impacts.

The possible social impacts of the each proposed component are presented below.

Sub-project/ Activity	Possible Adverse Social Impacts
Construction of resilient electrical network	• Inconvenience and temporary access constraints to neighbourhood communities • Inconvenience and temporary disruption to services and access to certain public places and facilities; • Temporary impacts on livelihood to neighbourhood business entities
Restoration of Connectivity (rural roads and district roads) and shelter infrastructure	• Acquisition of private lands • Use of public lands • Loss of structures located on public and private lands • Impacts to non-title holders on using public lands • Damages to standing crops and plantations • Impacts on livelihoods
Repair of cyclone shelters	• Lack of maintenance • Inappropriate use post maintenance
Restoration and protection of beach front	• Use of government or community lands • Loss of structures located on govt. or community lands • Impacts on squatters and encroachers (non-title holders) using public lands • Loss of Common Property Resources • Livelihoods losses

Sub-project/ Activity	Possible Adverse Social Impacts
Restoration of environmental services facilities and livelihood support	• Use of governmental or community lands • Loss of structures located on public or community lands • Impacts to squatters or encroachers (non-titleholders) using government or community lands

Conclusion/Remarks

Among the seven proposed components under the project, the four reconstruction components - i) constructing resilient electrical network; ii) restoration of road connectivity and shelter infrastructure; iii) restoration and protection of beach front; iv) restoration of environmental facilities and livelihood support for especially poor coastal families, widows, unemployed youth (boys/girls) - would involve safeguard aspects that needs to be avoided and minimized through developing and placing appropriate safeguard provisions and systems in the project.

The construction of resilient electrical network under component 1, essentially involves shifting of overhead distribution lines to underground. This is not expected to involve land acquisition but may temporarily disturb access and give disturbances to neighborhoods during construction.

The roads proposed by R&B department under Component 2 may require additional land at few locations, particularly in habitation portions. These are Major District Roads (MDRs) proposed to be widened to double lane from single lane. Sufficient widths are not available particularly in habitation portions as well additional land will be required if the design involves improvements of alignment/curve improvements. The rural roads proposed under the same component 2, may not require additional land as they are not proposed for widening nor are they new connectivity roads.

For Component 3, there could be no requirement of any additional land; and generally existing land is found to be free from encroachments. Restoration of environmental service facilities and livelihoods under component 4 would not involve land acquisition as the sub-components include restoration of the lost shelterbelts/windbreaks and mangroves along the coast; and restoring damaged environmental services of the Zoological Park and the Eco Tourism Park at Kambalakonda Wildlife Sanctuary.

The actual impacts will only be known once the sub-projects/activities are identified and screening results are available. The said exercises have been initiated for some components but other than indicative numbers for roads component, more details at this stage are now known. If the impacts are significant, then a detailed Social Assessment will be carried out, followed by preparation of RAP and IPP as per the guidelines given in this ESMF.

Largely, government land will be preferred for sub-project works. In cases where institutional land is not available, participatory approaches of voluntary donation

or direct purchase or exchange by the sponsoring institutions will be preferred for obtaining private land.

World Bank's Operational Policy on Involuntary Resettlement (OP/BP 4.12) has been triggered to effectively manage such cases of involuntary resettlement. A social screening exercise at the sub-project level will determine the specific requirement, if any on land uptake in addition to any other key social issue. Similarly, OP 4.10 (Indigenous Peoples) has been triggered in view of the presence of scheduled tribe groups living in the project districts where some of the activities will be undertaken.

Chapter 6 : Environmental and Social Management – Approach, Process and Management Measures

The Andhra Pradesh Disaster Recovery Project proposes to support multiple sub-projects covering different in the coastal areas of the state. The approach to use ESMF helps in effective environmental and social management in a scenario where multiple sub-projects are located in different parts of the coastal region across four districts and their specific locations are not known at this stage of the project design.

To understand, assess and mitigate issues related to environment management, land requirement, displacement and resettlement, the State Disaster Management Authority (SDMA) conducted consultations and carried out rapid reviews in the four key participating districts of Andhra Pradesh. This Environmental and Social Management Framework (ESMF) has been developed based on experience from NCRMP I (WB funded project currently under implementation in the state); rapid reviews and feedback from consultations carried out till date for charting out the approach and process to manage environmental and social issues, which are likely to arise due to the implementation of sub-project activities.

The ESMF has been prepared for supporting the integration of environmental and social aspects within the decision making and implementation process of various sub-projects. It will also support compliance with applicable laws and regulations of GoI and State Government apart from meeting the requirements of the relevant Bank policies. The Environment and Social Management Framework is an essential ingredient aligned to the project and sub-project delivery cycle.

This chapter lays out the over-all approach or methodology to be followed for managing environmental and social issues/impacts in the project cycle. It also provides guidance on the management measures to be adopted for various types of planned investments under the project.

6.1 Safeguards Management Approach and Process

The environment management process and the instrument for the project have been designed keeping in mind the varied scope of work/activities under the various components. Accordingly, to effectively plan, design and integrate environmental and social dimensions into the sub-project preparation and implementation cycle, **key steps have been formulated**. **These steps must be followed through the key stages of the sub-project cycle** such as site identification, screening (including its documentation), assessment (basic or detailed as needed), implementation review and monitoring.

6.1.1 Environment Management Approach

The over-all environment management approach for the project proposes the use of a holistic and integrated approach in the project/sub-project planning process to prevent or at least minimize the vulnerability of people and assets from cyclone risks in future. **Appropriate site selection for cyclone resilient infrastructure, therefore is central to the reconstruction and recovery path**

post Hudhud and plays an important role in minimizing the over-all adverse impact in the event of a disaster.

The management of environmental issues in AP DRP, specifically with regard to the approach used for screening of sub-projects, will be based on a robust and scientific methodology that has been successfully used for NCRMP I. The approach and the safeguards requirements set forth within it remains relevant in the context of AP DRP as well.

Appropriate measures will be developed to enhance positive impacts and to avoid, minimize and mitigate adverse impacts through generic/standard activity-specific Environmental Management Plans (EMPs), which form a part of the ESMF. Activity-specific EMPs will help in addressing various construction and operation-stage impacts. However, critical environmental issues, which may result on account of improper site selection (an important factor of consideration in a coastal area), would be considerably avoided and/or minimized by effectively using results from the Environment Screening Exercise. This will ensure that no sub-project with the likely possibility of creating significant or irreversible adverse impact on environment is taken-up without a proper study (environment assessment/ analysis). Accordingly, sub-projects or activities without significant or irreversible adverse impacts will be selected for investment under Phase I while others, which are located in/close to environmentally sensitive zones will be either dropped from the project scope or will be considered only after duly completing the environment assessment studies.

6.1.2 Key Steps to be followed

This over-all environment and social management approach for AP DRP has been elaborated below and will include the following key steps:

1) **Identification of sub-project site/s.** The identification of site/s for risk mitigation infrastructure would be informed by results from a vulnerability assessment exercise to ensure that appropriate sites/locations are chosen keeping in mind the risks from future natural disasters. As part of this exercise, consideration of aspects related to local topographic conditions; natural drainage pattern; existing land use/s; vulnerability to erosion, flooding and other hydro-meteorological events would be necessary. The information/mapping already available with the state will be used for this purpose.

2) **Environmental and Social Screening.** Once the sub-project sites are identified/short-listed, an environment and social screening exercise will be carried out. This exercise will help in identification of environmentally sensitive areas such as presence of National Parks/Sanctuaries, Wildlife Corridors, Reserved/Protected forests, Cultural Properties etc. Similarly, the sites requiring private lands and/or sites with displacement issues such as those with private/government/community structures and/or sites with impacts on vulnerable people will be identified through this screening exercise. The results from this exercise will help in: (i) finalizing the sites for the various sub-projects; (ii) identification of the need to obtain any regulatory clearances (such as Forestry and/or CRZ clearances and/or LA and R&R approvals) for specific site/s (specifically where relocation is involved)

and; (iii) establishing the need to carry out any further investigation/ assessment. Based on this, prioritization and phasing of the civil work program/procurement plan would be worked out.

Villages where infrastructure development involves significant environment or social issues and villages falling within the CRZ with no alternative sites close by, will be considered either dropped or taken-up later, subject to the findings of detailed assessments and attaining of required clearances.

The results from this exercise will help in categorization of sub-projects – those to be dropped and others that can be taken in first/second tranche of the project. Also, regulatory permissions/clearances, if required for specific sub-project/s are to be sought based on the screening exercise results/outputs. Proposed investments will be screened and sub-projects with no significant adverse environmental impact are being identified for implementation under Phase I.

The environment screening process for the project will use a robust methodology supported by use of scientific tools such as GIS and remote sensing techniques, which will help in avoiding environmentally sensitive sites/features to a large extent. The results will be collated component-wise in the form of Screening Report/s. The process and documentation structure for environment screening exercise was developed under NCRMP I (currently under implementation in Andhra Pradesh as well) and was found to be quite effective in identifying issues early-on even in a scenario where a large number of sub-projects were being considered across a long coastline. In addition to guidance provided in this chapter on this very important step, a screening checklist to be used for the project has been provided in Volume II.

3) **For sub-projects with the potential to cause significant adverse environment and social impacts** (which will emerge from screening results), **an Environment and Social Assessment (EA/SA) and a sub-project specific Environment Management Plan (EMP) and Resettlement Action Plan (RAP) will be prepared** in accordance with Bank's OP 4.01 and OP 4.12. The EA and SA will include an assessment of baseline conditions, analysis of alternative options, assessment of potential impacts, identification of mitigation measures and preparation of sub-project specific environmental management plans. However, it is expected that sub-projects with the potential for significant adverse environment and social impacts will be few in number. These are expected to be primarily limited to Beach/Shore Protection and Underground Electric Cabling works.

   For ensuring compliance to specific Bank policies, particularly for **activities that require compliance to OP 4.04 on natural habitats or OP 4.09 on Pest Management or OP 4.11 on Physical Cultural Resources, sub-project specific comprehensive management/mitigation plans** will be prepared in line with principles and requirements set forth under the applicable policy. This will be done by bringing-in appropriate level of expertise, as and where required. Likewise, if required based on screening results, **Indigenous Peoples Development Plan shall be prepared in line with requirements set forth in OP 4.10.**

4) Based on screening results, **if a sub-project does not require an EA, the**

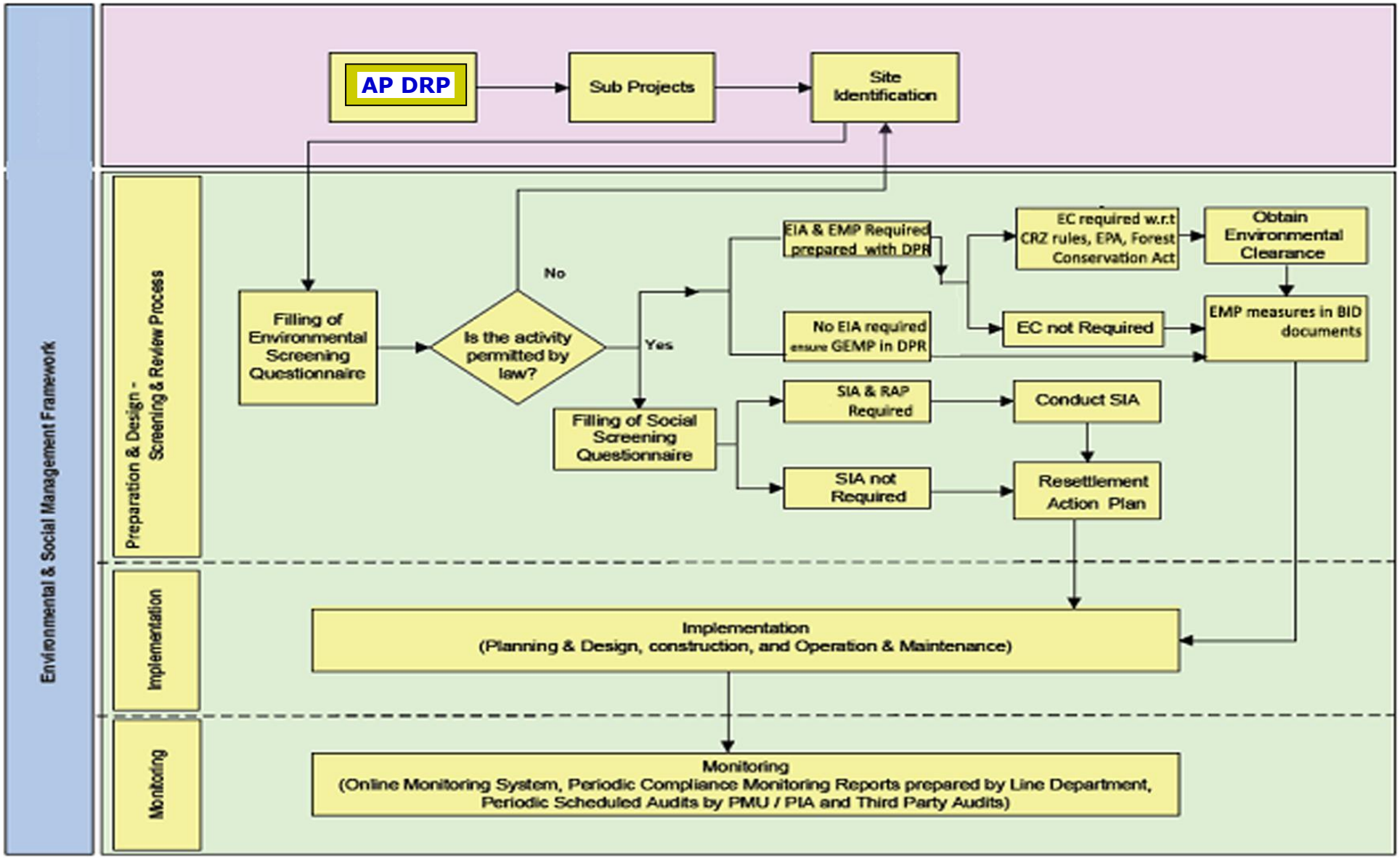
generic/standard activity specific EMP, **developed as part of the ESMF, will apply.** These generic/standard activities specific EMPs provide overall guidance on avoidance, minimization and mitigation measures to be adopted during the planning, design, implementation and operation stages of the concerned sub-project.

If the screening process for certain sub-projects has identified any minor potential impacts that may require site-specific mitigation measures, such measures need to be built into the Generic EMP. These standardised plans have been provided for use by Line Departments/Agencies. These will also help in reducing transaction time during sub-project preparation and approval cycle. These GEMP documents can also be transformed into the site-specific EMPs, wherever required to reflect particular site conditions or sub-project needs.

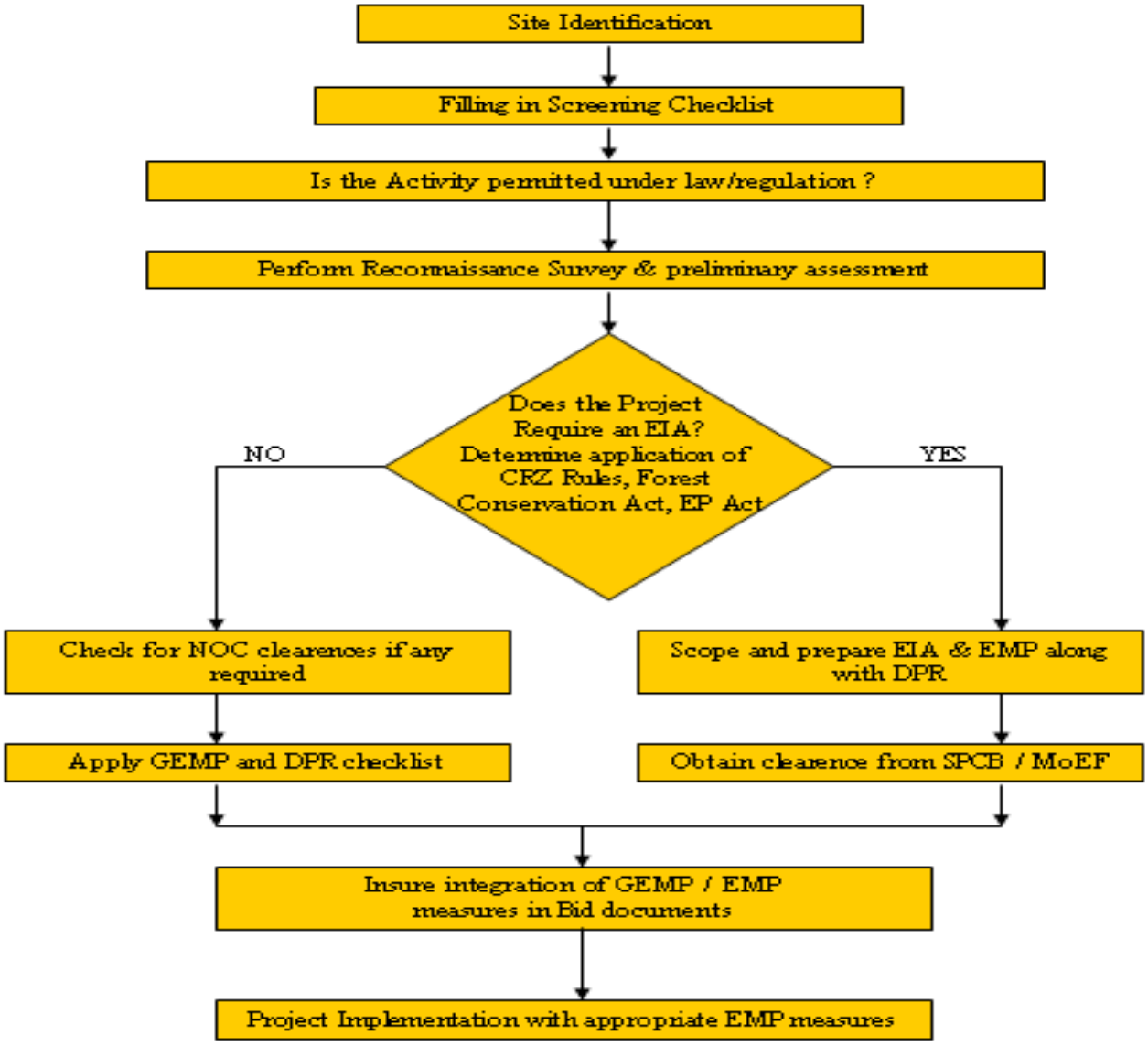
5) **Public consultation.** Consultation with public, particularly the beneficiary groups and likely to be impacted people/communities will be carried out during various stages of the sub-project preparation and implementation. This includes consultations and seeking consensus on site identification and selection; designs; infrastructure provision and; for understanding any specific social-economic needs of the community. All such proceedings, decisions/community consents and resolutions will be properly documented, including written and visual means (refer Section 6.4 for specific details on the Consultation Strategy and Participation Framework prepared for AP DRP)

6) **Integration of Environmental and Social Requirements in sub-project selection and design.** The considerations/requirements/findings from Screening, EA and as suggested in EMPs are to be mainstreamed as part of the over-all decision making and execution process. The considerations/ requirements will be mainstreamed as part of the over-all decision making and execution process – the selection of sites (screening, including vulnerability assessment will determine this output) and designs, including environment, health and safety requirements which will be reflected in the site planning outputs such as maps/DPR/other reports.

7) **Preparation of Bidding Document/s and integration of environment, health and safety requirements.** Environment, health and safety requirements to be adhered to during construction will be integrated into the Bidding Documents. These requirements in form of conditions/specifications, drawings and Bills of Quantities (as required/relevant) will be integrated into the Bidding Documents.


Environmental & Social Management Framework
AP DRP
Sub Projects
Site Identification
Preparation & Design - Screening & Review Process
Filling of Environmental Screening Questionnaire
Is the activity permitted by law?
No
Yes
EIA & EMP Required prepared with DPR
EC required w.r.t CRZ rules, EPA, Forest Conservation Act
Obtain Environmental Clearance
No EIA required ensure GEMP in DPR
EC not Required
EMP measures in BID documents
Filling of Social Screening Questionnaire
SIA & RAP Required
Conduct SIA
SIA not Required
Resettlement Action Plan
Implementation
Implementation (Planning & Design, construction, and Operation & Maintenance)
Monitoring
Monitoring (Online Monitoring System, Periodic Compliance Monitoring Reports prepared by Line Department, Periodic Scheduled Audits by PMU / PIA and Third Party Audits)

Environment Screening – Flow Chart showing Key Steps



Note: All sub-projects would be subjected through the Screening Exercise. The documentation of the Screening Results will carry four key parts:

(a) Map showing location and key features prepared using Remote Sensing/GIS platform;

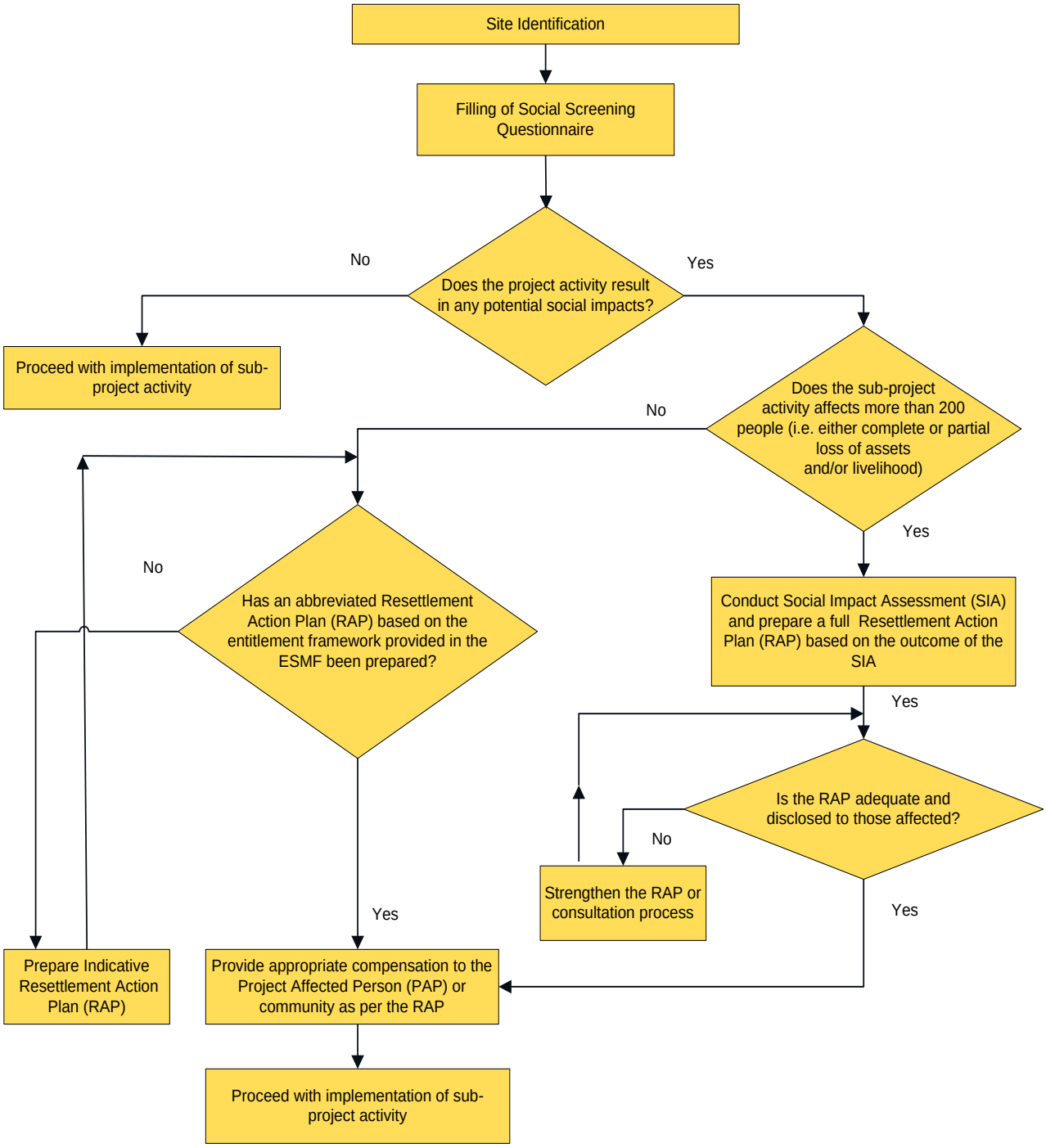
(b) Screning Checklist;

(c) Stakeholder Consultation Proceedings/Documentation; and

(d) Visual Documentation (photographs/videos)

Once the Screening Report/s are prepared, these shall be disclosed in line with disclosure requirements spelt out under Right to Information Act and in Bank policies.

Social Screening – Flow Chart showing Key Steps



Note: All sub-projects would be subjected through the Screening Exercise. Once the Screening Report/s are prepared, these shall be disclosed in line with disclosure requirements spelt out under Right to Information Act and in Bank policies.

6.2 Guidance on Tools for Addressing Environmental Issues

6.2.1 Screening

Screening is practically the first step in the environment management process. The purpose of screening is to get an overview of the nature, scale and magnitude of the issues in order to determine the scope of the detailed EA and SIA that would be subsequently carried out. After identifying issues, the applicability of the Bank's environment and social safeguard policies is established along with Government of India's regulatory requirements. Based on this, boundaries and focus areas for the EA and SIA along with the use of specific instruments are determined.

Key Environmental Parameters Considered for Screening

Some of the key environmental parameters/aspects that shall be considered in the Screening process includes –

1. Presence of sensitive/critical natural habitats including National Parks, Sanctuaries, Wetlands etc.
2. Presence of Reserved and Protected Forests
3. Movement/nesting/breeding sites of endangered species (outside the protected areas such as Olive Ridley Turtles)
4. Presence of mudflats/swamps
5. Presence of cultural properties/archaeological monuments/historical places
6. Location of a sub-project within a Coastal Regulation Zone
7. Requirement of regulatory clearances/permissions
8. Presence of Mangroves
9. Presence of Dams/Reservoirs/Public Water Supply Sources
10. Presence of Indigenous People/Groups
11. Land Requirement and Ownership
12. Presence of encroachers/squatters

All of these parameters mentioned above and a few others have already included in the Environment and Social Screening Checklist that shall be used for the project. Refer Volume II, Annexure 5. The annexure also includes guidance on exclusion criteria.

Key Steps involved in Project Screening

The key steps involved in the screening process are briefly outlined below.

1. Step 1: Ascertain presence of any environmentally sensitive areas as detailed in screening criteria section, which includes those specified under country

regulations and those mentioned in Bank policies. It is necessary that the PIU and Line Departments have detailed topographic maps of all the proposed sub project sites with CRZ zones identified along with details of ecologically sensitive areas, habitat areas, Reserve Forest, Wildlife Sanctuary at a suitable scale to undertake the screening tasks.

2. Step 2: Confirm applicability of regulations and whether any of the sub-projects are prohibited as per the existing law/regulations or not permitted for support under Bank policies at the specific proposed location. Wherein the proposed activity is restricted, Step 1 needs to be performed again.
3. Step 3: Conduct reconnaissance site visits for ground truthing to incorporate additional information.
4. Step 4: Revisit the screening check list and ascertain outcomes of the screening checklist. Undertake the detailed screening process for all investments along with the Line Department. While filling the screening check list conduct consultations with communities impacted. The consultations should be conducted both with the positively and adversely impacted communities. Depending on the size of the project, location, type of impacts, spread of impacts, etc. the number of consultations and their locations should be decided.
5. Step 5: Determine the requirement of an EA study and its scope and other applicable rules/regulations and clearances. It is advisable to have a meeting with all the Line Departments and the concerned officials of the State Environment & Forest Department and agencies like the Pollution Control Board before starting the process to gain a better understanding of the clearance process.
6. Step 6: If EA is required, then:
   - Step 6.1: Prepare ToR for EA studies and appoint Environment Assessment Consultants. (Standard ToR is provided in Volume II)
   - Step 6.2: Conduct EA as per the scope defined in the ToR along with preparation of the detailed DPR documents.
7. Step 7: Check for applicable NOC/Clearances from MoEF/State PCB's etc as applicable

The outcome of the screening process will help prioritize the various investments and where required, start the clearance process in a timely manner e.g. project sites (in particular requiring Forest Clearance etc) wherein clearance process is expected to take longer duration can be sequenced/phased later in overall project implementation but the clearance process for such sites is initiated at the start of the overall project. This shall help ensure that no sub projects are dropped merely due to delay in the clearance procedures. The environmental screening flowchart and the note illustrates the overall screening process.

6.2.2 Consultation with Stakeholders

Stakeholder involvement mechanisms are/will be central to the design and implementation of the project and provide opportunities for information sharing, consultation and collaboration measures. While planning stage involvement requires participation in site selection and design, implementation phase requirements encourage community feedback for a more participatory monitoring. Guidance for this purpose has been laid out in the Environment and Social Management Framework to ensure proper consultation and involvement of key stakeholders during key stages of sub-project preparation and implementation.

The PIUs will also hold consultations at district, block and community level to facilitate involvement of stakeholders and solicit feedback on sub-project identification/selection, preparation/design, implementation plans and other such key elements of project delivery. Key stakeholders such as project affected persons, opinion makers, experts, and different department personnel would be consulted.

A consultation and participation framework has been prepared and included in the Social Section of this chapter for guidance and use as these processes will be common for both environment and social management.

6.2.3 Pre-construction Activities

All utilities and common property resources likely to be affected due to the project will be relocated with prior approval of the concerned agencies before start of construction. Similarly, cultural properties whose structure is likely to get affected, will be relocated at suitable locations, as desired by the community before construction starts. Local community need to be contacted and discuss relocation aspects, siting as well as their maintenance.

All necessary and adequate care shall be taken to minimize impact on cultural properties (which includes cultural sites and remains, places of worship including temples, mosques, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties/sites/remains notified under the Ancient Sites and Remains Act. No work shall spill-over to these properties, premises and precincts.

Additional requirements on this aspect have been built into the Gemeric EMPs provided in Volume II.

6.2.4 Incorporating EMP/GEMP into Contract Documents

The purpose of this guidance is to provide guidelines on the integration of the EMP / GEMP documents into the contract documents

Environment requirements in the pre-bid documents

1. The project implementing agency, i.e. PIU / the Line Departments issue the pre-bid documents to shortlist a few (usually six) contractors, based on their expression of interest and capability. While details on environmental

requirements are really not required in the pre-bid stage, it is useful to mention that the contractor's environmental management capability or experience/is expected to be good.

Incorporating EMP in the bid document

2. The project implementing agency (Line Department) issues the bid documents to the pre-qualified contractors. There are two kinds of bid documents, for International Competitive Bids (ICB) and National Competitive Bids (NCB). In Bank projects, these documents are prepared based on templates (separate for ICB and NCB) provided by the Bank. The ICB documents are based on the FIDIC (i.e., an acronym for the International Institute of Consulting Engineers) guidelines, while the NCB is closer to the national contracting procedures, i.e. the Central PWD contract documents in India. The bid documents contain separate volumes. For instance, a typical ICB document contains – (i) General Conditions of Contract, which is based on the FIDIC; (ii) Technical Specifications, which is based on the applicable specifications in India for similar infrastructure related works; (iii) Bill of Quantities and (iv) Drawings. The parts of the EMP should be included in the relevant locations of the bid documents in the following way:

   - Mitigation/enhancement measures & monitoring requirements tables: The cross-reference to these tables should be included in the "conditions of particular application (COPA)", which is a part of the General Conditions of Contract (e.g. Section IV, Item 19.1 of the ICB). As a standard practice, there is an overall reference to the laws that have to be followed in this section/item. The relevant laws need to be mentioned here. In addition, the adherence to the mitigation/enhancement measures and monitoring requirements tables should be included. The two tables will have to be added as Annexes or the EMP (without cost) as a whole should be attached. Either the Annexes or the appropriate section in the EMP should be cross-referred in the description of this item.
   - Modifications/additions to the technical specifications: Due to the mitigation/enhancement measures included in the EMP, there may be (a) additions/alterations required to the applicable specifications and (b) some new specifications. These are to be referred in the section on "Supplementary Specifications" in the Technical Specifications Volume of the bid documents. Generally, the GoI applicable specifications are taken as followed and are not repeated in the bid documents. Changes and additions to these specifications are made through the inclusion of a section "Supplementary Specifications." This section should also include additional technical specifications related to the EMP or should provide a cross-reference to the specific section of the EMP.
   - Cost table: All the items in the EMP cost table relevant to the contractor have to be referred in the Bill of Quantities (BoQ) table, which is a separate volume of the bid documents. It is to be noted that the BoQ table in the bid documents includes the various tasks to be done by the contractor under

different categories. Against each task, the contractor will have to indicate a unit rate while completing the bid documents.

- Drawings: Due to the mitigation / enhancement measures included in the EMP, there may be (a) changes required to the drawings and (b) new drawings. All of these drawings are to be reflected in the Bid documents under the separate Drawings Volume. If the drawings are included in the EMP, then a cross-reference should be provided in the Drawings Volume.

Developing the EMP to suit the bid/contract documents

3. As one of the intentions is to integrate the EMP requirements into the bid documents/contract Agreement, the EMP should be developed keeping the following in mind:

1) Mitigation/enhancement measures table – description: In the Mitigation/ Enhancement Measure table, the text describing each measure should not include/repeat what is already covered under the technical specification, which is being cross-referred. The text should be short, clear and succinct. The description should focus on "what" and "where" of the mitigation / enhancement measure as the "how" of the measure is covered under the specification.

2) Monitoring requirements table: There are certain monitoring requirements for the contractor. While developing the Monitoring Requirements table, those that pertain to the contractor should be clearly separated.

3) Technical specifications: The modifications to the specifications and the additional specifications should be separately listed. These should be included as Annexes in the EMP. The (added or modified) technical specifications should be adequately detailed to avoid problems (including that of interpretations) at site.

4) Drawings: The modifications to the drawings and the additional drawings should be included as Annexes in the EMP. It is important to note that all drawings included / added should be "execution drawings" detailed as per requirement of the particular item so as to execute at site with adequate quality control and workmanship. (Also, it is important to note that the quality of BoQ [or cost estimate] and technical specifications part of the contract document depends on the degree of detailing in the drawings).

5) Cost table: The items pertaining to the contractor should be clearly separated from those that are to be incurred by the project implementing agency, supervision consultant or any other agency organization. The contractor's cost table should also not be attached to the bid / contract documents.

6) Timing for finalizing EMP: It is best to finalize the EMP before the finalizing the bid documents. This is required to fully reflect the sections of the EMP relevant to the contractor in the bid documents and to ensure full integration.

7) Variation orders: Once the completed bids have been received from prospective contractors, the project implementing agency takes a decision based on the costs and the technical merit of the bids. Following the decision, the

implementing agency and the chosen contractor sign and counter-sign the completed bid documents. It becomes the contract agreement thereafter. If issues have been missed in the bid documents, it cannot be amended at the time of signing the contract agreement stage unless there is a really strong justification for the same. If there is an EMP cost item that is not reflected in the BoQ of the signed contract agreement, the supervision consultant may issue a variation order. Contractor will quote a rate and the task gets done. This issue of variation orders is a standard practice and is generally used. However, the intent of the good contracting practices is to minimize variation orders.

6.2.5 Indicative Mitigation/Management Measures

While the table below suggested a few key indicative measures that may be required for specific activities, more detailed Generic EMPs or guidelines have been prepared and included in Volume II.

S.No.	Activity	Indicative Mitigation Measures
1	Underground Cable Laying	• Worksite Safety Management Plan • Provide for cautionary signs along the cable route and prevent any unauthorized digging. Any authorized digging should be under expert supervision. • Conduct consultations with community and fix timings to minimize inconvenience. • Utility restoration, wherever affected/disrupted • Provide safety gear to all workers during implementation and during repairs/maintenance. • Provide for guards at night at critical locations
2	Roads, Bridges and Culverts	• Provide for Cross Drainage works as required in the light of flooding pattern/s in the area. • Provide for road safety measures, including traffic calming features, where required and warning signs
3	Cyclone Shelter Repair	• Sensitize community and involve community groups in management and maintenance of facilities. • Provide for sufficient dustbins. Provide warning signs about littering. • Provide water proofing to the septic tanks. Locate septic tanks away from water storage structures. • Prepare a maintenance schedule and sensitize the community groups. • Fix display boards on basic do’s and don’ts. • Training for Shelter Maintenance Committee Members

S.No.	Activity	Indicative Mitigation Measures
4	Shore Protection Works (to be finalized). **	• For any shore protection pilot/works, conduct a detailed Environmental Impact Assessment and prepare a detailed/specific EMP. While doing the EIA, consider the negative impacts listed in the ESMF. • The EA will cover cumulative effects/impacts assessment. • Specific assessment on any likely impact on biodiversity, including specific marine fauna. • Detailed assessment on issues like impact of any hard engineering measures on increased erosion in surrounding areas/coastal stretches. • Implement the EMP rigorously and monitor it closely on parameters suggested in EMP.
5	Beach Front Restoration	• Prepare a master plan/comprehensive plan for over-all reconstruction and redevelopment. • Solid waste collection and disposal arrangements • Special attention to planning and design of public amenities, including features for differently abled and women/children. • Prepare EMPs for specific works, if needed. • Implement the EMP rigorously and monitor it closely on parameters suggested in EMP.
6	Rehabilitation of Historic Buildings and Landmarks	• For all works involving rehabilitation of historic building/s and landmark/s, conduct a detailed assessment and prepare a detailed DPR with measures to re-build/restore to its original condition, albeit with resilient features. • Chose an agency/experts with experience in such cultural and heritage works. • Prepare specific design and construction management plans. • Public consultation.
7	Urban infrastructure and services (including roads, parks, public spaces	• Screening and consultation to determine if work/s require detailed assessment. • Public Consultation • Conduct consultations with community and fix timings to minimize inconvenience. • Utility restoration, wherever affected/disrupted

S.No.	Activity	Indicative Mitigation Measures
	etc.)	• Traffic Management and Safety Plan/s • Prepare a Preventive Maintenance Schedule and implementation of the same. • Prepare EMPs for specific works, if needed. • Provide protective gear to all workers. • Implement the EMP rigorously and monitor it closely on parameters suggested in EMP.
8	Reviving Nurseries feeding to Farm Forestry	• Consult local experts on choice of species. • Avoid mono cropping. • Use the services of horticulturists in deciding the variety and planting spacing. • Prepare an IPM Plan. • Sensitize farmers about IPM and reduce the use of banned chemical fertilizers and pesticides.
9	Rebuilding the Indira Gandhi Zoological Park and Eco Park at Kambalakonda	• Follow design principles and protocols laid out under the IUCN and CZA guidelines. • Prepare a master plan/comprehensive plan for over-all redevelopment. • Special attention to planning and design of public amenities, including features for differently abled and women/children. • Build partnerships/associations to bring-in best international practices in the design and operation of the Zoological Park • Prepare comprehensive maintenance protocols/ handbook to guide the operation of the facility • Training and sensitization of staff
10	Restoration of Shelter Belts/ Mangroves	• Selection of sites for shelter belt plantations to be done in a manner that doesn't affect critical habitats or species, such as Turtle Nesting Sites. • Use screening results and consult community and experts to finalize locations. • Prepare a detailed plantation strategy/plan • Avoid mono cropping. • Use the services of horticulturists in deciding the variety and planting spacing. • Prepare and implement an IPM plan.

** This intervention/activity depends on the outcome/recommendations from a high level study commissioned by GVMC, which is currently underway. Once the possible technical/engineering options are recommended, a comprehensive EA, including comparison of alternatives and cumulative effects assessment to finalise whether the recommended solution/s can actually be funded/supported under the project.

6.3 Guiding Principles for Addressing Social Issues

The displacement, resettlement and rehabilitation issues arising out of this project will be addressed through the Resettlement Policy Framework presented below.

6.3.1 Resettlement Policy Framework

This Resettlement Policy Framework for APDRP is drawn in accordance with the World Bank's Safeguard Policy on Involuntary resettlement (OP 4.12) and the National Act 'The Right to Fair Compensation and Transparency in Land Acquisition and Rehabilitation and Resettlement Act' 2013. This framework will act as guide for mitigating the social impacts that would be triggered by the sub-projects under APDRP.

6.3.1.1 Objective of RPF

The primary objective of this RPF is to provide better standard of living to the project affected persons or at least restore their standard of living to that of before project. If the affected persons belong to Below Poverty Line (BPL) category before the project, then this RPF aims to bring them Above Poverty Line (APL). The other objectives of this RPF are to:

- Avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs.
- Assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them.
- Encourage community participation in planning and implementing resettlement.
- Provide assistance to affected people regardless of the legality of land tenure.

6.3.1.2 Guidelines for Resettlement and Rehabilitation

The resettlement and rehabilitation principles adopted for this project will provide compensation at replacement cost, resettlement and rehabilitation assistance to all project affected persons (loss of land, residences, business establishments and other such immovable properties), including the informal dwellers / squatters in the corridor of impact (COI). The basic resettlement principles and guidelines include:

- All PAPs are eligible for compensation for lost assets and livelihood irrespective of ownership of title to land. However, a title will be required for payment of compensation for land.

- Compensation will be at replacement value without deducting depreciation and salvage value.
- Compensation and Rehabilitation assistance will be paid before displacement.
- No civil works will be initiated unless compensation for land and assets and rehabilitation assistance is provided to all eligible PAPs.
- Where land acquisition is required, it will be acquired either through direct purchase, voluntary donation or according to the RFCTLARR, Act 2013 and in a way to minimize the adverse impacts and to avoid displacement as much as possible.
- Non-titleholder (squatters and vulnerable encroachers) will be provided replacement cost of their structures.
- Provision for multiple options for resettlement (self-relocation or assisted relocation) of the affected residential structures, including informal dwellers/squatters.
- Shifting assistance to the owners of residential structures and informal dwellers / squatter households and titleholders for shifting of household goods and assets.
- Special measures and assistance for vulnerable groups.
- PAPs will be meaningfully consulted and will have opportunities to participate in planning and implementing resettlement programs.
- Appropriate grievance redress mechanism will be established at the city level to ensure speedy resolution of disputes, if any.
- All activities related to resettlement planning, implementation, and monitoring would ensure involvement of women. Efforts will also be made to ensure that vulnerable groups are included.
- Provisions will be kept in the budget for those who were not present at the time of enumeration. However, anyone moving into the project area after the cut-off date will not be entitled to assistance.

6.3.1.3 Definitions

Following definitions that will be applicable unless otherwise stated specifically.

- **Project Affected Person:** Affected persons are those who stand to lose all or part of their physical and non-physical assets including homes, productive land, community resources, commercial properties; livelihood; and socio-cultural network.
- **Project Displaced Person:** A displaced person is a person who is compelled to change his/her place of residence and/ or work place or place of business, due to the project.

- **Family:** A "Family" shall mean karta, spouse (Husband/Wife), and all dependents, including minor children. Every divorced, widowed, or separated daughter living separately or with the family on or before the cut-off-date will be treated as separate family.
- **Encroacher:** A person who has extended their building, agricultural lands, business premises or work places into public/government land without authority.
- **Squatter:** A person who has settled on public/government land, land belonging to institutions, trust, etc and or someone else's land illegally for residential, business and or other purposes and/or has been occupying land and building/asset without authority.
- **Vulnerable Person:** Include disadvantaged persons belonging to SC, ST, disabled, handicapped, orphans, and woman heading the household are also recognized as vulnerable persons. Vulnerable groups would also include those farmers who (after acquisition of land) become small/marginal farmers For such cases, total land holding of the landowner in that particular revenue village will be considered in which land has been acquired.
- **Titleholder:** Affected persons/families who has legal title to land, structures and other assets in the affected zone.
- **Non-titleholder:** Affected persons/families/ households with no legal title to the land, structures and other assets adversely affected by the project. Non-titleholders include encroachers, squatters, etc.
- **Below poverty line (BPL) or BPL family:** means below poverty line families as defined by the Planning Commission of India, from time to time and those included in the BPL list for the time-being in force.
- **Replacement cost:** A replacement cost/value of any land or other asset is the cost/value equivalent to or sufficient to replace/purchase the same land or other asset. For all operational purposes, the methodology for estimation of replacement cost is given below. The replacement cost for land is guided by new Act and estimated as follows.
    - Guidance value prepared by the Revenue Department. The guidance value is prepared based on sales statistics of land transactions.
    - The Guidance value is multiplied by factors of 1 if in urban area and between 1-2 in rural areas based on distance of project from urban area
    - The value arrived by the multiplication factor will be doubled by adding 100% solatium additionally
- **Cut-off date:** In the cases of land acquisition affecting legal titleholders, the cut-off date would be the date of issuing the acquisition notices under LA Acts. In cases where people lack title, for non-title holders the date of census survey will be considered as cut-off date.

6.3.1.4 Entitlement Matrix

The Entitlement Framework below is based on the provisions of the RFCTLARR Act, 2013 and World Bank's safeguard policies. These entitlements do not apply for cases of voluntary donation.

Entitlement Matrix for APDRP Project

Sl No	Impact Category	Unit of Entitlement	Details of Entitlements	Remarks
Loss of Assets - Titleholders				
Loss of Private Agricultural, Homestead and Commercial Land				
1	Private Land	Land owner(s)/Titleholder	(a) Cash compensation for the land at market value, which will be determined as per provisions of RFCTLARR Act, 2013; or Direct purchase; or Voluntary land donation as per the provisions specified in the Project Policy. (b) Amount equivalent to current stamp duty on compensation amount for replacement of lost assets. (c) In case of land owners become marginal farmers, landless or those who are already marginal, the following entitlement shall be provided: • Subsistence allowance of Rs 36,000/- • Annuity of Rs 5,00,000/- for creating Income Generating Assets and • Training Assistance (d) Post acquisition, if residual land becomes economically unviable, the land owner will have the choice of either retaining or selling it to the Government.	Compensation for land includes compensation for all assets attached to the land.

Sl No	Impact Category	Unit of Entitlement	Details of Entitlements	Remarks
			(e) Loss of perennial and non-perennial crops will be compensated in accordance with the provisions of Horticulture and Agriculture department as applicable. (d) A Grant of Rs 25000 for loss of replacement of cattle shed. (e) In case those who lose a narrow strip of land, equivalent or less than 10% of total land, will be offered an allowance of Rs 40000/- and will be not entitled for any other R&R benefits.	
Loss of Private Structures (Residential/Commercial)				
2	Loss of structure (Residential or Commercial or Res-cum-Commercial)	Land Owner/Titleholder	(a) Cash compensation determined on the basis of R&BD current Schedule Rates and without deducting depreciation cost and other provisions prescribed in RFCTLARR Act 2013; or direct purchase (b) Shifting allowance of Rs 50000 as per provisions of RFCTLARR Act, 2013 (c) Provision of free house as per RFCTLARR Act 2013, for completely displaced residential/commercial or cost of @ Rs 1,50,000 will be offered if the affected family opts not take a house. (d) Subsistence allowance of Rs 36,000 if the structure is lost completely (RFCTLARR Act 2013)	

Sl No	Impact Category	Unit of Entitlement	Details of Entitlements	Remarks
			(e) Resettlement allowance of Rs 50,000 if the structure is lost completely (RFCTLARR Act 2013) (f) Additional 25% structure compensation for partially affected structures towards reconstruction of structures. (g) For those who lose their entire commercial structure, Annuity of Rs 5,00,000/- for creating Income Generating Assets and Training Assistance. (h) Right to salvage materials from affected land or structure	
3	Tenants and Lease holders	Tenants and lease holders	Registered lessees will be entitled to an apportionment of the compensation payable to structure owner as per applicable local laws.	
Loss of Residential and Commercial Structures - Non Titleholders				
3	Squatters		(a) Assistance amount equivalent for impacted structures at replacement cost determined on the basis of R&BD Schedule of Rates as on date without deducting depreciation cost. (b) All squatters will be paid subsistence allowance of Rs 30000. (c) All squatters will be paid Rs 10000 as shifting allowance (c) Right to salvage materials from affected structure	

Sl No	Impact Category	Unit of Entitlement	Details of Entitlements	Remarks
4	Encroachers	Affected Person (Individual/Family)	(a) Assistance amount equivalent for impacted structures at replacement cost determined on the basis of R&BD Schedule of Rates as on date without deducting depreciation cost. (b) Encroachers shall be given advance notice of 2 months in which to remove assets/crops.	
Loss of livelihood – Title and Non-Titleholders				
5	Loss of livelihood – title holders and commercial squatters	(Individual/Family)	One time grant of Rs 25,000 (value prescribed under RFCTLARR Act 2013) Training assistance	• For commercial squatters, the eligibility will become from the date of Census survey
6	Foreseeable and unforeseen impacts* likely during the construction stage	Owner, affected person	Payment of damages if any to structures Temporary access would be provided, where necessary.	• Such as temporary impacts on structures, temporary disruption to access or passage, particularly in congested slums if the option of mobile units is not used;
7	Temporary loss of income of mobile kiosks, if any	Kiosk owner	Two months advance notice to vacate the area	

Sl No	Impact Category	Unit of Entitlement	Details of Entitlements	Remarks
Vulnerable people				
8	SC, ST and Disabled Persons		Assistance to include in government welfare schemes if not included, if eligible as per Government criteria; and Additional benefits to SC and ST as per the provisions of RFCTLARR Act 2013 Schedule.	
9	Women		In case of extending any productive asset, joint ownership in the name of husband and wife will be offered. While disbursing the entitlements, women will be given the first priority to receive the entitlement benefits over other entitled persons.	
10	Loss of or impact on any Common or cultural Property Resource such as shrine, temple, mosque, hand pump, shed, etc.	Community, Village/ Ward	Resources such as cultural properties and community assets shall be conserved (by means of special protection, relocation, replacement, etc.) in consultation with the community.	
11	Unforeseen impacts		Any unforeseen impacts shall be documented and mitigated in accordance with the principles and objectives of the Policy	

6.3.1.5 Land Requirement and Acquisition Options

APDRP proposes various types of sub-projects to be taken up. These sub-projects will require land depending on their type and size. The land requirement would vary across sub-projects and locations. The type and size of the sub-projects dictate the land requirement.

GoAP is implementing similar projects on a regular basis, which require land, of which the ownership could be either public or private. Accessing public land is easier, but arrangements will have to be made for securing privately owned land. When additional lands are required, GoAP, as a first step, would try and secure public lands where feasible and available. If private lands are required, then GoAP would resort to, either through voluntary donation or by outright direct purchase or through using RFCTLARR, Act 2013.

Voluntary Land Donation

Wherever there is requirement of additional land for rural roads, the GoAP has procured these lands through voluntary donations under NCRMP I. As there is good demand for reasonable rural roads, many times the Village Panchayat and the communities have come forward to donate any additional land. In the case of Rural Roads under the present project, the requirements are minimal and simple:

- almost all roads proposed will be existing roads (sometimes in badly damaged and not motor-able) and the project intervention will be restricted to improving/strengthening the existing road which would mean land requirement will be nil or limited;
- most of these rural roads do have sufficient RoW; and
- in case, it becomes inevitable, the lands will be secured either through voluntary donations subject to fulfillment of certain conditions or outright purchase or acquisition using new LA and R&R Act 2013.

Under the APDRP, the use of voluntary donation option will be limited to small strips of land for rural roads and small plots of land for buildings. Under no circumstances, the titleholder will be subjected to any pressure, directly or indirectly, to part with the land. These actions are expected to minimize adverse impacts on the local population and help in project benefits reaching all sections of community.

APDRP will ensure that the process of voluntary donation of land will be meticulously documented at all levels to avoid confusions, misunderstandings, litigations, etc. at a later stage. A format for this purpose is enclosed in the Volume II, Annexure 16.

This process will be taken up mainly at three levels as described below:

Process of Voluntary Donation of Land

Level	Process	Output	Responsibility
Village /Ward Level	Based on the revenue survey, lands will be identified and the list of titleholders will be prepared. This will be done by the implementing agency of Panchayat Secretary/Revenue Department. The PIU will help in this process and will document the willingness to donate land by the titleholders in the presence of the Sarpanch and Pancahayat Secretary in the form of a Willingness Letter. The list of such persons will be displayed at the Panchyat Office.	Willingness Letters/MoU /Affidavit/Gift Deed	Sarpanch, , PIU, Panchayat Secretary, and affected persons (Titleholder)
Mandal Level	Mandal Revenue Officer (MRO) or concerned Revenue Official surveys the land and demarcates the extent of area required. The survey will identify if the land is public, private or encroachment. Based on the survey, maps are prepared. The maps will be signed by Sarpanch, Village Secretary, and concerned Revenue Officer.	Survey map signed by relevant persons indicating the extent of land required.	MRO, Surveyor, Sarpanch, Village Secretary, PIU
District Level	Formalize relinquishment of land rights where concerned local people voluntarily donate their private land for the project for public purpose.	Effect Changes in Land Revenue Records	District Collector, MRO

Original copies of all documentation of voluntary donation of land will be kept with the MRO with copies at Village Panchayat. Complete documentation along with a copy of the final document will be sent to SPIU for records and for inspection at a later date. In order to make this process transparent, the following rules are prescribed:

- The Titleholder should not belong to the vulnerable sections/ BPL category.
- Identification of vulnerable PAPs: The vulnerability shall be assessed by the project based on the census of the affected persons. The following categories of PAFs/ PAPs shall be entitled for support as vulnerable groups:
    - BPL households (with a valid proof), as per the State poverty line for rural areas;

- BPL households without a proof of the same and belonging to the following social categories (i) Women headed households with women as sole earner (ii) Scheduled Caste/Scheduled Tribe and (iii) Handicapped person, and is subject to any of the following impacts;
  - Loses land holding,
  - Loses shelter and
  - Loses source of livelihood.

- The project provides for targeted support/ assistance to the vulnerable groups.
- The impacts must be minor. The voluntary donation should not be more than 10 percent of the area of that particular holding of the Titleholder in that category of land (dry, wet or commercial/ residential). This should not require any physical relocation of the Titleholder.
- The project technical authorities should ensure that the land is appropriate for sub-project purposes and that the sub-project will not invite any adverse social, health, environmental, safety, etc. related impacts by procuring this land.
- Documentation shall include village level consultation and documentation of the voluntary land donation on prescribed form with key community members as witness including the local body representative.
- The legal process in the country requires the land to be donated in the form of gift deed. This will enable to mutate the land in the name of the Government.
- The land in question must be free of squatters, encroachers, or other claims or encumbrances.
- In case of any loss of income or physical displacement is envisaged, verification of voluntary acceptance of community devised mitigatory measures must be obtained from those expected to be adversely affected.
- The Titleholder donating land should be provided access on priority basis, subject to eligibility, to the Government housing/ poverty reduction/ livelihoods/ etc. programs operating in the area.
- The Titleholder donating land should made to understand that they will have equal access to the infrastructure built on the donated land like any other community member and that they cannot claim for any priority treatment.
- Grievance Redressal Mechanism must be available.

Direct Purchase or through RFCTLARR, 2013

The private land acquisition can be adopted, on a willing seller and willing buyer basis, to avoid delays. If acquired using new LA and R&R Act, 2013 the following process will need to be followed as detailed below.

Process

Whenever the appropriate Government intends to acquire land for a Public purpose, it shall consult the concerned Panchayat, Municipal Corporation as the case may be, at village level or ward level, in the affected area and carry out a Social Impact Assessment study in consultation with them, in such manner and from such date as may be specified by such Government by notification.

The Social Impact Assessment will be carried out as per the LA and R&R Act 2013. The study includes all the following, namely:-

a) Assessment as to whether the proposed acquisition serves 'public purpose'.

b) Estimation of affected families and the number of families among them likely to be displaced

c) Extent of lands, public and private, houses, settlements and other common properties likely to be affected by the proposed acquisition.

d) Whether the extent of land proposed for acquisition is the absolute bare-minimum extent needed for the project.

e) Whether land acquisition at an alternate place has been considered and found not feasible.

f) Study of social impacts of the project, and the nature and cost of addressing them and the impact of these costs on the overall costs of the project vis-a-vis the benefits of the project.

Pre-Notification

(i) Social Impact Assessment (SIA) shall be conducted

(ii) Public hearing for Social Impact Assessment at the affected area.

(iii) Publication of Social Impact Assessment Study and the Impact Management plan.

(iv) Appraisal of SIA report by an Expert Group. And examination & approved by State Government wherein, Collector submits report on status of alternative sites.

Notification

a) Publication of Preliminary notification to acquire (when a preliminary notification is not issued within twelve months from the date of appraisal of the Social Impact Assessment report submitted by the Expert Group, then such report shall be deemed to have lapsed and afresh SIA shall be required to be undertaken prior to acquisition proceedings. Provided Government have power to extend the period.

b) Public hearing of objections

c) Finalization of R&R scheme (within 6 months of Preliminary notification) after survey on :

- Particulars of lands and immovable properties being acquired of each affected family.
- Livelihoods lost in respect of land losers and landless whose livelihoods are primarily dependent on the lands being acquired.
- A list of public utilities and Government buildings which are affected or likely to be affected, where resettlement of affected families is involved.
- Details of any common property resources being acquired.

d) Draft Declaration and R&R Scheme published

e) Land to be marked out, measured and planned including marking of specific areas.

f) Notice to persons interested that the Government intends to take possession of the land and that the claims to compensation and R&R for all interests in such land may be made to him.

Award

a) Enquiry and land acquisition award by Collector.

b) Determination of market value of land by Collector and Determination of amount of compensation to be paid to the land owner by including all assets attached to the land.

c) Resettlement & Rehabilitation of affected families as per entitlement matrix and the infrastructure amenities to be provided by the acquirer of land.

6.3.3 Identification of Impacts through Social Screening

Though it is envisaged that the subproject activities will have very generic social issues that are manageable through standards and codes of practice, there might be some sub-project activities proposed in due course, that carry a higher risk social disruptions and/or impacts. The possibility of such an issue arising in the sub-project site will be identified during the screening process. The screening check list for the APDRP (Chapter 5) has been designed to identify sub-projects with potential social issues that may need to be addressed at the project planning stage.

6.3.4 Preparation of Resettlement Plans

Having identified the potential impacts of the relevant sub-projects, the next step is to develop action plans to mitigate the impacts. The RAPs provides a link between the impacts identified and proposed mitigation measures to realize the objectives of involuntary resettlement. The RAPs will take into account magnitude of impacts and accordingly prepare a resettlement plan that is consistent with this framework for Bank approval before the sub-project is accepted for Bank financing.

- Sub-projects that will affect more than 200 people due to land acquisition and/or physical relocation would require an SIA and a full Resettlement Plan (RP).
- Sub-projects that will affect less than 200 people will require an abbreviated RP;

Such plans will be prepared as soon as the sub-project is finalized and cleared prior to approval of the bid documents. Projects that are not expected to have any land acquisition or any other significant adverse social impacts are exempted from any further social intervention.

6.3.5 Grievance Redressal Mechanism (GRM)

This section deals with the Grievance Redressal Mechanism, the Grievance Redressal Cell and the legal options available to the PAPs.

State level Project Steering Committee (PSC)

In order to address grievances related to land acquisition and resettlement and rehabilitation implementation, two bodies are to be established; Project Steering Committee at the state level and Grievance Redressal Committee at the district level. The former established for project running under the chairmanship of Principal Secretary (Revenue), shall be used to monitor and review the progress of implementation of resettlement. Project Director, SPIU will be convener of this committee.

This committee should meet every quarter to review the progress made in the implementation of the RAPs and to solve any grievances of the PAPs. This committee will also provide policy related direction to the Grievance Redressal Cell and the participating departments with regard to Land Acquisition and Resettlement and Rehabilitation.

District level Grievance Redressal Committee (GRC)

The Grievance Redressal Committee will be established at each project district under the chairmanship of District Collector for redressal of grievances of the PAPs. PIU in-charge shall be the convener of these committees. At the district level, the IA will provide support to these committees. District level head of all participating departments will be members along with a PAPs representative and a prominent Social Worker of the district.

Macro level issues, at the village level, beyond the purview of the 'District' shall be addressed by the Village Panchayat and the project staff. It is proposed that the PAPs first registers the grievances with the IA. After receipt of grievance, the IA should take them to the committee to take up the matter during the next immediate meeting and initiate measures for redressal. No grievance can be kept pending for more than a month which means the committee has to meet every month. Implementation of the redressal rests with the SPIU. In case the aggrieved party is not satisfied with the proposed redressal measures, it can take approach the state level committee. If the aggrieved party is not satisfied with the decision of state level committee, it can approach the court of law.

Grievance Redressal Mechanism

Level	Agency	Time period for redressal of grievances	Issues likely to emerge	Responsibility
Village	Village Panchayat	Maximum of one week	▪ Encroachment ▪ Land acquisition ▪ Livelihood Assistance ▪ Compensation ▪ Inclusion of households	Village Panchayat, Project Staff
District	Grievance Redressal Committee	Maximum of one month		District Collector as Chairperson and DPIU in-charge as Convener
State	Project Steering Committee	Maximum of three months		Principal Secretary (Revenue), as Chairman, Project Director, SPIU as Convener

Legal Options to PAPs

The PAPs will have two kinds of options for addressing their grievances relating to the Land Acquistion. One is the grievance redressed mechanism incorporate in this framework as above. The other is the general legal environment consisting of court of law to address their grievance as per RFCTLARR 2013. These options will be disclosed to the PAPs during the public consultation process.

Grievance Redress Service of the World Bank: In addition to seeking to resolve their grievances through the GRM established at the government level, "communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project such as this operation may also submit complaints to the Grievance Redress Service (GRS) established by the World Bank. The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may also submit their complaint to the WB's independent Inspection Panel, after having brought the complaint to the World Bank's attention through its GRS. Information on how to submit complaints to the World Bank's Grievance Redress Service is available at http://www.worldbank.org/GRS. Information on how to submit complaints to the World Bank Inspection Panel is available at www.inspectionpanel.org.

6.3.6 Citizen Engagement Strategy

The key elements of the citizen engagement strategy for this operation include the following: (i) suo motu disclosure of important project related information by the

government on its website and at the appropriate local level under section 4 of the Right to Information Act and disclosure procedures agreed with the Bank, (ii) framework for consultation with the key stakeholders including the scheduled tribes (IPs) during planning, design and implementation of all sub-projects; (iii) ensuring free, prior, informed consultation with the Scheduled Tribe groups and their representatives for obtaining broad community support as a part of preparation of specific sub-projects relevant to that area; (iv) upgrading the established Grievance Redress Mechanisms (GRM) at PIU and SPIU levels to meet specific grievance redress requirements of this operation; (v) promoting community based risk reduction initiatives with the participation of and networking with relevant stakeholders including women, school children, youth, civil society organizations, and local bodies.

6.3.6 Gender and Social Inclusion Action Plan

Social and Gender Context in Andhra Pradesh

Andhra Pradesh has been at the forefront of poverty reduction schemes and participatory development initiatives in the country. It is, therefore, not a surprise to note that the State's combined poverty ratio was reported at 9.20% in 2011–2012, which was considerably lower than the all India average during the same time. Andhra Pradesh is well known for its strong emphasis on community mobilization and women's social and economic empowerment through the mobilization of self–help groups, water users' groups, farmers' clubs, watershed committees, school education committees, and micro–finance institutions. The State has witnessed its share of social movements which resulted in radical systemic changes. For example, social movements that advocated for land entitlements and rights of socially marginalized communities (indigenous populations and Dalits). However, unlike Kerala and Tamil Nadu, the State didn't quite pick up momentum on health and education related issues. It is, therefore, not surprising to see why the State does not rank among the top few States and Union Territories (UT) on the composite human development index (ranks 14th out of 36 States and UTs). The State fairs worse on the gender development index (ranks 27 out of 36 States and UTs).

As per Census 2011, the sex ratio for Andhra Pradesh was 996, which is substantially higher than the All India average of 943. It is worth noting that the sex ratio for scheduled castes (SCs) and scheduled tribes (STs) was 1007 and 1009 respectively. Even though lower than the national average, the State's literacy rate is gradually rising and was at 67.4 percent in 2011. Gender disparities, however, persist in literacy levels. The male literacy level is 74.8 percent, while the female literacy is 60.0 percent.

A majority of the districts in the State are located along the coast. Many people living along the coasts are from poor economic backgrounds and face multi–layered vulnerabilities (including vulnerabilities resulting from natural hazards and climate change), gendered inequalities, and social exclusion. These vulnerabilities are further exacerbated by weak service delivery systems. In coastal Andhra Pradesh, for example, only 31 percent of the population has access to 'pucca' houses; 37 percent to safe drinking water; 31 percent to electricity; 7.6 percent to toilets; 81 percent to

primary school facilities; 33.4 percent to medical facilities; 50 percent to posts and telegraphs; and 9 percent to running water taps.

Most coastal families depend on aquaculture and fisheries for a living. The fisheries sector is one of the fastest growing in Andhra Pradesh. It employs about 1.4 million people, directly or indirectly, and has recorded a faster growth rate than crop and livestock sectors. Many women from poor coastal families are involved in fisheries. While men participate in fish harvesting activities, women normally are active in fish vending. Women are considered to be poorer than men in terms of their access to assets, productive capacity and social standing. There are many among them who are widowed, deserted or divorced and therefore are the sole income earners of their households.

Gendered and Exclusionary Dimensions of Natural Disasters: Few Fact

- Women and children are 14 times more likely than men to die during a disaster.
- There is a direct relationship between women's risk of being killed during disasters and their socio-economic status (defined as access to information, economic resources and ability to exercise personal freedom of choice).
- In the 2004 Asian Tsunami, women in many villages in Aceh, Indonesia, and in parts of India accounted for over 70 percent of the dead.
- In relief camps, women and girls are exposed to higher risks than men, including through conflict over scarce resources and vulnerability to sexual and physical abuse. Compounding this, social strains in such situations aggravate stress levels in the family, which may result in increased incidences of domestic violence.
- In some situations, men are disproportionately vulnerable: there were more immediate deaths among men when hurricane Mitch struck Central America, not only because they were engaged in open-air activities, but because they took fewer precautions when facing risks.

India's National Policy on Disaster Management and Gender

The National Policy on Disaster Management, 2009, clearly identifies women, elderly and the economically and socially excluded as particularly vulnerable groups. Further, it mandates that States adopt gender – sensitive actions; salient features of the policy from the perspective of gender and social inclusion are:

1. Including women members in the State Disaster Response Force (SDRF) to look after the needs of women and children.
2. Community-based disaster preparedness is indispensable in tackling disasters in a planned manner. The policy strongly encourages women and youth to actively participate in decision making committees and action groups for management of disasters.

3. The policy lays emphasis on plugging gaps in the social and economic infrastructure and enhancing viability of livelihoods. This includes care facilities for women, elderly and children.
4. State Ggovernments are mandated to lay emphasis on the restoration of livelihoods of those affected by disasters and special attention should be given to the needs of female–headed households.

The Project is anchored within the 'Strategic Engagement Area 3: Inclusion' of India's CPS, which states that the World Bank's investments in this area will (i) help build institutional capacity to prepare for and manage the impact of natural disasters, and (ii) help people protect themselves from natural disasters and recover quickly from them. Weaving in gender-sensitive indicators within the project fabric will, therefore, help the project to mitigate risks in a streamlined manner.

Gender and Social Inclusion Action Plan

Project Component	Suggested Action Area	Policy Rationale
Component 1 – Resilient electrical network	Ensure widowed, female – headed, poor households are covered through underground electrical cable networks that connect their households to the grid through subsidized (and safe) connections.	Andhra Pradesh is one of the three states in the Country selected for implementation of 'Power for All' program. The State Government is committed to supply 24X7 quality, reliable and affordable power to all domestic, commercial and industrial consumers. The AP State Disaster Management Plan highlights power supply disruptions caused by recurring high winds, storm surges, flooding and earthquakes.
Component 2– Restoration of connectivity and shelter infrastructure	Ensure friendly design features are developed for the disabled, elderly, women, children, adolescent girls, SCs, STs while restoring roads connectivity and shelter infrastructure.	The Economic Survey 2014 – 2015, GoAP focuses on embarking on an 'Infrastructure Mission.' One of the aims of this Mission is to establish improved road and port connectivity in the State to strengthen economic growth and strive towards becoming a leading maritime hub.

Project Component	Suggested Action Area	Policy Rationale
		The AP State Disaster Management Plan focuses on creating new or restoring multi – hazard shelters that are easily accessible to vulnerable populations. A recent CAG report on the state of multi – hazard shelters in AP suggested that there is an urgent need to restore or maintain these shelters, as it was found that most of these were used for other purposes or in a dilapidated condition.
Component 3– Restoration and protection of beach front	Ensure that friendly design features and safety measures are adopted for women, children, the disabled, elderly and adolescent girls while restoring and protecting beach front. Advocate for employment of unemployed youth (boys/girls) in the restoration/protection/ beautification of beach front.	The 'Social Empowerment Mission' launched by the Government of Andhra Pradesh in February 2015 focuses on, among other things, women's and other vulnerable groups' safety and improved access to civic amenities and standards of living. State employment policies such as the Mission for Elimination of Poverty in Municipal Areas (MEPMA) give opportunities to unemployed youth from slum areas to access jobs. The State Government's 'Social Empowerment Mission' focuses on promoting employment opportunities for SCs, STs, OBCs, minorities, and economically poor sections to ensure equitable growth.

Project Component	Suggested Action Area	Policy Rationale
Component 4 - Restoration of environmental services facilities and livelihood support	Restore damaged national ecological/zoological parks with participation of local communities. Restore the livelihoods of coastal families dependent on mangrove fisheries and forest farming and other allied activities.	The State Government released funds for the development and maintenance of national parks and sanctuaries under the Normal State Plan (2008 – 2009). This scheme is running since then and complements the Government's efforts to preserve sensitive ecological hotspots and promote eco–tourism with support of local communities. One of the key focus areas of the State Tourism Policy, 2010 is eco–based or rural tourism with community participation.
Component 5: Technical assistance and capacity building for disaster risk management	Support in the design and effective disbursement of accidental, and other, insurance products: Awareness campaigns designed to promote financial literacy and product acceptance among targeted vulnerable populations: widowed households, the elderly, female headed households, disabled, SCs, and STs.	The State Disaster Management Authority has, since 1998, been running an accidental insurance scheme for BPL families. It will be important to understand the extent to which such risk transfers impact the lives of vulnerable populations.

Specific Measures

Recognizing these vulnerabilities, the project strongly emphasizes attention to gender equity and social inclusion in the implementation process. The proposed livelihoods component will support restoration and strengthening of artisans, wherein substantial female participation would be ensured. The Social Welfare Departments and Women Development Corporation will be a key stakeholder in the implementation process. The restoration of public buildings will have design features that will pay special

attention to the needs and interests of vulnerable people including children, women, and aged, physically disabled, and other social groups (e.g. separate toilets for women and men in public buildings, separate waiting areas for women, separate toilets for girls and boys, etc). The proposed disaster risk reduction initiatives will similarly focus on equal participation of and benefits for women, children, and other vulnerable groups. The gender equity and social inclusion outcomes of the project shall be monitored with key performance indicators specified in the results matrix.

Additional measures proposed for women include: (i) Gender disaggregated data will be collected during detailed surveys and separate women focus group discussions will be conducted to address specific women related issues under the sub-project; (ii) Any direct adverse impact of the sub-project on woman-headed Household will be taken up on a case-to-case basis and rehabilitation of these Households will be treated as priority under the sub-project; (iii) During disbursement for rehabilitation assistance and compensation, priority will be given to woman-headed households; and (iv) Joint ownership in the name of husband and wife will be offered in case of non- women headed households.

Provision can be made for a 'Vulnerability Assessment Study' to be conducted in the first year of implementation. This study, which could be undertaken as part of Component 7 – Implementation Support, will identify:

1. The scale of vulnerability faced by widows, youth (boys/girls), female-headed households, the elderly, differently – abled, and other marginalized categories.
2. Barriers that obstruct the reach of services or facilities to these marginalized categories.
3. Policy interventions/recommendations that can reduce the access gap.

6.4 Consultations Strategy and Participation Framework

To ensure peoples' participation in the planning phase and aiming at promotion of public understanding of project scope, activities and impacts, various sections of project affected persons and other stakeholders will be engaged in various consultation throughout the project planning and implementation.

Public participation, consultation and information dissemination in a project begins with initial Social assessment activities during the initial phases of project preparation. Public consultation activities and information dissemination to PAPs and local authorities continues as the project preparation activities proceed in a project. Through respective departments and civil society, PAPs are regularly provided with information on the project and the resettlement process prior to and during the project preparation and implementation stage.

The information dissemination and consultation with PAPs during project preparation should include but not limited to the following:

- Project Description and its Likely Impacts
- Objective and Contents of the Surveys

- General Provisions of Compensation Policy
- Mechanisms and Procedures for Public Participation and Consultation
- Resettlement Options (Reorganization on Remaining Land, Relocation to a Fully Developed Resettlement Site, or Cash Compensation)
- Grievance Redress Procedures and its Effectiveness
- Tentative Implementation Schedule
- Roles and Responsibilities of Sub-Project Proponents And Local Authorities
- Feedback on the Income Generation Activities And Effectiveness
- Feedback Regarding Relocation Site(S)
- Preferences for the Mode of Compensation for Affected Fixed Assets (I.E., Cash or Land-For-Land)

This framework shall be a sub-set of the overall communication strategy of the project. Some of the methods that can be used for the purpose of communication will include provisions of information boards, pamphlets distribution, wall paintings, drum beating, organizing meetings with key informants and village committees and opinion gathering through post cards, phones and SMSes. Certain per centage of the project cost will be allocated for preparation and implementation of communication strategy.

It is good practice to document details of all public meetings held with people and local government officials with dates, location and the information provided and the major emerging issues. It is recommended that RAP and other documents include this list, as an attachment. Where public announcements are made, the details, together with a copy of the text of the announcements should be provided in the documents. A template for consultation framework is presented in the below Table.

Consultation Framework

Project Stage	Consultation Activities
Project Preparation	**Information dissemination and consultation with PAPs during field surveys:** • Project description and its likely impacts • Objective and contents of the surveys • General provisions of compensation policy • Mechanics and procedures for public participation and consultation • Resettlement options (reorganization on remaining land, relocation to a fully developed resettlement site, or cash compensation)

Project Stage	Consultation Activities
	• Grievance redress procedures • Feedback on the availability of paps to participate in income generation activities in the sub-project, where relevant It is a good practice to prepare a brief Public Information Booklet (PIB) for distribution to all the PAPs. The PIB will very briefly explain the sub-project objectives, likely benefits and adverse impacts, general provisions of the compensation policy, and grievance redress mechanisms.
	Information dissemination to local authorities after completion of census & inventory and during the SIA/RAP preparation: • Sub-project components • proposed policies and procedures including proposed resettlement strategies • a summary of impacts • request for identification of resettlement sites, if necessary • tentative implementation schedule • roles and responsibilities of the sub-project proponents and local authorities
	Consultation with community and other key stakeholders: • feedback regarding relocation site(s) • preferences for the mode of compensation for affected fixed assets (i.e., cash or land-for-land) • When the draft RAP are available they should be provided to key stakeholders and local NGOs in their native language and put in a public place. Feedback should be requested and incorporated into the final documents. The feedback could be received through email, phone, face-to-face interaction, meetings etc. Details of all the public meetings held with people and local government officials with dates, location and the

Project Stage	Consultation Activities
	information provided and the major emerging issues should be documented. It is recommended that RAP and other documents include this list, as an attachment. Where public announcements are made, the details, together with a copy of the text of the announcements should be provided in the documents. The draft RAP/SIA should be discussed with local authorities and a copy of the document should be kept with state and district level authorities. PAPs should be informed through public announcements on the availability of the draft documents at the district and local government level.
Project Implementation	Information dissemination and consultation with PAPs during RAP implementation: • Sharing RAP document with local authorities • Major policy resettlement policy provisions and grievance redress mechanism should be informed to the PAPs and beneficiary households in the project area through village level public meetings. • One to one meeting with the PAPs to explain their eligibility • Placing of micro plan for compensation and resettlement in affected villages for review and minimize grievances • Payment of compensation to PAPs in public meeting to maintain transparency • Household consultation for skill improvement training, use of compensation amount and livelihood restoration
Public Participation in Project Monitoring and Ex-Post Evaluation	• Establish Stakeholder Monitoring Group (SMG), consisting with affected people and civil society members. The group will be responsible for monitoring of all aspects of resettlement implementation and provide feedback to the PIU • Participation of PAPs in monitoring will provide project management with a more accurate reflection of PAPs reactions and perceptions.

Information Disclosure

The Right to Information Act, 2005 provides for setting out the practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, the constitution of a Central Information Commission and State Information Commissions and for matters connected therewith or incidental thereto.

The draft Resettlement Policy Framework will be disclosed through the AP Government website. In order to get the feedback from the stakeholders on past experience and to obtain suggestion for further refinement for draft RPF, consultations at the state and central level has been organized.

When the draft RAP is available for sub projects they shall be provided to key stakeholders and local NGOs and put in a public place. For sub projects requiring environmental clearance, the draft documents shall also be placed for public viewing and stakeholders' feedback as prescribed under EP Act 1986. The draft copies will also need to be disclosed at KUIDFC website at least two months prior to the awards of the contracts. Feedback received from stakeholders shall be incorporated into the final documents.

The executive summary of final set of RAP, wherever applicable and other project related documents/ relevant information shall be translated in local language and made available at Project Authority's state and project offices. The final documents in full will replace the draft documents in Project Authority's websites. The list of eligible persons (PAPs) for disbursement of benefits shall be separately disclosed at concerned Panchayat Offices/ Urban Local Bodies to ensure transparency. A copy of the list of eligible PAPs shall be put up at notice boards of the District Collector Offices, Block Development Offices, project offices, and any other relevant offices, etc. The Resettlement Policy Framework, executive summary of the Social Assessment and Resettlement Action Plan of the relevant sub project shall also be placed in the District Collector's Office.

The following project specific information related to social safeguards will be disclosed on the website.

- Approved RP&F including entitlement matrix;
- Approved Resettlement Action Plan;
- Government and private land to be acquired;
- Cultural and religious property to be shifted and relocated;
- Disbursement status of compensation and assistance given to respective PAPs;
- Details of Grievance Redress Committee, its procedures and mechanism;
- Details of public consultation;
- Details of compensation given to land looser and PAP;

Addition to the state and local disclosures as discussed above, documents like SMF, SIA and RAP will be disclosed in the World Bank's Info-shop.

6.5 Indigenous Peoples Development Framework (IPDF)

Since the Project is contemplating interventions in areas where there are tribals, it becomes imperative to prepare an Indigenous People Development Plan. No adverse Impacts of the subprojects have been identified on the IP households in any of the proposed subprojects proposed in the first year. The remaining sub projects are in the process of assessment. The key benefits envisaged out of the Project mainly comprise of a restoration and sustained improvements in basic service provision within the Project Affected Areas. Indirect benefits will be available in the form of improved living conditions, a healthier living environment and the prospect of improved income and health status of the population plus an improved economic climate with employment opportunities. Nonetheless, this Indigenous Peoples Management Framework (IPMF) is intended to guide selection and preparation of additional subprojects under the Project where impacts on tribal people are identified to ensure better distribution of the Project benefits and promote development of the indigenous peoples in the Project areas.

SC and ST Population

The newly formed Andhra Pradesh state in the year 2014 has about 5.33% ST population as per 2011 census. The district wise SC and ST population of the project area is given below:

ST Population in Project Districts

Project District	Total Population	ST total	% ST to total population
East Godavari	5,154,296	213,195	4.14
Visakhapatnam	4,290,589	6,185,00	14.42
Vizianagaram	2,344,474	2,35,556	10.05
Srikakulam	2,703,114	166,118	6.15
Andhra Pradesh (state)	**49386799**	**2631145**	**5.33**

Tribals/ Indigenous People

The terms 'indigenous peoples', indigenous ethnic minorities', tribal groups,' and 'scheduled tribes' describe social groups with a social and cultural identity distinct from the dominant society that makes them vulnerable to being disadvantaged in the

development process. By definition, IP refers to people living in an area within a nation-state, prior to the formation of a nation-state, but who do not identify with the dominant nation. This group has social, cultural, economic, and political traditions and institutions distinct from the mainstream or dominant society and culture. Essentially, indigenous people have a social and cultural identity distinct from the mainstream society that makes them vulnerable to being overlooked in development processes.

IPDF Objectives

The Indigenous Peoples Management Framework seeks to ensure that indigenous people and tribal communities are informed, consulted and mobilized to participate in the subproject preparation. The Framework is intended to guide selection and preparation of additional subprojects under the Project where impacts on tribal people are identified to ensure better distribution of the Project benefits and promote development of the indigenous peoples in the Project areas.

The IPMF aims to protect ethnic minorities from the adverse impacts of development, and to ensure that ethnic minorities benefit from development projects and programs. The need for a full IPDP will depend on the nature and magnitude of the Project impacts and sensitivity of IP issues. The need for the IPDP will be established on the basis of the following criteria, to determine if project impacts are 'significant':

i. adverse impacts on customary rights of use and access to land & natural resources;
ii. negative impacts on socio-economic status and cultural identity;
iii. impacts on health, education, livelihood and social security status; and
iv. any other impacts that may alter or undermine indigenous knowledge and customary institutions.

The IPDP will ensure that project affected IPs are, as well off with the project as without it after the implementation of the plan. This plan will also aim to identify measures towards satisfying the needs and developmental aspirations of IPs.

If, the impacts on IP's are insignificant and due to resettlement related activities then specific actions in favour of the indigenous people will need to be integrated in the Resettlement Plan for the subprojects or a community/ Indigenous People Development Plan. This would ensure appropriate mitigations and benefits for the indigenous people.

Based on both India's legal, constitutional and developmental strategies and The World Bank Policy on indigenous people, the objectives of an IPDP will be as follows:

i. Ensure that tribal/ ST people affected by any sub-project will benefit from the sub-project;

ii. Ensure tribal inclusion in the entire process of planning, implementation and monitoring of the sub-project;

iii. Ensure that the benefits of the sub-projects are available to STs more than or at least at par with other affected groups; this may require giving preference to tribal people as vulnerable groups over others on certain benefits under the subprojects; and

iv. Provide a base for the tribal groups in the area to receive adequate development focus and attention.

Preparation of IPDP

Based on the screening using Environmental and Social Data Sheet (ESDS), a field-based Social Assessment (SA) will be conducted either as part of the feasibility study or as a stand-alone activity. The SA will, in a gender-sensitive manner, in consultation with Indigenous Peoples communities, identify the project-affected Indigenous Peoples and the potential impacts of the proposed project on them. The SA will provide a baseline socioeconomic profile of the indigenous groups in the project area and project impact zone; assess their access to and opportunities to avail themselves of basic social and economic services; assess the short- and long-term, direct and indirect, and positive and negative impacts of the project on each group's social, cultural, and economic status; assess and validate which indigenous groups will trigger the Indigenous Peoples policy principles; and assess the subsequent approaches and resource requirements for addressing the various concerns and issues of projects that affect them. The level of detail and comprehensiveness of the SA will be proportional to the complexity of the proposed project and commensurate with the nature and scale of the proposed project's potential effects on Indigenous Peoples, whether positive or negative In order to prepare an IPP the following steps will be undertaken:

i. Based on the social assessment, establish baseline data on the tribal people (subsistence, employment, community networks) affected by the project (use the criteria in the section above to determine project impacts);

ii. Review policy guidelines both at national and state level regarding STs;

iii. If the impacts are considered significant as defined above, prepare an IPDP

iv. Submit IPDP to the World Bank for review and approval.

As enumerated above, the main features of the IPDP will thus comprise of a preliminary screening process, followed by a social impact assessment to determine the degree and nature of impact of each subproject, and an action plan will be developed if warranted.

Screening

A project's Indigenous Peoples category is determined by the category of its most sensitive component in terms of impacts on Indigenous People. The significance of impacts of a sub-project on Indigenous Peoples is determined by assessing (i) the magnitude of impact in terms of (a) customary rights of use and access to land and

natural resources; (b) socioeconomic status; (c) cultural and communal integrity; (d) health, education, livelihood, and social security status; and (e) the recognition of indigenous knowledge; and (ii) the level of vulnerability of the affected Indigenous Peoples community. The level of detail and comprehensiveness of the IPDP are commensurate with the significance of potential impacts on Indigenous Peoples.

The concerened social specialist of the Project will undertake a screening of the tribal communities with the help of the community leaders and local authorities. The screening will cover the following aspects:

i. Name(s) of tribal community group(s) in the area;

ii. Total number of tribal community groups in the area;

iii. Percentage of tribal community population to that of total area/locality population;

iv. Number and percentage of tribal community households along the zone of influence of the proposed subproject.

v. Socio-economic, demographic, cultural and other details of each affected tribal community household

If the results of the screening bring forth the presence of tribal community households affected as more than 10 households in the zone of influence of the proposed subproject, a social assessment will be planned for those areas.

Social Assessment

The PMU will undertake a social assessment with the help of a consultant. The SA will gather relevant information on demographic data; social, cultural and economic situation; and social, cultural and economic impacts – positive and negative on the tribal communities in the subproject area.

Information will be gathered from separate focus group meetings within the tribal community, including tribal leaders; group of tribal men and women, especially those who live in the zone of influence of the proposed subproject under the Project. Discussions will focus on the positive and negative impacts of the subproject as well as recommendations on the design of the subproject.

The PMU and will be responsible for analyzing the SA and based on it developing an action plan with the tribal community leaders. If the SA indicates that the potential impact of the proposed Project will be significantly adverse threatening the cultural practices and their source of livelihood, the PMU will consider other design options to minimize such adverse impacts and will prepare an Indigenous Peoples Development Plan (IPDP).

Indigenous Peoples Development Plan

IPDP will consist of a number of activities and will include mitigation measures of potentially negative impacts by means of modification of subproject design and

development assistance. Where there is land acquisition in tribal communities, the Project will ensure that their rights will not be violated and that they will be compensated for the use of any part of their land in a manner that is culturally acceptable to them. The compensation will be in keeping with Entitlement Matrix as provided in the Resettlement Policy Framework of the Project. The IPDP will include:

1. Baseline Data
2. Legal Framework (reflecting applicable national/state laws/acts) (key acts/policies have been mentioned in Chapter 4)
3. Land tenure information
4. Impacts and Losses
5. Identification of mitigation measures
6. Institutional arrangement
7. Community participation
8. Entitlements by Household
9. Monitoring and evaluation
10. Implementation schedule
11. Budget

The PMU will send this IPDP to The World Bank for review and comments and concurrence.

Free, Prior, Informed Consultation for recording Broad Community Support

Meaningful consultations with IPs, including women throughout the project cycle to seek their informed participation at all stages. Consequently all relevant information relevant to the project would be disseminated among them through regular information disclosure workshops, pamphlets in local language etc. The tribal groups/IPs will be consulted during the preparation of the IPDP. They will be informed of the mitigation measures proposed and their views will be taken into account in finalizing the plan.

The Plan will be translated into the tribal language and made available to the affected people before implementation. TDP/IPDPs will include dates, locations and attendees for all consultations held; and that all TDPs/IPDPs will include a summary of the results of those consultation, evidence on the level of community support for the project, as well as any concerns or potential risks or conflicts. The tribal institutions and organizations in the affected area will also be involved in implementing the IPDP and in resolving any disputes that may arise.

Grievance Redressal Mechanism

Over and above the proposed GRM systems, for tribal population, any existing customary tribal administration system/tribal panchayats will be involved in the grievance redressal system as the first step.

The preliminary level for resolving grievances shall be the Village level Committee headed by Ward member and comprising community leaders. At the secondary level, the PIU and PMU grievance redress committees shall be responsible for addressing grievances of the IPs. At the state level, the Commission for SC , STs, and Minorities shall be the apex body to hear and resolve grievances from the IPs. India also has a national level Commission for SCs, STs, and minorities which monitors incidents of crime or discrimination against tribal people and hears and addresses their grievances.

Institutional Arrangements and Budget

The Implementing Agency will be implementing the IPDP for the sub-project under the supervision of the PMU. However, PMU will have the primary responsibility for the preparation of the IPDP. The responsibility of financing, implementation and monitoring of the IPDP will rest with the PMU. A local NGO with the relevant experience will be hired to assist the PMU in planning and implementing the IPDP.

Disclosure

The disclosure will be in a manner accessible to PAPs where there are differing levels of literacy skills. All IPDPs will be disclosed as given in the RPF.

6.6 Lessons Learned and Reflected in the Project Design

The proposed project incorporates lessons learnt from the on-going NCRMP-I and the other on-going disaster risk management projects in India, as well as international best practice. Some of the lessons incorporated are:

Over-all

a. The proposed project incorporates lessons, from the on-going NCRMP-I; that Technical codes and standards utilized should be resilient to natural hazards. Previous projects have shown the importance in utilizing technical standards during the design phase in order to build back better by factoring in various natural hazard risks. In addition to utilizing technical standards the type of designs and construction methods should be tailored to local conditions and utilize appropriate material. Technical assistance in this area will be provided to ensure compliance under the project

b. The Disaster Management Act of 2005 paved the way for the creation of the National Disaster Management Authority (NDMA) at the national level, and the

State Disaster Management Authority (SDMA) at the state levels, the latter with a clear mandate for spearheading disaster management efforts in the states. The Project recognizes the need for strengthening the capacity of the SDMA at the state and local level towards disaster risk mitigation and has allocated funds and activities towards the same. The Gujarat State Disaster Management Authority and the Odisha State Disaster Management Authority are good examples and lessons are drawn from their evolution and development process.

c. Globally, there is evidence that some disaster response programs have focused too heavily on rebuilding infrastructure and not enough on better adaptation and preparedness for the future in complementary investments, such as water and flood management, rural finance, early warning communication systems, etc. A strong disaster response mechanism plays a crucial role in not only saving lives and livelihoods, but also for achieving sustainable recovery and long-term disaster risk reduction. The Project will focus on providing technical assistance in sustainable risk mitigation and response.

d. Communities are the first responders and also the worst affected. Building capacity of the community (including women and young girls) in disaster response and preparedness has paid off rich dividends in Odisha during Cyclones Phailin and Hudhud.

School curriculum is an effective and widespread medium of disseminating DRR knowledge just as training conducted by the various Governmental Department Training Institutes reaches out to the entire Government machinery. Learning generated by the 'CBDRM and DRM Curriculum for Schools and Government Training Institutions' component from the World Bank funded Coastal Disaster Risk Reduction Project (CDRRP) in Tamil Nadu, are part of the project design.

Management of Environment and Social Issues/Concerns

a. **Engagement of local communities**: Evidence from Bangladesh, NCRMP I, and other projects all highlight the important benefits of involving the local community in infrastructure location and design. These lessons will be incorporated in the proposed project under multiple components; construction of cyclone shelters, strengthening early warning systems, capacity building and others. The consultation process to finalize the location and design in targeted coastal areas will involve engagement with the community.

b. **Capacity of Local Governments and Community** should be strengthened to ensure sustainability of the interventions through a long-term strategy for operating and financing maintenance of the assets established under these projects. Odisha has demonstrated an effective model of community ownership of Cyclone Shelters through the Cyclone Shelter Management & Maintenance Committee (CSM & MC) established around each shelter.

Relevant lessons from the same and other such interventions have been adopted in the NCRMP and are being integrated for the management and maintenance of evacuation shelters and EWDS.

c. **Screening and Analysis of Alternatives**: The environment and social screening tool developed as part of the Environment and Social Management Framework (ESMF) for the parent NCRMP project has been used effectively for early identification of key environmental and social issues associated with sub-projects, which are not only many in number but also spread across a wide geographical coastal realm of two states, namely Odisha and Andhra Pradesh. This exercise, carried out in parallel with the technical assessment, has also helped in precisely identifying the location for a sub-project.

- For location/s falling within the Coastal Regulation Zone (CRZ) line, an alternative site was identified in Odisha. For sub-projects with significant social issues, land acquisition and displacement issues and the ones falling within the CRZ with no alternative sites, were either dropped or considered for Phase II, depending on the nature and scale of issues.

  The already established methodology for environment screening exercise, supported by use of scientific tools such as GIS and remote sensing techniques, has helped in avoiding/minimizing adverse environmental impacts on sensitive habitats and in finding alternatives, wherever possible.

- For NCRMP II, all sub-projects will be subjected to an environmental and social screening in line the process and procedures set forth in the ESMF and in line with the well-established system adopted for the parent project (NCRMP I). The screening process will filter out sub-projects with substantive/ major environmental or social issues. It will distinguish/identify sub-projects requiring a detailed impact assessment and/or regulatory clearances and requirement for land uptake, if any.

d. A **detailed or limited environmental impact assessment study** (as the case may be depending on findings from the screening exercise) will be undertaken for investments pertaining to saline embankment/bund strengthening works and underground electric cabling (or in exceptional cases for roads with major re-alignments). These sub-projects will undergo an analysis of alternatives, especially in terms of their proposed location and/or design as required under standard EA practice.

   For sub-projects requiring regulatory clearances (including the Coastal Regulation Zone (CRZ) clearance), alternative site/s will be explored, and for those with no viable alternatives, permissions will be sought in line with regulatory requirements.

e. **Considerations of environment and social dimensions in operation and maintenance cycle of assets** would help in ensuring the soundness and sustainability of the program from an environmental perspective. For example, project benefits for multipurpose disaster shelters include ensuring safe sheltering of the project beneficiaries at the event of any disasters including cyclone, and providing new or upgraded spaces for schools, health centres, or other public uses (as decided by the community).

Separate floor for sheltering livestock is expected to save number of cattle and other livestock in the event of a disaster. Some ancillary provisions in the cyclone shelters stemmed out from environmental considerations. The design of each shelter includes separate sanitary facilities for men and women, access ramps and sanitary facilities for physically challenged, separate space for generator, first aid facilities and a kitchen. These provisions also include an attempt towards clean energy benefits from use of solar panel/s.

Chapter 7: Implementation Arrangements

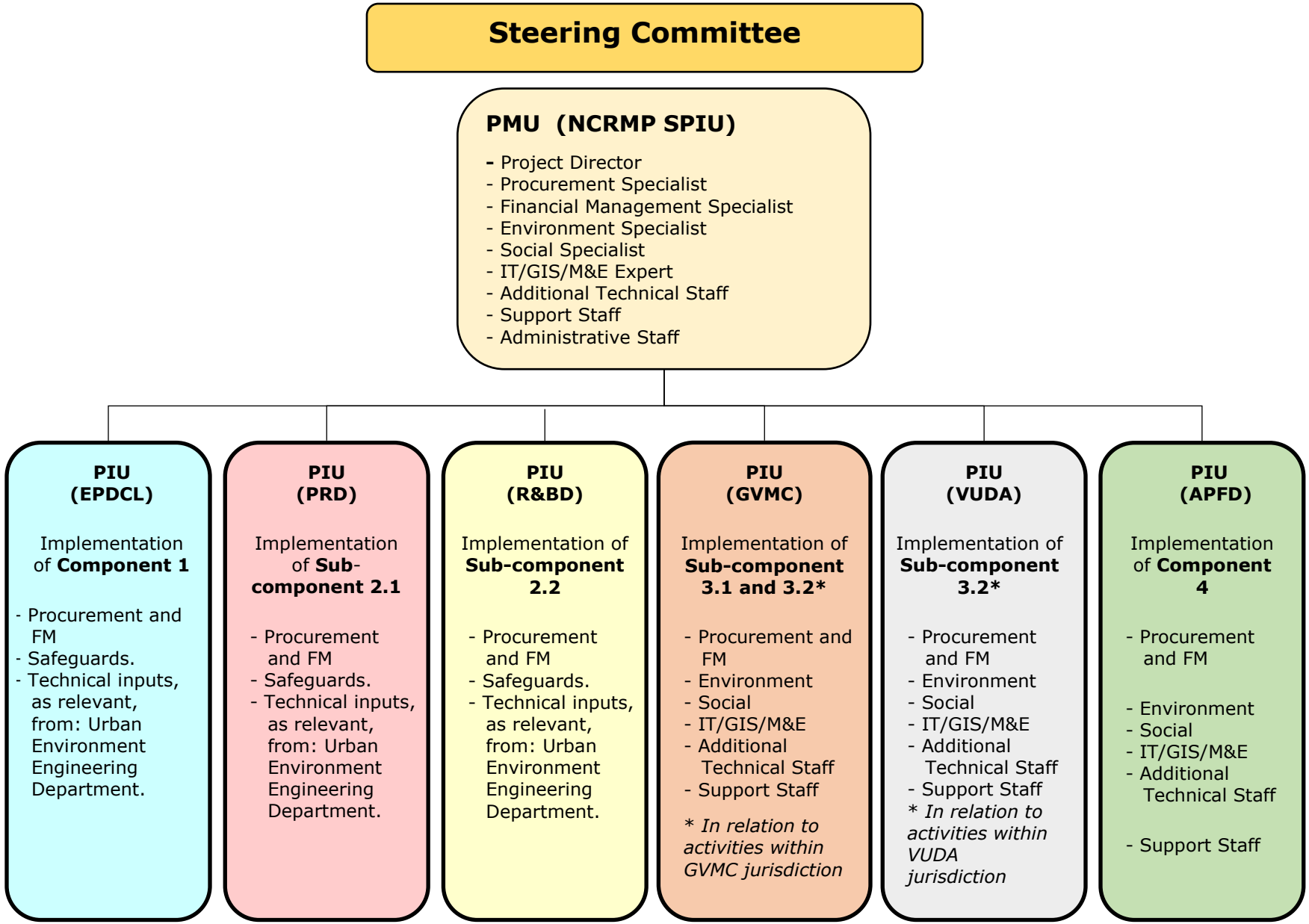
7.1 Over-all Project Administration Mechanisms

The State level Project Steering Committee (SCC) constituted at apex level for NCRMP will oversee and monitor the overall progress of project. The State Project Implementation Unit (SPIU) for NCRMP will act as the Project Management Unit for the project. The PMU will be supported by sector experts drawn from each of the Line Departments (LDs) implementing the project investments. The Line Departments shall be responsible for actual execution of the works and further maintain the infrastructure created. These Line Departments will appoint nodal officers and will execute the project through respective field offices. The overall list of the various project components and respective implementing agencies is illustrated in the Table below.

Project Components and Respective Implementing Agencies

Components	Departments/Agency
Component 1: Resilient electrical network	• Eastern Power Distribution Company of A.P. Ltd. (EPDCL)
Component 2: Restoration of connectivity and shelter infrastructure	• Panchayati Raj Department (PRD) for Rural Roads and repair of cyclone shelters (Sub-component 2.1) • Road and Building Department (R&BD) for Major District Roads (Sub-component 2.2)
Component 3: Restoration and protection of beach front	• Greater Visakhapatnam Municipal Corporation (GVMC) for Shore protection work (Sub-component 3.1) • GVMC and Visakhapatnam Urban Development Authority (VUDA) for Beach front restoration (Sub-component 3.2)
Component 4: Restoration of environmental services facilities and livelihood support	• Andhra Pradesh Forest Department and its partners
Component 5: Capacity building and technical assistance for disaster risk management	• PMU and its partners

All Implementing Agencies shall establish a Project Implementation Units (PIUs). The proposed implementation arrangements is outlined in the graph below:


Steering Committee
PMU (NCRMP SPIU)
- Project Director
- Procurement Specialist
- Financial Management Specialist
- Environment Specialist
- Social Specialist
- IT/GIS/M&E Expert
- Additional Technical Staff
- Support Staff
- Administrative Staff
PIU (EPDCL)
Implementation of Component 1
- Procurement and FM
- Safeguards.
- Technical inputs, as relevant, from: Urban Environment Engineering Department.
PIU (PRD)
Implementation of Sub-component 2.1
- Procurement and FM
- Safeguards.
- Technical inputs, as relevant, from: Urban Environment Engineering Department.
PIU (R&BD)
Implementation of Sub-component 2.2
- Procurement and FM
- Safeguards.
- Technical inputs, as relevant, from: Urban Environment Engineering Department.
PIU (GVMC)
Implementation of Sub-component 3.1 and 3.2*
- Procurement and FM
- Environment
- Social
- IT/GIS/M&E
- Additional Technical Staff
- Support Staff
* In relation to activities within GVMC jurisdiction
PIU (VUDA)
Implementation of Sub-component 3.2*
- Procurement and FM
- Environment
- Social
- IT/GIS/M&E
- Additional Technical Staff
- Support Staff
* In relation to activities within VUDA jurisdiction
PIU (APFD)
Implementation of Component 4
- Procurement and FM
- Environment
- Social
- IT/GIS/M&E
- Additional Technical Staff
- Support Staff

The SCC will formally approve the project investments and help coordinate the activities of various departments, including in obtaining required approvals/ clearances for the Project. This shall be done through semi-annual review meetings, where the SCC shall:

- Review the budgets.
- Review progress against the defined milestones.
- Review critical findings of the audit and evaluation reports.
- Provide such guidance, as it may deem necessary for the Project.

The PMU will be responsible for:

a. Overall project management and reporting;

b. Coordination with PIUs and line departments in approval of designs, assisting the PIUs in preparation of: Detailed Project Reports (DPRs), bidding documents, tendering schedules, etc.;

c. Implementation of Component 5;

d. Appointment of technical assistance consultants and others safeguards management support to the implementing agencies;

e. Quality Assurance through third party audits;

f. Maintaining MIS and Quarterly reporting;

g. Progress reporting, financial management, monitoring and reporting;

h. Ensuring compliance with agreed implementation procedures and other Bank requirements, etc.;

i. Grievance redress.

The PIUs will be responsible for:

j. Preparation of DPRs including technical designs, surveys and investigations, etc.;

k. Tendering, bid evaluation, contract award, contract management, etc.;

l. Financial Management and safeguards compliance;

m. Progress and expense reporting to the PMU;

n. Coordination with line departments for design, implementation, and hand-over arrangements;

o. Grievance redress.

At the district level, the respective District Collectors will oversee and provide guidance for the implementation of the Components.

Component 1

Component 1 will be implemented by the Eastern Power Distribution Company of AP Ltd (EPDCL). A dedicated PIU will be housed within this Agency. EPDCL will also be responsible for quality assurance through third party audits.

Component 2

Component 2 will be implemented by the Panchayati Raj Department (PRD) for Sub-component 2.1, and by the Roads and Buildings Department (R&BD) for Sub-component 2.2, and two separate Project Implementation Units (PIUs) will be established. Each PIU will be coordinated by the respective Department Chief Engineer's Office. Surveys, investigations and designs will be carried out by the respective Departments with inputs from the field staff under the Superintending Engineer of the respective District. Independent consultant(s) will be appointed by R&BD and PRD to support the day to day preparation and implantation activities of these tasks. PRD will also appoint external consultants for major bridges, if any. All procurement actions will be undertaken by the respective Departments; the management and construction supervision of works contracts will be carried out by the field staff of the respective Departments and Districts. Third party consultant appointed by the PIUs will carry out quality monitoring and audit of the works contracts.

Component 3

Component 3 will be implemented by the Greater Visakhapatnam Municipal Corporation (GVMC) for Sub-component 3.1 and by GVMC and the Visakhapatnam Urban Development Authority (VUDA) for Sub-component 3.2. The lead implementing agency for Component 3 will be GVMC, and two separate PIUs will be established. Each PIU will be coordinated by the respective Department Chairman, in particular, the GVMC Vice-Chairman, and the VUDA Chairman.

The activities under Sub-component 3.1, i.e. shore protection, will be planned and implemented by GVMC. The activities under Sub-component 3.2, which include restoration of assets/infrastructure on the land side of the beach front, will be implemented by GVMC and VUDA within their respective jurisdictions.

Both agencies will be responsible for identification, preparation, implementation, financing, and repayment including the community development and technical assistance of the respective activities they implement under these sub-components. Support will be provided to both GVMC and VUDA. Both agencies will also be responsible for quality assurance through third party audits.

The PIUs will consist of:

- Consultant Firm: A Consultant Firm will be appointed by GVMC to support GVMC and VUDA with all the day to day preparation and implementation activities. The Consultant Firm will be responsible for preparation/review of Detailed Project Reports including technical designs, surveys, investigations etc.; tendering, bid evaluation, contract management; financial management and safeguard compliance and progress and expense reporting. It can also be supplemented by short term experts as required.

The contract will be a tripartite agreement between the firm, GVMC and VUDA. Persons with clearly defined roles will be assigned and will report to both GVMC and VUDA separately.

- Designated Officials of GVMC and VUDA: Both GVMC and VUDA will provide a dedicated team of government officials towards the project. They shall be responsible for day to day implementation and coordination, also for quality control. Respective Project Managers shall be assigned by both agencies – of level of Superintending Engineer in GVMC and Superintending Engineer in VUDA. Other officials to be designated to the project are noted in detail in the implementation structure below.

Component 4

1. Components 4 will be implemented by the Andhra Pradesh Forest Department (APFD). The APFD will have a PIU at Visakhapatnam to implement this component. One or more Participating Agencies could assist APFD in the implementation of the Component 4. The Civil works will be executed through an arrangement with a Participating Agency (ies) that has to be assessed for purposes of procurement and contract management. The plantations will be developed using the existing VSS (*Vana Samrakshana Samithies* – Village Forest Protection Committees) structure.

7.2 Institutional Capacity for Environment and Social Management

The PMU under the Revenue and Disaster Management Department, GoAP will be the key implementation and coordinating agency for this project. It is familiar with the Bank's safeguard requirements, through its involvement in NCRMP-I (an on-going Bank funded operation in the state). On the environment and social management aspects, the Unit has gained basic familiarity with regard to the Bank's safeguard requirements through their involvement in the said on-going operation. Insights into typical issues/problems have been developed at the state level and reporting and other monitoring mechanisms have been put into place. The Unit already has social and environmental specialists and but will need to bring-in additional expertise as may be needed for specific activities (such as those under Component 3 and triggering requirements of OP 4.11 and 4.04).

However, this proposed operation will also involve GVMC, VUDA and electric utility company for whom the environmental and social dimensions are new and will require capacity building support and hand-holding both from the PMU and the Bank. More so, some sensitization/awareness among implementers in the field (consultants, contractors and line agency staff) will also be required so that project specific requirements set forth in the ESMF are understood clearly by all concerned. The Bank will continue its oversight on aspects pertaining to institutional arrangements and staff capacity, as with a large number of implementing entities that are involved in the operation, staff turnover during the course of project implementation is expected.

7.3 Arrangements for ESMF Implementation

Staffing arrangements for environment and social management in the project are given below.

- At PMU, Environmental and Social Specialists have been deployed to handle all matters pertaining to environmental management in the project (for both NCRMP I and this project), including activities related to project planning and preparation, supervision, monitoring, evaluation, reporting and documentation. The role of this specialist also includes dealing with matters pertaining to training and capacity building; regulatory clearances; integration of ESMF into project design and contract documents; preparation of ToRs for studies (such as for EA, as and if required) and; co-ordination with the participating SDMAs on environmental activities in the project. The state level Environmental Officer shall also be responsible for data collation and documentation on environmental aspects of the sub-projects in the project. The PMU will bring-in additional expertise as may be needed for specific activities (such as those under Component 3 and triggering requirements of OP 4.11 and 4.04).

- The Line Department/Agency will designate an officer/appoint expert for environment and social management/safeguard activities.

- At the sub-project level, the contractor would be responsible for planning, executing and coordinating the implementation of the ESMF provisions as laid out in the contract documents; overseen by the concerned line department staff.

- During implementation, an 'Independent/Third Party Auditor' would audit/review the implementation of the works in accordance environmental, health and safety management provisions set out in the respective contracts.

1. Project Management Unit (PMU)

Towards the application and implementation of the ESMF, two officers have been appointed as Environmental & Social Specialists as part of the PMU/state level set-up. Their main role is to ensure that environmental and social requirements set forth for the project are applied appropriately and the implementation of sub-projects is carried out in line with applicable Government of India/GoAP regulations and World Bank Operational policies.

The Environment and Social Specialists at the state level shall provide feedback based on the field visits, regular supervision and monitoring activities, including those undertaken as part of Third Party audits to the Project Director. The Environment and Social Specialists at the state level will provide technical assistance in planning and design of the activities, including reviews and trainings.

The role and responsibilities of the Environment and Social Specialists at the PMU shall include:

- Updating of the ESMF document.
- Training and orientation of the PIUs on the requirements and application of the Environment and Social Management Framework
- Reviewing the monitoring reports submitted by the implementing agencies on compliance with the ESMF, including the EMPs.

- Undertake regular visits, specifically covering sub-projects near environmentally sensitive sites, across the implementing states, to review compliance with the ESMF and sub-project specific plans.
- Provide guidance and inputs to the line agencies on environment and social management aspects, including documentation
- Act as a single point of contact for resolving queries related to environment and social issues.
- Prepare regular reports/updates for the PD/SDMA and the World Bank.

The Environmental & Social Specialists shall oversee the implementation of ESMF as well as other environmental and social provisions specified in the state's regulatory framework.

Environment Specialist

The primary role of the Environment Specialist in the Project Implementation Unit is to assist and guide the line agencies in the preparation and implementation of the sub-project specific Detailed Project Reports (DPRs). In particular the screening exercises and sub-project specific EMPs and RAPs, where required and integration of findings into the sub-project's decision making cycle have to be carried out by them. Other duties/responsibilities will include, but not limited to, the following:

- Ensuring appropriate application of the ESMF to all components and sub-projects.
- Coordinate the preparation of environmental screening report of project sites assessments.
- Preparation of site specific environment management plans (EMP) for selected sub-projects.
- Liaising with various State line departments & other implementing agencies on environmental matters.
- Detailing all the environmental laws and regulations of the state and national government which will apply to specific sub project activities.
- Coordinating with MoEF/State-level regulatory authorities for obtaining environment clearances in a timely manner.
- Organizing training for SDMA staff and line departments on ESMF/EMP implementation.
- Capacity building of contractors on environmental issues, practices and procedures to be followed.
- Identifying and providing oversight to consultants who may be deployed to carry out sub-project specific EAs and EMPs of sub-projects (wherever required).
- Prepare information, communication, and education strategy to enable proper conduct of stakeholder consultations.

- Periodic site visits to ensure that environmental requirements in the ESMF are being followed during implementation of projects activities by the Line departments and contractors, including identification of good practices and shortcomings, if any and advice on the remedial corrections.
- Documenting the implementation of ESMF and EMPs.
- Provide necessary inputs to project quarterly progress reports on environmental matters.
- Supporting hiring of external environmental auditors and coordinating the conduct of these audits as per the ESMF requirements.
- Oversee the working of the third party auditors including review of the audit plan, the results and recommended corrective action/s.

Qualification and Experience: A Master's Degree in Environment/Natural Resources or related areas. Good and demonstrated understanding of the environmental safeguard policies of agencies like World Bank is a prerequisite for this position. The person shall have hands on experience in projects funded by the WB and/or other multilateral agencies in India and the State (preferably). The candidate must possess good writing, reporting and communication skills.

Social Specialist

The primary scope of work of the Social Development and Resettlement Specialist is to help the State Project Implementation Unit in preparing and implementing the social dimensions/requirements of the ESMF. Other duties/responsibilities include, but not limited, to the following:

- The consultant will assist and guide the state level PIUs, their line departments, Implementing Agencies (IAs) engaged in the project in community mobilization, preparation, and implementation of resettlement plans, as required, in accordance with the ESMF.
- Assist the above stakeholders in the preparation and implementation of RAP for sub-projects which trigger adverse social concerns for the Project Affected People (PAPs).
- Carry out, wherever required an initial poverty and social assessment, sample socio-economic survey, and detailed inventory of affected assets and losses
- Ensure disclosure of the sub-project Resettlement Plan to the affected persons.
- Provide guidance to line departments/implementing NGOs in the preparation of information materials related to resettlement, consultation on resettlement/ relocation options and finalization of individual entitlements, verification, and delivery of compensation and allowances, house reconstruction (if required) prior to dispossession or displacement.
- Wherever land acquisition issues are involved, liaise with District Collectors and relevant authorities to expedite land acquisition process and assist in finalizing estimates of compensation
- Monitor all land acquisition and resettlement related activities.

- Extend assistance to PIU and line departments in effectively addressing the grievances of the PAPs in line with Grievance Redressal mechanisms.
- Prepare monthly progress reports highlighting implementation progress, issues/constraints that require decisions by the PIUs and other agencies involved.

Qualification and Experience: A Master's Degree in social sciences with good knowledge of the prevailing R&R regulations/laws of the country, state, and World Bank. The person shall have hands on experience in projects funded by the WB and/or other multilateral agencies in India and the State (preferably). The candidate must possess good writing, reporting and communication skills.

3. Line Departments/Implementing Agencies

The line departments shall be responsible for the execution of the contracted work either through the contractors or internally by the department staff. The line department will ensure during the day-to-day functioning that the ESMF, EMPs and the RAPs, are implemented properly in their respective sub-projects.

The line departments/implementing agencies shall carry out the following key tasks:

- Leading social and environment screening exercise for every sub-project site.
- Integrate findings of the screening and assessments (where applicable) in the sub-project selection and/or design process.
- Preparation of the EA/SA and EMP/RAP documents along with the DPRs where applicable either through internal resources or external consultants.
- On-site review for compliance with the ESMF, EMP and the RAP requirements.
- Take required actions, including application of contractual remedies, on contractors when needed.
- Provide required update/data/information to the PIU on ESMF implementation.

4. Independent Third Party Consultants

Third party consultants will be appointed by the PMU to provide independent assurance on compliance with the EMSF across THE project sites. The third party consultants shall:

- Support the PIU in preparing the audit plan.
- Prepare compliance report for sub-project activities in line with ESMF guidelines and other statutory requirements as applicable through scheduled or unscheduled audits.
- Conducting random field visits and review compliance, especially at the environmentally or socially sensitive areas.
- Review the performance of the project through an assessment of periodical monitoring reports submitted by the line departments and PIU.
- Share REVIEW findings with the PIU to aid in timely decision making and adopting appropriate mitigation action/s, if necessary.

5. Community

Community Based Cyclone Shelter Management and Maintenance Committees (CSMMCs) may be formed under the Chairmanship of local BDO and a volunteer from the community as Secretary and the buildings may be handed over to the concerned CSMMC for management and maintenance. Local Tehsildar, Medical Officer, Junior Engineer of the Block, Revenue Inspector, Head-master of the School, ANM and Aaganwadi Supervisor could be the Ex-Officio Members of the Committee. Representatives from the local NGO, from shelter and served villages, SHG and SC & ST communities may also be members of the Committee.

The CSMMC may take the charge of day-to-day management and maintenance of the building. Buildings constructed may be used for School, Library, Vocational Training Centre, Panchayat Ghar and other purposes during normal time. The CSMMC is also authorized to put the building for economic / community uses like community house, marriage mandap, social gathering etc. and earn user fees. The amount so earned is to be kept in a joint account and as and when necessary spent for the purpose of maintenance of the building.

Capacity Building: The CSMMC members and Village Disaster Management Teams (DMT on first-aid and DMT on search and rescue) may train volunteers for a shelter on first-aid techniques or on search & rescue techniques by engaging appropriate experts. The shelters also have to be given a linkage with the Village, GP and Block level Disaster Management Plans.

7.4 Over-all Project Supervision, Reporting and Monitoring (SRM)

The multi-tier implementation arrangements under the Project include supervision and monitoring roles and responsibilities of the various players involved in the implementation. Supervision will generally entail routine quality certification at various stages of construction, forming the basis of payment certification and other works. Monitoring will occur as a periodic function, and will include process reviews/audits, reporting of outputs, and maintaining progressive records. Broad thematic areas that will be supervised and monitored include the following:

1. Periodic Physical Progress Monitoring
2. Regular Quality Supervision and Certification
3. Social and Environmental Monitoring & Third Party Quality Audit
4. Over-all Monitoring and Evaluation

A summary is provided below:

Periodic Physical Progress Monitoring - Physical progress monitoring will be carried out by the line or implementing agencies (IAs) on a monthly basis. The line agencies will carry out monthly surveys in their respective domains to record and report on the progress of works. They will also, in coordination with the respective beneficiaries and contractors, identify any constraints and delaying factors.

Environment and Social Monitoring - This will comprise of the following sets of activities:

a) Monitoring compliance with environmental regulations, social safeguards and Environmental and Social Management Framework (ESMF) provisions and

b) Monitoring and oversight of social and environmental issues at state/project levels.

A third party audit/review agency will also be selected to evaluate the level of compliance with the project's environment safeguard instruments. A comprehensive assessment report on environmental performance will be prepared by the Project Authority at mid-term and end-term.

Regular Quality Supervision & Certification – This will be carried out by the respective implementing departments, forming the basis of payment certification. Technical supervision staff shall be deployed by the implementing departments. In addition, compliance on social and environmental aspects shall be taken into account before the bills are paid.

Monitoring and Evaluation (M&E) - The environment management instruments provide guidance on monitoring and evaluation parameters and describe the institutional arrangements to facilitate the 'process' and 'progress' monitoring. The application/implementation of environment and social management instrument, ESMF will be monitored using parameters prescribed in the instrument.

7.5 Monitoring – Frequency and Responsibility

Each designated Environment and Social Specialist shall be responsible for overseeing compliance of the sub-projects to Bank safeguards, GoI/GoAP regulations and applicable ESMF guidelines. They shall also review regularly the timely implementation of environment and social provisions as per the ESMF, EMP and RAP, where applicable. The following aspects shall be monitored and reported as per the frequency provided in table below. Corrective actions shall be initiated in a planned manner as appropriate to ensure compliance to the ESMF/EMP measures.

S.No.	Particulars	Frequency	Reporting Responsibility	Monitoring responsibility
1	ESMF Compliance/Status Report, including screening results, status of conduct of EIA/SIA and actions taken for compliance	Monthly/ Quarterly	PIU, Environmental and Social Experts	Project Director - PMU, Environmental and Social Specialists
2	Environment and social site visit report	Quarterly	PIU, Environmental and Social Experts	Project Director - PMU, Environmental and Social Specialists

S.No.	Particulars	Frequency	Reporting Responsibility	Monitoring responsibility
3	Regulatory clearances	Quarterly	PIU, Environmental and Social Experts	Project Director - PMU, Environmental and Social Specialists
4	Verification of land to be acquired and status of land acquisition	Monthly	PIU, Social Expert	Project Director - PMU, Environmental and Social Specialists
5	Distribution of entitlements and assistances	Monthly	PIU, Social Expert	Project Director - PMU, Environmental and Social Specialists
6	Community consultations	Quarterly	PIU, Environmental and Social Experts	Project Director - PMU, Environmental and Social Specialists
7	Grievance redressal	Monthly/ Quarterly	PIU, Social Expert	Project Director - PMU, Environmental and Social Specialists

The monitoring and reporting will be done by line departments/implementing agency to PIU, which in turn will be reporting to PMU.

7.6 Reporting Formats

Reporting formats are being developed to get progress and results data of the project from the field. Some that have been developed so far have been provided in Volume II containing Annexures. This will also help in synchronising and streamlining reporting requirements from the various Project Implementation Units (state level) to the Project Management Unit of AP DRP.

7.7 Training and Capacity Building

Specific capacity strengthening support for the project is necessary. Experience from NCRMP-I has re-emphasized the need for adequate training and capacity building arrangements on environment and social management at various levels covering all levels of concerned organizations/agencies (PIU, implementing agencies, consultants and contractors). Adequate implementation and support mechanisms would be required for the project as there are new activities, some of which require specific expertise and close over-sight.

The proposed project would require regular/periodic training programmes on the safeguard aspects to ensure that the comprehensive safeguard instruments developed for the project are effectively and uniformly used in the field. Training and sensitization would be required at periodic intervals to ensure that sub-project activities are carried out as per the requirements set forth in this ESMF.

Training may be organized by PMU and PIUs for:

1) Implementation Agency Staff involved in the Project
2) Asset Maintenance and Management Committee Members
3) Volunteer Task Force

A holistic and integrated approach will be evolved towards disaster management with emphasis on building strategic partnerships at various levels.

Modules for training may be developed keeping in the needs of the various target groups/stakeholders. A more comprehensive plan on training and capacity building will be included in the Operations Manual for the project, which is currently being drafted/developed in consultation with the stakeholders.

7.8 Budget for ESMF Implementation

To effectively implement the environmental and social management measures suggested as part of the ESMF, necessary budgetary provisions will be made in the DPRs for the individual sub-projects. Tentative bud get for each of the project

should include the environmental management costs along with the good engineering practices and cost of environmental and resettlement monitoring.

The budget for complying with the EMP needs to be worked out for each sub-project by working out the cost of implementing each EMP mitigation measure. Where this is not possible, provision of a minimum of 2% of the sub-project cost needs to be earmarked for complying with the EMP. All administrative costs for implementing the ESMF shall be budgeted for as part of the PIU and PMU costing.

Andhra Pradesh Disaster Recovery Project

(Proposed for World Bank Funding)

Environment and Social Management Framework

Department of Revenue and Disaster Management
Government of Andhra Pradesh

Volume II: Main Report
(Final Version: May 7, 2015)

Table of Contents

Acronyms

AP	Andhra Pradesh
ASCI	Administrative Staff College of India
APSDMA	Andhra Pradesh State Disaster Management Authority
BCR	Benefit Cost Ratio
CBO	Community Based Organization
CRZ	Coastal Regulation Zone
CSMMC	Cyclone Shelter Management and Maintenance Committee
CBDRM	Community Based Disaster Risk Management
CDRRP	Coastal Disaster Risk Reduction Project
CSO	Civil Society Organization
DC	Direct Contracting
DEA	Department of Economic Affairs, Govt. of India
DPR	Detailed Project Report
DRM	Disaster Risk Management
DoRD	Department of Rural Development
EA	Environmental Assessment
EC	Empowered Committee
EOC	Emergency Operating Centre
ESMF	Environment and Social Management Framework
EDC	Eco Development Committee
EHSIA	Environment Social and Health Impact Assessment
EPDCL	Eastern Power Distribution Company of Andhra Pradesh Ltd
GIS	Geographic Information System
GoI	Government of India
GoAP	Government of Andhra Pradesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
GVMC	Greater Visakhapatnam Municipal Corporation
HTL	High Tide Line
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
ICZM	Integrated Coastal Zone Management
IDA	International Development Association
IMD	India Meteorological Department
ISP	Implementation Support Plan

INCOIS	Indian National Centre for Ocean Information Services
ISRO	Indian Space Research Organization
LARRA	Land Acquisition, Resettlement and Rehabilitation Act
M&E	Monitoring & Evaluation
MHA	Ministry of Home Affairs, Govt. of India
MIS	Management Information System
NCRMP	National Cyclone Risk Mitigation Project
NDMA	National Disaster Management Authority
NIDM	National Institute of Disaster Management
PRD	Panchayati Raj Department
PPR	Periodic Performance Review
RAP	Resettlement Action Plan
RDNA	Rapid Damage and Needs Assessment
R&BD	Road and Building Department
SDMA	State Disaster Management Authority
SPMU	State Project Management Unit
SBD	Standard Bidding Document
SIL	Specific Investment Loan
SRM	Supervision, Reporting & Monitoring
SSC	State Steering Committee
ToR	Terms of Reference
TPQA	Third Party Quality Audit
UN	United Nations
VSCS	Very Severe Cyclonic Storm
VSS	Vana Suraksha Samiti
VUDA	Visakhapatnam Urban Development Authority
WB	The World Bank

Annexure 1

Key Statistics of Coastal Area - India

Length of coastline	7516.6 km Mainland: 5422.6 km Island Territories: 2094 km
Total Land Area	3,287,263 km²
Area of continental shelf	372,424 km²
Territorial sea (up to 12 nautical miles)	193,834 km²
Exclusive Economic Zone	2.02 x106 million km²
Maritime States and UT	
Number of coastal States and Union Territories	Nine states 1. Gujarat 2. Maharashtra 3. Goa 4. Karnataka 5. Kerala 6. Tamil Nadu 7. **Andhra Pradesh** 8. Odisha 9. West Bengal Two Union Territories 1. Daman & Diu 2. Puducherry
Island Territories	1. Andaman & Nicobar Islands (Bay of Bengal) 2. Lakshadeweep Islands (Arabian Sea)
Total number of coastal districts	69 coastal districts in mainland India; 3 in Andaman & Nicobar and 1 in Lakshadweep

Coastal Geomorphology (Mainland)	
Sandy Beach	43 %
Rocky Coast	11%
Muddy Flats	36%
Marshy Coast	10%
Coastline affected by erosion	1624.435 km mainland 132 (islands)
Population	
Total Population of India	1.27 billion (Census, 2011)
Population of Coastal States and UTs	560 million
Population of Island Territories	0.44 million
Total Population of coastal districts	171 million
% of population in coastal districts of India	14.2 %
Coastal Ecosystems	
Coastal wetlands	43230 km²
Major estuaries	97
Major Lagoons	34
Mangrove Areas	31
Area under mangroves	6740 km² (57% East coast, 23% west coast, 20% Andaman &Nicobar Islands)
Coral Reef Areas	5
Marine Protected Areas	31
Area Covered by MPA	6271.2 km²
Coastal Biodiversity	
Marine Algae	217 general 844 species
Seagrasses	6 general 14 species

Mangroves	25 families, 43 genera, 39 species Associated flora: 420 Associated fauna: 1862
Crustaceans	2934 species
Molluscs	3370 species
Echinoderms	765 species
Hard Corals	218 species
Fishes	2546 species
Reptiles	5 sea turtle species 26 sea snake species
Marine Mammals	25 reported from Indian waters 3 species of cetaceans: Irrawaddy dolphin, Ganges River Dolphin and Sperm whale; Dugong listed in Schedule I of Wildlife Act 1972
Ports and Harbours	
Major Ports	13
State wise number of ports	Gujarat: 40 Maharashtra: 53 Goa: 5 Daman & Diu: 2 Karnataka: 10 Kerala: 13 Lakshadweep Islands: 10 Tamil Nadu: 15 Puducherry: 1 **Andhra Pradesh: 12** Odisha: 2 West Bengal: 1 Andaman & Nicobar Islands: 23

Annexure 2

Environment and Social Profile – Andhra Pradesh

Introduction

Andhra Pradesh was formed in 1956 on the basis of language. It is the fifth largest State[18] in India both in terms of area as well as population. The total area of the State is, 75,045 sq. kms of which 2,70,588.98 sq. kms is under rural and balance 4,480.02 sq. kms is urban area. Madhya Pradesh, Chattisgarh, and Orissa bound the State in the North, the Bay of Bengal in the East, Tamil Nadu, and Karnataka on the South and Karnataka and Maharashtra on the West.

Physiologically, the State is divided into three zones of Coastal plains, Eastern Ghats, and the plains. The climate in the State is tropical, mostly hot and humid particularly in the coastal belt. The average temperature is 31.58°C.

General Administration

Andhra Pradesh can be divided into three regions, namely Coastal Andhra, Rayalaseema and Telangana. The State has 23 districts: Adilabad, Anantapur, Chittoor, Kadapa, East Godavari, Guntur, Hyderabad, Karimnagar, Khammam, Krishna, Kurnool, Mahbubnagar, Medak, Nalgonda, Sri Potti Sreeramulu Nellore, Nizamabad, Prakasam, Rangareddy, Srikakulam, Visakhapatnam, Vizianagaram, Warangal and West Godavari. Each district is divided into multiple mandals and each mandal is a group of a few villages. Recently, Telangana has been carved out of Andhra Pradesh as a separate/new state.

The districts where major investments are proposed under the project are all located in the State of Andhra Pradesh - Srikakulam, Vizianagaram, Visakhapatnam and East Godavari.

Socio-Economic profile

The state's economy is agrarian oriented. Of late, rapid growth of industrialization has resulted in growth of economy. The GDDP of the state stands at INR 16338467 lakhs whereas the per-capita income is rupees 19,087 at current prices. However, in the project area, the per-capita income stands at average INR 19,915.

Climate

The state has a tropical climate, mostly hot and humid. Annual average temperature is 31.5°C. The state is principally fed by the southwest monsoon while the northeast monsoon contributes about a third of the rainfall. The east coast region has been prone to disastrous cyclonic storms which have destroyed much life and the livelihood of the villagers in this area.

Coastal Environments

The 974 kms long coastline of Andhra Pradesh, a very productive stretch along the Bay of Bengal, supports a variety of economic activities. Multifarious industrial complexes, human settlements, fisheries, tourism, exist and new activities are all

[18] Source: http://www.envis.nic.in/soer/ap/soeap%5B1%5D.htm

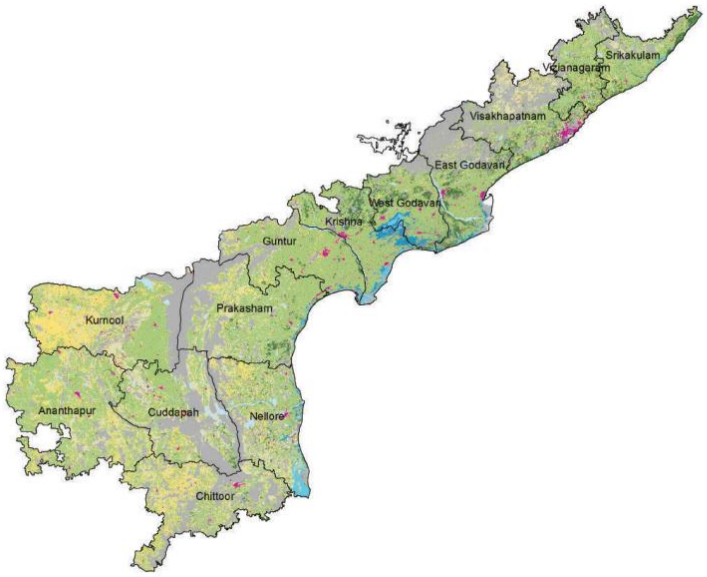
coming up along the coastline.

Ever increasing population and rapid developmental activities along the coastal zone, make coastal zone management a complex exercise. Increase in offshore activities for oil and gas extraction, mining of deposits, shipping and marine transportation add further complexity to the overall situation.

The coastal zone, an interface between land and water is traversed by important rivers such as Krishna and Godavari and other minor rivers such as Pennar, all of which drain into the Bay of Bengal. In addition, there are several creeks and important lakes such as Pulicat and Kolleru which again connects to the Bay of Bengal.

The continental shelf stretches over an area of 0.31 lakh sq. kms constituting 7.4 percent of the total 4.15 lakh sq. kms. Andhra Pradesh is one of the biggest maritime states of India having 453 maritime villages and 280 fish landing centres stretching along nine coastal districts and two major functional fishing harbours at Visakhapatnam and Kakinada. It is considered to be the second-highest cargo-handling state in India and has one major port at Visakhapatnam, two intermediate ports at Kakinada and Machillipatnam and 10 minor ports within the state.

Land Use / Land Cover - Andhra Pradesh



Main Category	Sub Category	Area In Sq.Km	%
1	**Built-up area**	4088.7	2.51
1	Urban	1178.8	0.73
2	Rural	2909.9	1.79
2	**Built-up/Industries/Mine**	796.8	0.49
3	Industrial	293.2	0.18
4	Mining / Quarry	503.6	0.31
3	**Aquaculture**		
5	Aquaculture	1801.2	1.11
4	**Fallow**		
6	Fallow	17739.1	10.92
5	**Agriculture**	78388.6	48.25
7	Agricultural Land-Crop Land	69341.3	42.69
8	Plantation	9047.3	5.57
6	**Forest**	33390.6	20.55
9	Deciduous Forest	244.9	0.15
10	Evergreen Forest	98.8	0.06
11	Mangrove Forest	20198.7	12.43
12	Forest Plantation	639.6	0.39
13	Scrub Forest	8411.3	5.18
14	Tree Clad Area	425.1	0.26
15	Grass Land	15.7	0.01
16	Shifting Cultivation	3356.6	2.07
7	**Waste Lands**	15902.2	9.78
17	Barren Rocky	11880.2	7.31
18	Gullied/Ravinous land	285.4	0.18
19	Salt Affected Land	2137.6	1.32
20	Sandy Area	244.9	0.15
21	Scrub Land	1354.1	0.83
8	**Water Bodies**	9168.7	5.64
22	Canal/Drain	3218.1	1.98
23	Reservoir/Tanks	636.9	0.39
24	River/Stream	4888.5	3.01
25	Lakes/Ponds	425.1	0.26
9	**Wetlands**	1589.1	0.98
26	Inland Wetlands	450.5	0.28
27	Coastal Wetlands	1138.7	0.70
	Total	**162440.1**	**100.00**

The coastal environment is being altered at ever-increasing rates, often without looking ahead at future consequences. This is due to a multitude of human activities. The coastal zone receives a vast quantity of sewage waste, dredge spoils, industrial effluents and river runoff. These markedly affect the composition and quality of coastal environment, causing marine pollution.

The studies conducted by the National Institute of Oceanography (NIO), Regional centre, Visakhapatnam, concluded that the impact of the anthropogenic inputs such as industrial effluents and domestic sewage has resulted in deterioration of water quality, causing mass mortality of fish due to asphyxiation. The new industrial

developments along the coastline, like development of pharma-city and the effluent discharge needs attention. In view of lack of economically viable technologies to treat large effluents from industrial processes, the industrial groups, which are located in land-locked areas, are identifying new sites along the coast for discharge of effluents, bringing tremendous pressure on water resources, both for industrial and infrastructure needs, which may result in salt-water intrusions into groundwater zones.

Soil

The state is endowed with a wide variety of soils. These range from less fertile coastal sands to highly fertile deltaic alluviums. The six major soil groups present in the state are red soils, black soils, alluvial soils, coastal sands, laterite and lateritic soils and problem soils which include saline, saline alkali and non-saline alkali soils.

Seismic Zones

According to GSHAP data, the state of Andhra Pradesh falls in a region with low to moderate seismic hazard. As per the 2002 Bureau of Indian Standards (BIS) map, the state falls in Zones II & III. Historically parts of the state have experienced seismic activity in the M5.0-6.0 range.

Forests

Forests represent not only biodiversity but are also instrumental in conservation of water, soil etc. They are also sources of nutrients for a large population especially through the non-timber forest produce (NTFP). Forests also contribute sources of fuel, timber, pulpwood etc. The forest types of Andhra Pradesh include Southern tropical thorn forest, Southern tropical moist deciduous, Tropical dry deciduous, Littoral and Mangroves representing 16,110, 16,110, 28,431, 2,856 and 317 sq. km respectively. The forests also form major source of revenue to the Government. The major items which contribute to the State Exchequer are timber, bamboo, beedi leaf (Diospyrous melanoxylon) and non-timber forest produce and minor forest produce (NTFP and MFP). The annual revenue from timber, bamboo and beedi leaf is about 40, 20 and 24 crore rupees respectively and about five crore rupees from NTFP. The forests are also the main source of livelihood for tribal people and other villagers living in and around the forest area. The beedi leaf collection in the lean summer months of April and May alone generates an employment of 80 lakh mandays. Similarly about one lakh mandays are generated by way of work involved in bamboo working and NTFP collection. The major beneficiaries are tribal.

As per the State Forest Report, published by the Forest Survey of India, Dehradun, the forest cover is 16.23% and recorded forest area is 23.20% of the State geographical area. The changes in forest cover as per 2001 assessment as compared to 1999 assessment shows a gain of 408 sq. km. These are in the districts, which happen to be catchments areas of Godavari, Vamsadhara, Swarnamuki and other small rivers. The efforts to adopt joint forest management seem to be paying dividends as the assessment shows improvement in the net forest cover.

Mangroves

According to Mangrove Cover Assessment 2003, the state of Andhra Pradesh has 15 sq. km of moderately dense mangroves, 314 sq. km of open mangroves. The major mangrove cover lies in the district of East Godavari, followed by Guntur, Krishna

and Prakasham districts. However the mangrove cover of the Godavari delta is fast depleting due to the impact of shrimp aquaculture. The mangrove cover has reduced from 495 hectares in 1987 to 333 hectares in 2001. According to the study by Andhra Pradesh Remote Sensing Application Center in the year 1999, the impacts of shrimp aquaculture on land use in Godavari Delta is given in the table below:

Impact of Shrimp Agriculture on land use in Godavari Delta

Land use	Land use area in hectares			Converted to Shrimp farms		
	1989	1997	1999	1987-97	1997-99	1989-99
Crop land	-	-	-	4543	2324	6903
Fallow land	-	-	-	3149	1327	4497
Dense mangroves	16586	15987	15318	433	471	1137
Sparse mangroves	4530	3786	3199	604	666	1030
Total mangroves	21116	19773	18517	1037	1137	2187

Wetlands

Andhra Pradesh has 1493 wetlands of the size 56.25 ha and 2 above, covering an area of 3719.08 km (APSRSAC, 1997 & SAC, 1998). Thus, 1.35% of the total geographic area of the state is constituted by wetlands. In the nine districts of Andhra Pradesh, assessed by SACON, 4553 wetlands of the size two ha and above, covering 3457.17 km have been reported. Smaller wetlands of two ha and above are more in abundance than the larger wetlands. Most of the wetlands have low or medium turbidity, except those in Nellore district, which have large area with high turbidity.

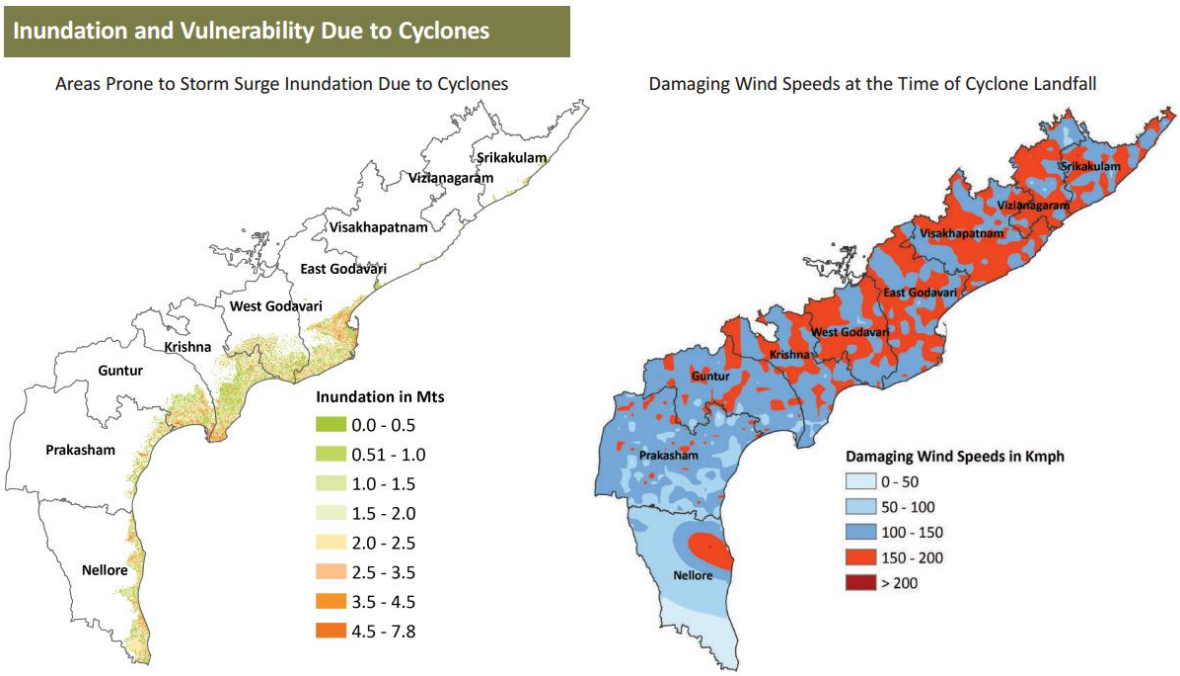
District	Geographical Area (sq. km)	Wetland Extent (sq. km)	Geographical Area Under Wetlands (%)
Srikakulam	5837	122.23	2.09
Vishakhapatnam	11161	81.74	0.73
Vizianagaram	6539	117.15	1.79
East Godavari	10807	107.16	0.99

The area under wetlands in the districts varied from 0.90% (Visakhapatnam) to 9.89% (Nellore). Two major categories of wetlands, namely reservoirs and ponds/lakes are identified in these districts. Nellore, Nizamabad and Adilabad districts have a large area under reservoirs. All the other districts have more of ponds and lakes. Wetlands smaller than 56.25 ha are more numerous in all the districts studied.

Wetlands of Warrangal have low turbidity. In Cuddapah, Guntur and Visakhapatnam districts, most wetlands had medium turbidity. Nellore has higher proportion of wetland area under high turbidity, while in Adilabad district, the proportion of wetland area under medium and high turbidity was almost the same. The data on turbidity levels for these districts show 60-90% of high to moderate levels of sediments. The wetlands with forested catchments, on the other hand, show relatively low turbidity as observed in Visakhapatnam district.

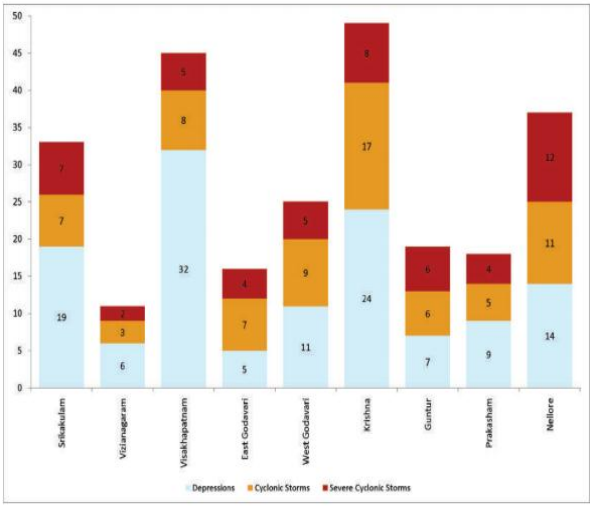
Vulnerability to Natural Disasters

Andhra Pradesh, because of its long coastline and geographical location is one of the most vulnerable states to multiple natural disasters in India. The State has 974 km of coastline, the second largest in the country after Gujarat. Nine coastal Districts of the state account for approximately 69% (34.19 million) of the total population of 49.3 million.

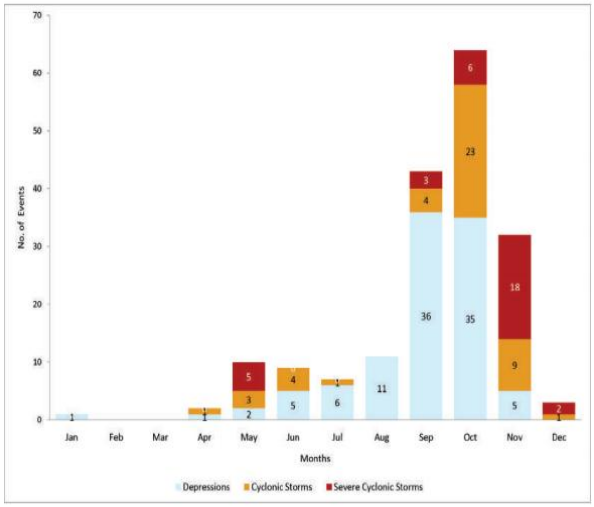


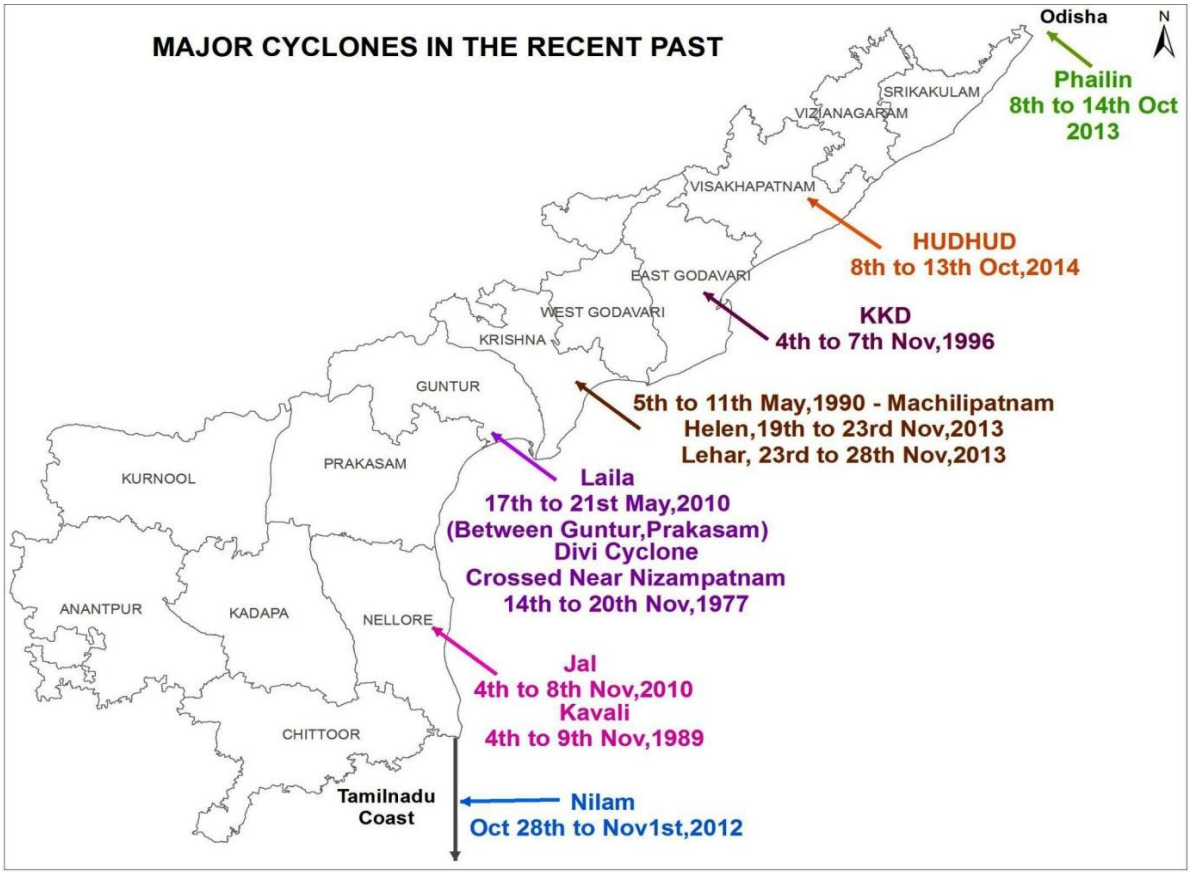
Frequency of Various Storms

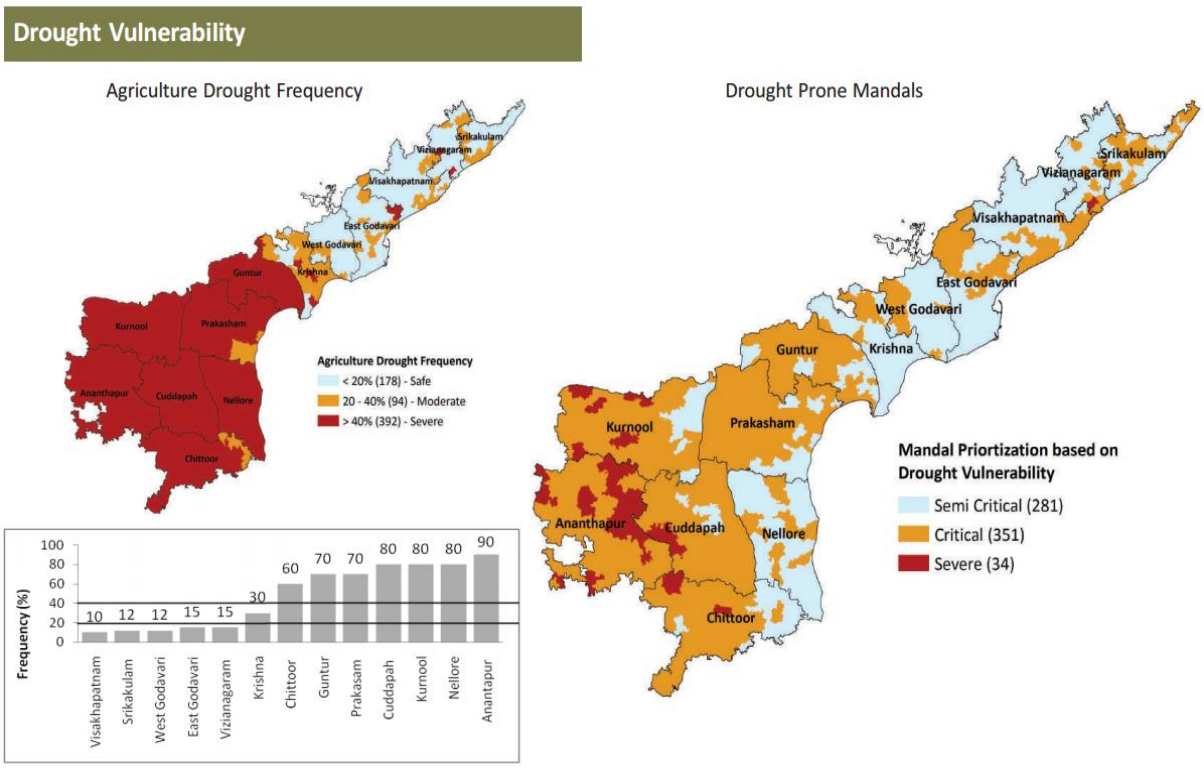
District Wise Frequency of Various Storms



Month Wise Storms That Crossed Andhra Pradesh Coast
(From 1891 To April, 2014)







Existing Infrastructure

Availability of Cyclone shelters and other cyclone resistant buildings

The Government of Andhra Pradesh with its past experience of cyclonic storms, have constructed 1136 cyclone shelters, out of which now 126 cyclone shelters need repairs and 59 are in dilapidated condition. The maintenance, construction and repairs of cyclone shelters is being looked after by the Panchayati Raj Engineering Department with funds provided by the GoAP.

The cyclone shelters are kept under the control of the local Panchayat Raj authorities and in normal times they are being utilized as Schools, Anganwadi Centres, Fair Price Shops and Community Centres.

Shelterbelt plantation/ mangroves

The non-structural methods in handling disasters have been gradually evolved by the community with the traditional knowledge and strength. These have been time tested, economic, and cost effective, of user-friendly technology and can be done by local people. The non-structural mitigation plans should be made popular and encourage people to do things themselves. Financial incentives will encourage people to adopt them. Example – planting of Coastal Mangrove, Casuarina, Cashew Nut Trees, etc.

Andhra Pradesh has a coastline of nearly 974 km out of this coastal shelter-belt plantation comprising of Casuarina, Palmyrah and Mangrove were raised in 822 km incurring an expenditure of Rs.18.20 crores. These plantations have been made in a coastal belt of 0.15 kms. of the coastline. Apart from this 804.53 lakh seedlings were raised and distributed among farmers for plantation in private farmlands within an area of 5 km. Lids from the Coastline to create tree cover

Embankments

The Kona tidal bank having a length of 18.55 kms connects the right bank of Gunderu Major Drain near Polatitippa Village with the Krishna left flood bank near Malakayalanka Village. It protects an ayacut of 20,000 acres from the tidal waters. The total length of the Kruthivennu Mandal Tidal Bank is 15.0 kms. It protects an ayacut of 11,600 acres from the tidal water and also the nearby villages. During the 1977 cyclone, these banks were completely wiped out and were re-constructed with higher standards within the same year. Due to inadequate maintenance, these bunds thinned over time. During the cyclone in May 1990, the sea water overtopped the bunds at several places causing heavy scours. The sea water not only damaged the bunds but also entered into the agricultural lands and sand impacting the areas nearby. Under the Cyclone Emergency Reconstruction project (CERP) from 1990-91 to 1994-95, the Banks were reconstructed keeping the top levels at par with the flood banks. Frequent cyclones and disasters thereafter including Tsunami in 2004 and OGNI cyclone in 2006 badly damaged the tidal banks. In addition, lack of maintenance and repair work also deteriorated the condition of these banks. The Kona tidal bank is therefore proposed for restoration to the CERP standards based on the representations of Village presidents and Water User's Association presidents, that these banks be restored to the flood bank ISI standards.

Roads and Bridges

Out of 67,362 Km of road network in the state, the nine coastal districts covers 26,000 km of road length. The roads in coastal districts have bridged crossings at many places. The different connecting roads to the various habitations are being managed and maintained by different Government departments such as Gram Panchayat (GP), Panchayati Raj Engineering Department (PRED), Municipal Engineering Department (MED) and Roads and Buildings Department (R&B). Further, there are 118,235 kms of road network in rural road sector in Andhra Pradesh. The following table presents a distribution of roads by category in the cyclone prone areas of the State:

Distribution of Roads in Cyclone Prone areas

Category	Surface	Zone-I (0-2.5 Kms)	Zone-II (2.5 – 5 kms)	Zone-III (5 – 10 kms)
Village Roads	BT	9.65 km	9.09 km	8.16 km
	Earthen	255.83 km	271.61 km	368.45 km
	WBM	61.42 km	56.56 km	69.36 km

However, some crucial /vulnerable locations along the coastal roads are still in need of linking bridges both High Level Bridges and Minor bridges to establish a continuous chainage to the network of other major roads in the vicinity, to reduce the risk of vulnerable habitations being cutoff from the major road networks in the hinterland during cyclones, monsoons, storm surges, floods, etc. and to provide free access to traffic for transportation of relief material, quick evacuation of all habitants, both human and animal, near the coastal area to safer places during emergencies.

Cyclone Hudhud

The Very Severe Cyclonic Storm 'Hudhud' (07-14 Oct. 2014) developed from a low pressure area over Tenasserim coast and adjoining North Andaman Sea in the morning of October 6, 2014. It concentrated into a Depression in the morning of the Oct 07, over the North Andaman Sea. Moving west-northwestwards it intensified into a Cyclonic Storm (CS) in the morning of October 08, and crossed Andaman Islands close to Long Island between 08:30 and 09:30 hrs, IST.

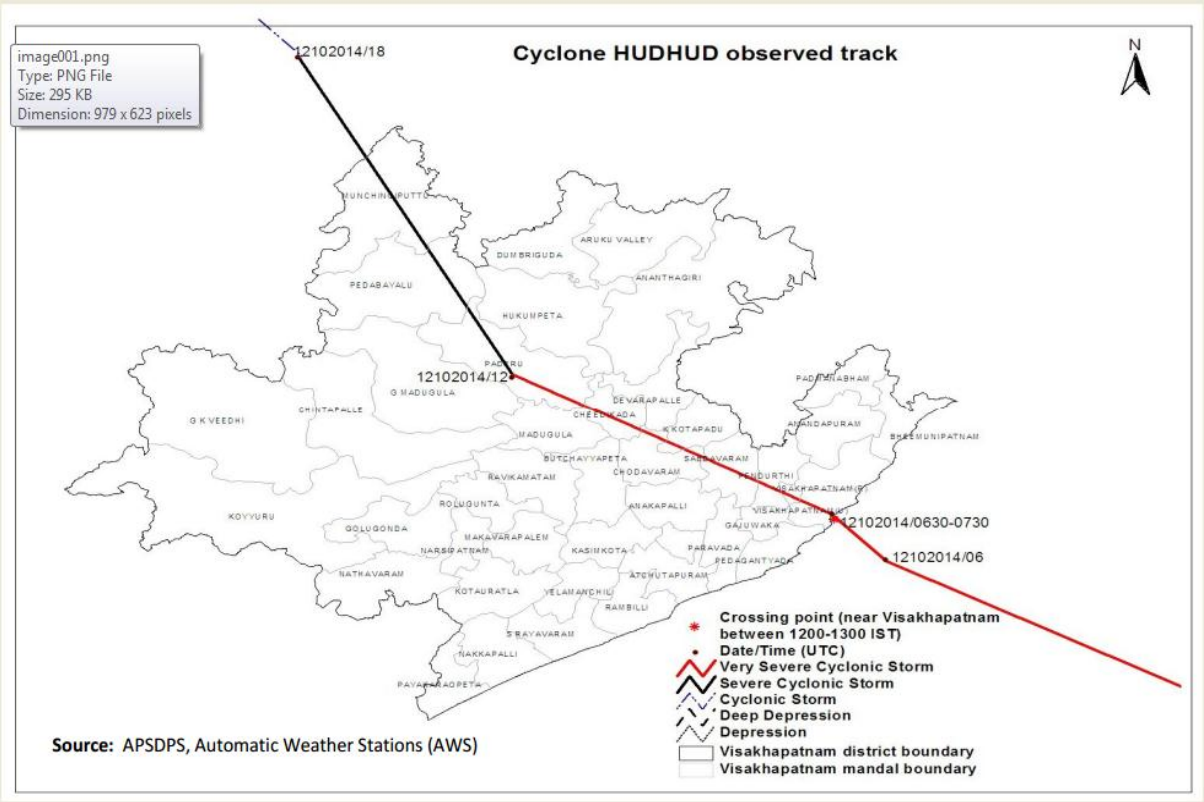
Subsequently, it emerged into Southeast Bay of Bengal and continued to move west-northwestwards, intensifying further into a Severe Cyclonic Storm (SCS) in the morning of October 09, and further into a Very Severe Cyclonic Storm (VSCS) in the afternoon of October 10. It continued to intensify while moving northwestwards and reached maximum intensity in the early morning of October 12 with a maximum sustained wind speed (MSW) of 180 kmph over the West Central Bay of Bengal, off Andhra Pradesh coast.

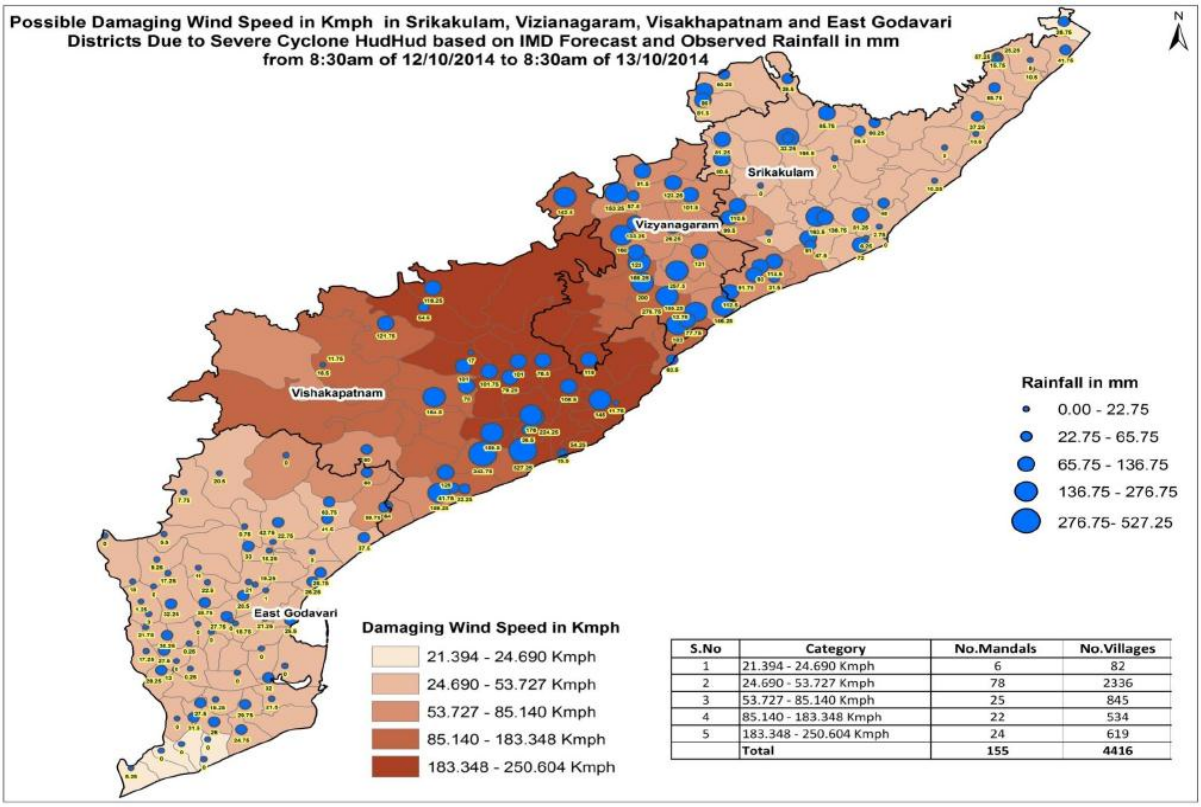
It crossed the north coast of Andhra Pradesh over Visakhapatnam between 12:00 and 13:00 hrs on October 12. After landfall, it continued to move northwestwards for some time and weakened gradually into SCS in the evening and further into a CS by midnight. It then weakened further into a Deep Depression by the early morning of October 13 and weakened into a depression by the same evening. Thereafter, it moved nearly northward and weakened into a well-marked low pressure area over East Uttar Pradesh and neighborhoods in the evening of October 14, 2014.

India Meteorological Department (IMD) accurately predicted the genesis, intensity, track and point & time of landfall, and also the adverse weather comprised of heavy rainfall, gale wind, and storm surge 4-5 days in advance.

The salient features of this system are as follows:

- At the time of landfall on October 12, the estimated maximum sustained surface wind speed in association with the cyclone was about 100 Knots.
- The estimated central pressure was 950 hPa with a pressure drop of 54 hPa at the centre compared to surroundings. It caused very heavy to extremely heavy rainfall over North Andhra Pradesh and South Odisha and strong gale winds leading to large scale structural damage over North Andhra Pradesh and adjoining districts of South Odisha and storm surge over North Andhra Pradesh coast.
- Maximum 24 hour cumulative rainfall of 38 cm ending at 0830 hrs IST of 13 October was reported from Gantyada (Vizianagaram District) in Andhra Pradesh.
- Maximum of storm surge of 1.4 meters above the astronomical tide has been reported by the tide gauge at Visakhapatnam.
- The numerical weather prediction and dynamical statistical models provided good guidance with respect to its genesis, track and intensity. Though there was divergence in model guidance with respect to landfall point and time in the initial stage, the consensus among the models emerged as the cyclone moved closer to the coast.





S.No	Category	No.Mandals	No.Villages
1	21.394 - 24.690 Kmph	6	82
2	24.690 - 53.727 Kmph	78	2336
3	53.727 - 85.140 Kmph	25	845
4	85.140 - 183.348 Kmph	22	534
5	183.348 - 250.604 Kmph	24	619
	Total	**155**	**4416**

According to IMD's Cyclone Warning division, Hudhud Cyclone wind speeds were very severe and were expected to cross 200 kmph according to initial warnings. Maximum sustainable wind speed of 181.6 kmph was recorded near Visakhapatnam Port Trust and 220 kmph by Naval Authorities (INS DEGA). Since the Doppler Weather Radar system at

Visakhapatnam had to be shut down on October 12 morning, wind speed data could not be captured by it thereafter.

State Government Response

The Government of Andhra Pradesh (GoAP) was proactive in preparing for the cyclone since its inception and prepositioned men and machinery to effectively deal with the potential cyclone. Relief and rescue team led by senior officials were deployed in the coastal districts likely to be impacted most and early warnings to vulnerable population were issued regularly through various channels. This, supplemented by evacuation of close to 250,000 persons mostly living in vulnerable *kutcha* houses or low-lying areas helped limiting the death toll from the cyclone to 61.

The Cyclone and the floods that followed after heavy rainfall caused extensive devastation in the affected districts, uprooting vast number of trees, damaging roads, public buildings and disrupting telecommunications and power infrastructure. Due to the effective prepositioning of men, machinery and materials, and effective coordination among State, National and Local agencies connectivity was restore by clearing roads within 24-48 hours.

Twenty four teams of National Disaster Response Force (NDRF) and one of State Disaster Response Force (SDRF), four Columns of Army, and thirty teams of Navy equipped with boats and other equipment attended carried out the rescue and relief operations. Helicopters and fixed wing aircrafts were also deployed including four Columns of Army personnel with engineers, communication specialist and medical teams with all equipment including boats.

Ever since the cyclone warning was issued and the affected people were moved to cyclone shelters, food packets were distributed by state government. In total, 400 MTs of food packets were distributed to 2.3 million people during December 14-17.

310 cyclone relief camps and 1,688 medical camps were organized for affected population. 222,460 people, who were evacuated from low lying areas, were accommodated in safe shelters in cyclone affected districts. In addition, almost 1.6 million people were provided with food and drinking water outside relief camps in the affected areas.

An early warning campaign on the intensity and tracking of cyclone was carried out through Television / radio / print media with measures to be taken by the public in the cyclone/flood prone areas to safeguard lives and property.

More than 2,000 technical personnel were deployed to restore damaged electrical lines. Immediately after the cyclone's landfall, a dedicated portal (http://hudhud.ap.gov.in) was launched with the enumeration forms of all departments to assess the damage and losses due to the cyclone.

Annexure 3

Scheduled Tribes in the Project Areas

Name of the District: Visakhapatnam

S.No.	Name of the Tribe	Total Population	%
1	Andh, Sadhu Andh	42	0.01
2	Bagata	129,772	20.98
3	Bhil	11	0.00
4	Chenchu	493	0.08
5	Gadabas, Bodo Gadaba, Gutob Gadaba, Kallayi Gadaba, Parangi Gadaba, Kathera Gadaba, Kapu Gadaba	14,943	2.42
6	Gond, Naikpod, Rajgond, Koitur	245	0.04
7	Goudu (in the Agency tracts)a	6,533	1.06
8	Hill Reddis	14	0.00
9	Jatapus	205	0.03
10	Kammara	22,771	3.68
11	Kolam, Kolawar	83	0.01
12	Konda Dhoras, Kubi	135,583	21.92
13	Konda Kapus	2,392	0.39
14	Kondareddis	1,983	0.32
15	Kondhs, Kodi, Kodhu, Desaya Kondhs, Dongria Kondhs, Kuttiya Kondhs, Tikiria Kondhs, Yenity Kondhs, Kuvinga	97,899	15.83
16	Kotia, Bentho Oriya, Bartika, Dulia, Holva, Sanrona, Sidhopaiko	29,961	4.84
17	Koya, Doli Koya, Gutta Koya, Kammara Koya, Musara Koya, Oddi Koya, Pattidi Koya, Rajah, Rasha Koya, Lingadhari Koya (ordinary), Kottu Koya, Bhine Koya, Rajkoya	2,892	0.47
18	Kulia	332	0.05
19	Manna Dhora	5,344	0.86

S.No.	Name of the Tribe	Total Population	%
20	Malis (excluding Adilabad, Hyderabad, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad and Warangal districts)	2,986	0.48
21	Mukha Dhora, Nooka Dhora	35,342	5.71
22	Nayaks (in the Agency tracts)a	185	0.03
23	Pardhan	11	0.00
24	Porja, Parangiperja	33,626	5.44
25	Reddi Dhoras	858	0.14
26	Rona, Rena	437	0.07
27	Savaras, Kapu Savaras, Maliya Savaras, Khutto Savaras	338	0.05
28	Sugalis, Lambadis, Banjara	1,122	0.18
29	Valmiki (in the Scheduled Areas of Vishakhapatnam, Srikakulam, Vijayanagaram, East Godavari and West Godavari districts)	54,641	8.83
30	Yenadis, Chella Yenadi, Kappala Yenadi, Manchi Yenadi, Reddi Yenadi	569	0.09
31	Yerukulas, Koracha, Dabba Yerukula, Kunchapuri Yerukula, Uppu Yerukula	7,455	1.21
32	Dhulia, Paiko, Putiya (in the districts of Vishakhapatnam and Vijayanagaram)	503	0.08

Name of the District: Vizianagaram

Sl.No	Name of the Tribe	Total Population	%
1	Andh, Sadhu Andh	1	0.00
2	Bagata	1,704	0.72
3	Chenchu	287	0.12
4	Gadabas, Bodo Gadaba, Gutob Gadaba, Kallayi Gadaba, Parangi Gadaba, Kathera Gadaba, Kapu Gadaba	20,962	8.90
5	Gond, Naikpod, Rajgond, Koitur	13	0.01

Sl.No	Name of the Tribe	Total Population	%
6	Goudu (in the Agency tracts)a	255	0.11
7	Hill Reddis	9	0.00
8	Jatapus	98,718	41.91
9	Kammara	195	0.08
10	Kattunayakan	1	0.00
11	Konda Dhoras, Kubi	53,892	22.88
12	Konda Kapus	116	0.05
13	Kondareddis	64	0.03
14	Kondhs, Kodi, Kodhu, Desaya Kondhs, Dongria Kondhs, Kuttiya Kondhs, Tikiria Kondhs, Yenity Kondhs, Kuvinga	673	0.29
15	Kotia, Bentho Oriya, Bartika, Dulia, Holva, Sanrona, Sidhopaiko	186	0.08
16	Koya, Doli Koya, Gutta Koya, Kammara Koya, Musara Koya, Oddi Koya, Pattidi Koya, Rajah, Rasha Koya, Lingadhari Koya (ordinary), Kottu Koya, Bhine Koya, Rajkoya	750	0.32
17	Malis (excluding Adilabad, Hyderabad, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad and Warangal districts)	100	0.04
18	Manna Dhora	4,546	1.93
19	Mukha Dhora, Nooka Dhora	6,806	2.89
20	Nayaks (in the Agency tracts)a	8	0.00
21	Porja, Parangiperja	201	0.09
22	Reddi Dhoras	3	0.00
23	Savaras, Kapu Savaras, Maliya Savaras, Khutto Savaras	31,290	13.28
24	Sugalis, Lambadis, Banjara	71	0.03
25	Valmiki (in the Scheduled Areas of Vishakhapatnam, Srikakulam, Vijayanagaram, East Godavari and West Godavari districts)	1,452	0.62
26	Rona, Rena	225	0.10

Sl.No	Name of the Tribe	Total Population	%
27	Yenadis, Chella Yenadi, Kappala Yenadi, Manchi Yenadi, Reddi Yenadi	257	0.11
28	Yerukulas, Koracha, Dabba Yerukula, Kunchapuri Yerukula, Uppu Yerukula	7,704	3.27
29	Nakkala, Kurvikaran	92	0.04
30	Dhulia, Paiko, Putiya (in the districts of Vishakhapatnam and Vijayanagaram)	162	0.07

Name of the District: Srikakulum

S.No	Name of the Tribe	Total Population	%
1	Andh, Sadhu Andh	4	0.00
2	Bagata	71	0.04
3	Chenchu	209	0.13
4	Gadabas, Bodo Gadaba, Gutob Gadaba, Kallayi Gadaba, Parangi Gadaba, Kathera Gadaba, Kapu Gadaba	1,311	0.79
5	Gond, Naikpod, Rajgond, Koitur	123	0.07
6	Goudu (in the Agency tracts)a	7	0.00
7	Hill Reddis	6	0.00
8	Jatapus	27,455	16.53
9	Kammara	160	0.10
10	Kattunayakan	1	0.00
11	Konda Dhoras, Kubi	5,507	3.32
12	Konda Kapus	132	0.08
13	Kondareddis	30	0.02
14	Kondhs, Kodi, Kodhu, Desaya Kondhs, Dongria Kondhs, Kuttiya Kondhs, Tikiria Kondhs, Yenity Kondhs, Kuvinga	2,564	1.54

S.No	Name of the Tribe	Total Population	%
15	Kotia, Bentho Oriya, Bartika, Dulia, Holva, Sanrona, Sidhopaiko	14,869	8.95
16	Koya, Doli Koya, Gutta Koya, Kammara Koya, Musara Koya, Oddi Koya, Pattidi Koya, Rajah, Rasha Koya, Lingadhari Koya (ordinary), Kottu Koya, Bhine Koya, Rajkoya	112	0.07
17	Kulia	15	0.01
18	Malis (excluding Adilabad, Hyderabad, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad and Warangal districts)	61	0.04
19	Manna Dhora	427	0.26
20	Mukha Dhora, Nooka Dhora	74	0.04
21	Nayaks (in the Agency tracts)a	48	0.03
22	Porja, Parangiperja	4	0.00
23	Rona, Rena	64	0.04
24	Savaras, Kapu Savaras, Maliya Savaras, Khutto Savaras	104,652	63.00
25	Sugalis, Lambadis, Banjara	173	0.10
26	Valmiki (in the Scheduled Areas of Vishakhapatnam, Srikakulam, Vijayanagaram, East Godavari and West Godavari districts)	77	0.05
27	Yenadis, Chella Yenadi, Kappala Yenadi, Manchi Yenadi, Reddi Yenadi	468	0.28
28	Yerukulas, Koracha, Dabba Yerukula, Kunchapuri Yerukula, Uppu Yerukula	3,692	2.22
29	Nakkala, Kurvikaran	121	0.07

Name of the District: East Godavari

S.No.	Name of the Tribe	Total Population	%
1	Andh, Sadhu Andh	9	0.00
2	Bagata	849	0.40
3	Bhil	2	0.00
4	Chenchu	1,187	0.56
5	Gadabas, Bodo Gadaba, Gutob Gadaba, Kallayi Gadaba, Parangi Gadaba, Kathera Gadaba, Kapu Gadaba	487	0.23
6	Gond, Naikpod, Rajgond, Koitur	22	0.01
7	Goudu (in the Agency tracts)	196	0.09
8	Hill Reddis	9	0.00
9	Jatapus	59	0.03
10	Kammara	20,963	9.83
11	Kattunayakan	2	0.00
12	Kolam, Kolawar	4	0.00
13	Konda Dhoras, Kubi	12,563	5.89
14	Konda Kapus	4,693	2.20
15	Kondareddis	77,937	36.56
16	Kondhs, Kodi, Kodhu, Desaya Kondhs, Dongria Kondhs, Kuttiya Kondhs, Tikiria Kondhs, Yenity Kondhs, Kuvinga	816	0.38
17	Kotia, Bentho Oriya, Bartika, Dulia, Holva, Sanrona, Sidhopaiko	77	0.04
18	Koya, Doli Koya, Gutta Koya, Kammara Koya, Musara Koya, Oddi Koya, Pattidi Koya, Rajah, Rasha Koya, Lingadhari Koya (ordinary), Kottu Koya, Bhine Koya, Rajkoya	45,193	21.20
19	Kulia	17	0.01

S.No.	Name of the Tribe	Total Population	%
20	Malis (excluding Adilabad, Hyderabad, Karimnagar, Khammam, Mahbubnagar, Medak, Nalgonda, Nizamabad and Warangal districts)	33	0.02
21	Manna Dhora	3,123	1.46
22	Mukha Dhora, Nooka Dhora	59	0.03
23	Nayaks (in the Agency tracts)a	51	0.02
24	Pardhan	1	0.00
25	Porja, Parangiperja	2,282	1.07
26	Reddi Dhoras	23	0.01
27	Rona, Rena	70	0.03
28	Savaras, Kapu Savaras, Maliya Savaras, Khutto Savaras	379	0.18
29	Sugalis, Lambadis, Banjara	582	0.27
30	Valmiki (in the Scheduled Areas of Vishakhapatnam, Srikakulam, Vijayanagaram, East Godavari and West Godavari districts)	14,177	6.65
31	Yenadis, Chella Yenadi, Kappala Yenadi, Manchi Yenadi, Reddi Yenadi	3,941	1.85
32	Yerukulas, Koracha, Dabba Yerukula, Kunchapuri Yerukula, Uppu Yerukula	20,345	9.54
33	Nakkala, Kurvikaran	4	0.00

Source : Census India, 2011

Annexure 4

List of Environmentally Important/Sensitive Areas

List of Wild Life Sanctuaries

Coringa WLS	East Godavari
Eturnagaram WLS	Warangal/ Karimnagar West
Gundla Brahmeswaram WLS	Kurnool, Prakasam
Kambalakonda WLS	Visakhapatnam
Kaundinya WLS	Chittoor
Kawal WLS	Adilabad
Kinnersani WLS	Khammam
Kolleru WLS	West Godavari, Krishna
Krishna WLS	Krishna,Guntur
Lanja Madugu Sivaram WLS	Adilabad, Karimnagar
Manjira WLS	Medak
Nagarjunsagar-Srisailam WLS	Guntur,Prakasam,Kurnool, Nalgonda & Mahaboobnagar
Nellapattu WLS	Nellore
Pakhal WLS	Warangal
Papikonda WLS	East & West Godavari, Khammam
Pocharam WLS	Medak, Nizamabad
Pranahita WLS	Adilabad
Pulicat Lake WLS	Nellore
Rollapadu WLS	Kurnool
Sri Lankamalleswaram WLS	Cuddapah
Sri Penusila Narasimha WLS	Nellore, Cuddapah
Sri Venkateswara WLS	Chittoot, Cuddapah

List of National Park/s

Sri Venkateswara NP	Chittoor,Cuddapah

Critically Polluted Areas

Visakhapatnam	Andhra Pradesh
Patancheru Bollaram	Andhra Pradesh

Wet Lands of National and International Importance

Kolleru	901 sq km

Annexure 5

Environment and Social Screening Form

Part A: General Information

1. Name of the District	
2. Type of proposed sub-project activity (tick the applicable option)	
▪ Cyclone Shelter	
▪ Underground Electrical Cabling Works	
▪ Roads/Bridges/Culverts	
▪ Shelter Belt Plantation	
▪ Plantation of Mangroves	
▪ Beach development work	
▪ Any Other (Please Specify)	
3. Location of the sub-project	
▪ Village	
▪ Taluka	
4. Size of the sub-project (approx. area in sq. mt/hac or length in mt/km, as relevant)	
5. Land Requirement (in hac./sq. mt.)	
▪ Total Requirement	
▪ Private Land	
▪ Govt. Land	
▪ Forest Land	
6. Implementing Agency Details (sub-project level)	
▪ Name of the Department/Agency	

▪ Name of the designated contact person	
▪ Designation	
▪ Contact Number	
▪ E-mail Id	
7. Details about the Screening Exercise	
▪ Date	
▪ Name of the Person	
▪ Contact Number	
▪ E-mail Id	

Part B (1): Environment Screening

Question	Yes	No	Details
1. Is the sub-project located in whole or part within the Coastal Regulation Zone?			If yes, specify the zone.
2. Is the sub-project located in whole or part in/near any of the following environmentally sensitive areas? [19]			
a. Biosphere Reserve			If yes, mention name and distance.
b. National Park			If yes, mention name and distance.
c. Wildlife/Bird Sanctuary			If yes, mention name and distance.
d. Tiger Reserve/Elephant Reserve			If yes, mention name and distance.

[19] The PIU should take adequate steps to ensure that there are no adverse impacts on the environment **within 1 km radius** of the listed protected areas during sub-project implementation. The Environmental Officers at the PIU/PMU need to ensure that the required avoidance, minimization and mitigation measures are taken care of during site selection, DPR preparation and implementation/construction stages of a sub-project. This will help facilitate project supervision and monitoring during the implementation stage as well.

Question	Yes	No	Details
e. Wetland			If yes, mention name and distance.
f. Important Bird Areas (IBAs)			If yes, mention name and distance.
g. Coastal area with corals			If yes, mention name and distance.
h. Mangrove area			If yes, mention name and distance.
i. Estuary with mangroves			If yes, mention name and distance.
j. Natural Lakes			If yes, mention name and distance.
k. Swamps/Mudflats			If yes, mention name and distance.
l. Habitat of migratory birds (outside protected areas)			If yes, mention name and distance.
m. Migratory Route of Wild Animals/Birds			If yes, mention name and distance.
n. Area with threatened/rare/endangered			If yes, mention name and distance.
o. Area with threatened/rare/ endangered flora (outside			If yes, mention name and distance.
p. Reserved/Protected Forest			If yes, mention name and distance.
q. Zoological Park /Botanical Garden			If yes, mention name and distance.
3. Is the sub-project located within 500 meters from rivers, streams, estuaries or deltaic mouths?			If yes, mention name/s and distance/s.
4. Is the sub-project located in whole or part near any of the following sensitive features? [20]			

[20] The SDMA should take adequate steps to ensure that there are no adverse impacts **within 1 km radius** of the listed sensitive features/areas during sub-project implementation. The Environmental Officers at the PIU/PMU need to ensure that the

Question	Yes	No	Details
a. World Heritage Sites			If yes, mention name and distance.
b. Archaeological monuments/sites (under ASI's central/state list) [3]			If yes, mention name and distance.
c. Historic Places (not listed under ASI – central or state list but regionally/locally important)			If yes, mention name and distance.
d. Reservoirs/Dams			If yes, mention name and distance.
e. Public Water Supply Areas from Rivers/Surface Water Bodies/ Ground Water Sources			If yes, mention name and distance.

Part B (2) : Result/Outcome of Environmental Screening Exercise		
1.	No Environment Impact Assessment Required	
2.	Environment Impact Assessment Required	
3.	CRZ clearance required	
4.	Environmental Clearance Required	
5.	Forest Clearance Required	

Guidelines for updating the results/outcome of the Screening Exercise

An EA/EIA is required if the sub-project is:

- An embankment or a canal bund; or
- Underground Electric Cabling Works or
- Any other sub-activity but the answer to any question listed in points

required avoidance, minimization and mitigation measures are taken care of during site selection, DPR preparation and implementation/construction stages of a sub-project. This will help facilitate project supervision and monitoring during the implementation stage as well.

[3] In case of archaeological sites/monuments, the prohibited area is 100 mts and the controlled area is 200 mts.

2-4 is yes ; or

- depending up on the nature and location specificity of the sub-project, as determined by the State Level Environment Impact Assessment Authority (SEIAA).

- Forest Clearance is required if the proposed activities under the project require temporary and or permanent use/diversion of forest resources to non-forest activities or tree cutting. The implementing agency / line department needs to take the necessary clearances from the Forest Department / MoEF
- Environment Clearance is required from Central / State Authorities as below:
  - The MoEF if the built up area for covered construction or facilities open to the sky (base area = base x width), referred hereunder as Construction Area for any sub-project is:
    - in excess of 150,000 sq m; or
    - ≥20,000 sq. m and <150,000 sq. m and the said built-up/construction area of the sub-project is within 10 km of sensitive area. The sensitive area is as defined below (based on MoEF Notification No. SO 1533 dated September 14, 2006).
  - The State Level Environment Impact Assessment Authority (SEIAA) if the sub-project's built-up/construction area as detailed above is ≥20,000 sq. m and <150,000 sq. m but lies outside 10 km of the sensitive area

Notes:

1. Sensitive Area = (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.
2. No EC is required if the built up/constructed area is <20,000 sq.mt but will be subjected to obtaining other statutory clearances if any applicable to the sub-project as listed above.

List of Prohibited Sites

In addition to the guidance provided under the applicable Bank policies, sub-projects with any of the attributes listed below will be ineligible for support under the proposed project. The following is a list of sites that is prohibited:

As per EPA Act and EIA Notification, 2006

- ✓ Any new construction within a biosphere reserve, national park wildlife/bird sanctuary, game reserve, tiger reserve/elephant reserve, wetland, important bird areas, coastal area with corals, mangrove area, estuary with mangroves, turtle nesting grounds, swamps/mudflats, notified sensitive eco zones.
- ✓ Any activity within a distance of:
  - i. 200 meters from the estuary boundaries.
  - ii. 500 meters from flood plain or modified flood plain or by flood control systems of a riverine system.

(http://envfor.nic.in/divisions/iass/eia/cover.htm)

(http://envfor.nic.in/legis/eia/so1533.pdf)

As per Ancient Monuments & Archaeological Sites and Remains Rules, 1959

- ✓ Any sub-project activity within 100 meters from the protected limits of notified archaeological sites or monuments

(http://asi.nic.in/asi_legislations.asp)

Part C (1) : Social Screening

1. Does the sub-project activity require acquisition of private land?			
Yes		No	
Give the following details:	Private Land (sq mts/hac.)		
	Govt. Land (sq mts/hac.)		
	Forest Land (sq mts/hac.)		
2. Does the proposed sub-project activity result in demolition/removal of existing structures?			
Yes		No	
If so, give the following details:			
▪ Number of public structures/buildings			
▪ Number of common property resources (such as religious/cultural/ drinking water/wells/etc)			
▪ Number of private structures (located on private or public land)			
3. Does the proposed Project activity result in loss of crops/trees?			
Yes		No	
4. Does the proposed Project activity result in loss of direct livelihood/ employment?			

Yes		No	
5. Does the proposed activity result in loss of mangrove ecosystem/ community forest on which nearby residents/local population are dependent for fuel wood/grazing etc.?			
Yes		No	
If yes, give the details of the extent of area to be lost (in acres/hac.).			
6. Does the proposed Project activity affect schedule tribe/caste communities?			
Yes		No	

Part C (2) : Result/Outcome of Social Screening Exercise

	Output	**Outcome**
1.	Answer to all the question is 'No' and only forest land is being acquired	☐ No SIA/RAP required
2.	Answer to any question is 'Yes' and the sub-project does not affect more than 200 people (i.e. either complete or partial loss of assets and/or livelihood)	☐ Abbreviated RAP is required
3.	Answer to any question is 'Yes' and the sub-project affects more than 200 people *(i.e. either complete or partial loss of assets and/or livelihood)*	☐ SIA/RAP Required

Annexure 6

Procedure for Conducting Environmental Assessment

The following process is to be followed for sub-project activities, wherein the requirement for an EIA has been determined,

1. As per The World Bank's operational policy OP.4.01, an Environmental Assessment study is required to be carried out for Category A and B projects only. However, if an EIA (which is same as 'EA' as per The World Bank's terminology) needs to be carried out as per the EIA Notification, 2006 of Government of India, the same needs to be carried out as per the requirements of the said notification and also complying to the requirements of OP 4.01.

2. An environmental assessment (EA) report should focus on the significant environmental issues of a project and should include an Executive summary concisely discussing significant findings and recommended actions. The other components of the EA report are indicated below.

Policy, legal, and administrative framework applicable for the project - Discuss the policy, legal, and administrative framework within which the EA is carried out such as applicable environmental regulations – EP Act, EIA Notification, Water Act, Air Act, CRZ Regulations, etc. and applicable World Bank policies such as OP 4.01, etc.

Project description - Concisely describe the proposed project (detailed description of the proposed components) and its geographic, ecological, social, and temporal context, including any offsite investments that may be required (e.g., dedicated pipelines, access roads, power plants, water supply, housing, and raw material and product storage facilities). Indicate the need for any resettlement plan or indigenous people's development plan. Also include a map showing the project site and the project's area of influence.

Baseline data - Assess the base line conditions of the study area and describe relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commences. Also consider current and proposed development activities within the project area but not directly connected to the project. Since the proposed pilot studies are in coastal areas include necessary base line studies on ecology of the project area such as aquatic/estuarine/ marine ecology, flora/fauna studies and benthal studies (depending on the project activities), migratory pattern of birds, nesting grounds of fish specific studies relevant to the coastal areas. Sampling and frequency of these studies should justify the reliability of the base line studies and associated impact predictions. Wherever, not feasible utilize available secondary data.

Environmental impacts - Predict and assess the likely positive and negative impacts of the project in quantitative terms to the extent possible with suitable modeling analysis. Identify mitigation measures and any residual negative impacts that cannot be mitigated. Explores opportunities for environmental enhancement. Identify and estimate the extent and quality of available data, key data gaps, and uncertainties associated with predictions, and specifies topics that do not require further attention.

Analysis of alternatives – Evaluate and compare feasible alternatives to the proposed project in terms of location, technology, design and operation--including the "without project" situation--in terms of their potential environmental impacts. The feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements should also be detailed out. For each of the alternatives, quantify the environmental impacts to the extent possible, and attach economic values where feasible. Justify the basis for selecting the particular project design recommended approaches to reduce possible environmental impacts. Since the projects are in coastal areas, the proposed projects should ensure that no adverse impacts are expected on the coastal resources (environmental, ecological, social and cultural resources)

Environmental Management Plan (EMP) – The EMP should include a set of mitigation, monitoring, and institutional measures to eliminate adverse environmental impacts to offset or reduce them to acceptable levels. The plan also should include actions needed to implement these measures. Specifically, the EMP

- identifies and summarizes all anticipated significant adverse environmental impacts (including those involving indigenous people or involuntary resettlement);
- describes--with technical details--each mitigation measure, including the type of impact to which it relates and the conditions under which it is required, together with designs, equipment descriptions, and operating procedures, as appropriate;
- estimates any potential environmental impacts of these measures; and
- Provides linkage with any other mitigation plans (e.g., for involuntary resettlement, indigenous peoples, or cultural property) required for the project.
- Identifies **monitoring** objectives and specifies the type of monitoring, with linkages to the impacts assessed in the EA report and the mitigation measures described in the EMP.
- The recommended monitoring program should provide a specific description and technical details of monitoring measures including the parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions; and
- **Monitoring and reporting procedures** to (i) ensure early detection of conditions that necessitate particular mitigation measures, and (ii) furnish information on the progress and results of mitigation.
- The EMP should also provide a specific description of **institutional arrangements**--who is responsible for carrying out the mitigation and monitoring measures (e.g., for operation, supervision, enforcement, monitoring of implementation, remedial action, financing, reporting, and staff training). To strengthen environmental management capability in the agencies responsible for implementation, EMPs may suggest (a) technical assistance programs, (b) procurement of equipment and supplies, and (c) organizational changes.
- For all the above three aspects (mitigation, monitoring, and capacity

development), the EMP should provide (a) an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and (b) capital and recurrent cost estimates (c) sources of funds for implementing the EMP. All these cost estimates should be integrated into the total project cost estimates.

- The EMP should be integrated into the project's overall planning, design, budget, and implementation by including the EMP project contracts and establishing the EMP within the project plan to receive funding and supervision along with the other components.

Consultation requirements specified in line Bank's operational policies and procedures shall be adhered to. The **record of stake holder consultation** carried out during the EA process shall be provided in the report along with the minutes of these meetings, views of stake holder agencies, affected people and local nongovernmental organizations (NGOs).

Independent Assessment and ToR Approval

In line with requirements of the Bank's operational policies, the EA/SA should be carried out and/or reviewed by engaging independent consultants (not associated with technical/engineering design).

All ToRs, including those for EA/SA studies and those for technical studies would be submitted to the Bank for approval.

Annexure 7

Standard Terms of Reference for Environment Assessment

Environment Assessment (EA) is a decision support mechanism to ensure that the project design and implementation are environmentally sound and sustainable. During the preparation phase, the objective of the EA is to provide inputs to the selection of sub-projects, feasibility study; preliminary and detailed design as well as assist development of a holistic development of the project package. During the implementation phase, environmental management plans (developed as a part of the EA during the preparation phase) are used for executing the environmental mitigation, enhancement and monitoring measures.

In the preparation phase, the EA shall achieve the following objectives:

1. Identify and analyze upstream environmental issues that affect the entire development package;
2. Establish the environmental baseline in the study area, and to identify any significant environmental issue;
3. Assess impacts of the project, and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures;
4. Integrate the environmental issues in the project planning and design; and
5. Develop appropriate management plans for implementing, monitoring and reporting of the environmental mitigation and enhancement measures suggested

The environmental assessment studies and reporting requirements to be undertaken under these TOR must conform to the GOI and the Bank guidelines and regulations, which comprise of, inter alia: The Environmental Impact Assessment Notification, MOEF, 2006 with subsequent amendments; the operational policies, guidelines and the reference materials of the World Bank

Description of the Project

(Include description of the project; covering geographical location, type of development envisaged including a description of activities. Also include current status of the project. Provide brief information on any other study – already completed/ongoing/proposed.)

Scope of Work

The EA comprises the following 3 components – (i) environmental management framework (EMF) for the entire project; (ii) environmental assessments (EA) for the individual road subprojects, as required; and (c) environmental management plans (EMPs) for these individual sub-projects. The following section gives the detailed scope of work in each of these stages.

Inception

The Consultants shall use the inception period to familiarize with the project details. The Consultants shall recognize that the remaining aspects of the project, such as engineering and social, are being studied in parallel, and it is important for all these aspects to be integrated into the final project design to facilitate their successful implementation. The Consultants should also recognize that due care and diligence

planned during the inception stage helps in improving the timing and quality of the EA reports.

During the inception period the Consultants shall (a) study the project information to appreciate the context within which the EA should be carried-out, (b) identify the sources of secondary information on the project, on similar projects and on the project area, (c) carry out a reconnaissance survey on a few sample road corridors, and (d) undertake preliminary consultations with selected stakeholders.

Following the site visits and stakeholder consultations, as well as a review of the conditions of contract between the consultant and the Client, the consultant shall analyse the adequacy of the allocated manpower, time and budgets and shall clearly bring out deviations, if any. The Consultants shall study the various available surveys, techniques, models and software in order to determine what would be the most appropriate in the context of this project.

The Consultants shall interact with the engineering and social consultants to determine how the EA work fits into the overall project preparation cycle; how overlapping areas are to be jointly addressed; and to appropriately plan the timing of the deliverables of the EA process. These shall be succinctly documented in the Inception Report.

Overall Environmental Baseline: All regionally or nationally recognized environmental resources and features within the project's influence area shall be clearly identified, and studied in relation to activities proposed under the project. These will include all protected areas (national parks, wildlife sanctuaries, reserved forests, RAMSAR sites, biosphere reserves, wilderness zones), unprotected and community forests and forest patches, wetlands of local/regional importance not yet notified, rivers, rivulets and other surface water bodies. In the context of xxxxxx (add and remove locations from the indicative list that follows), sensitive environmental features will include wildlife corridors, biodiversity hotspots, meandering rivers, flood prone areas, areas of severe landslide and river erosion, flood embankments (some of which are also used as roads). Consultants shall consolidate all these information in a map of adequate scale.

Stakeholder Identification and Consultation: Consultation with the stakeholders shall be used to improve the plan and design of the project rather than as project information dissemination sessions. The consultants shall carry out consultations with Experts, NGOs, selected Government Agencies and other stakeholders to (a) collect baseline information, (b) obtain a better understanding of the potential impacts and (c) appreciate the perspectives/concerns of the stakeholders, and (c) secure their active involvement during subsequent stages of the project. Consultations shall be preceded by a systematic stakeholder analysis, which would (a) identify the individual or stakeholder groups relevant to the project and to environmental issues, (b) include expert opinion and inputs, (c) determine the nature and scope of consultation with each type of stakeholders, and (d) determine the tools to be used in contacting and consulting each type of stakeholders. A systematic consultation plan with attendant schedules will be prepared for subsequent stages of project preparation as well as implementation and operation, as required.

Identification of Relevant Macro/Regional Level Environmental Issues: Consultants shall determine the Valued Environment Components (VECs)

considering the baseline information (from both secondary and primary sources), the preliminary understanding of the activities proposed in the project and, most importantly, the stakeholder (and expert) consultations, which would need to be carefully documented. Use of iterative Delphi techniques is recommended. Based on the identification of VECs, Consultants shall identify information gaps to be filled, and conduct additional baseline surveys, including primary surveys. The consultants shall conduct a preliminary analysis of the nature, scale and magnitude of the impacts that the project is likely to cause on the environment, especially on the identified VECs, and classify the same using established methods. For the negative impacts identified, alternative mitigation/management options shall be examined, and the most appropriate ones suggested. The preliminary assessment should clearly identify aspects where the consultants shall also analyse indirect and cumulative impacts during all phases and activities of the project. For the positive measures identified, alternative and preferred enhancement measures shall be proposed.

Environmental Screening: Consultants shall summarise the known sub-projects (whether upgrading or maintenance) into different categories that relate to the magnitude potential environmental impacts. During such categorisation, consideration shall be paid to (i) location of the sub-project with respect to environmentally sensitive areas, and (ii) volume, nature and technology of construction. This screening framework should be able to categorise all future subprojects, based on a limited number of parameters. The parameters should be such that their identification and measurement is easy, and does not involve detailed studies. The screening criteria also shall contain exclusion criteria, for subprojects, which should not be taken up due to potential immitigable and significant environmental impacts (including but not limited to permanent obstruction to wildlife corridors, or opening up increased access to threatened biodiversity resource hotspots, or construction on top of eroded and vulnerable flood embankments).

Environmental Scoping: For each category of sub-project roads identified by the environmental screening, Consultants shall suggest the scope of environmental assessment to be undertaken.

For higher impact category of sub-projects (located on or near environmentally sensitive areas and substantial volume of construction), the scope could be full and detailed EA (see Attachment III for details). For medium impact category of projects the scope of EA could be limited (focusing on pertinent issues); for lower impact category of projects, the scope could be implementing a simple set of environmental management practices.

The scoping shall include that which will be covered in the sub-project EA (or limited EA, as required), along with the "how, when and where" of each activity recommended. It shall include a listing of other environment issues that do not deserve a detailed examination in the project EA (covering, for example, induced impacts that may be outside the purview of the client) along with a justification. The scoping needs to identify and describe the specific deviations or inclusions vis-à-vis the EA ToR provided in Annexure III, if any, along with a justification; modify this ToR for the sub-project EA, if required; and recommend studies that need to be conducted in parallel but are outside the EA process. For medium impact category of sub-projects, Consultants shall prepare ToRs for Limited Environmental

Assessments (LEA), depending on the environmental issues identified during environmental screening and identification of issues (paragraphs 13-14 above).

Policy, legal, and administrative framework applicable for the sub-project - Discuss the policy, legal, and administrative framework within which the EA is carried out such as applicable environmental regulations – EP Act, EIA Notification, Water Act, Air Act, CRZ Regulations, etc. and applicable World Bank policies such as OP 4.01, etc. This assessment shall also include EH&S guidelines of the World Bank and applicable Indian Legislation on community and worker health and safety for the pertinent sector activities which are proposed to be funded.

Implementation Arrangements: The above works (described in paragraphs 10-16) shall result in a framework, which describes how the potential environmental impacts of all sub-projects will be managed during preparation, implementation, and in the post-implementation periods. This framework shall include (a) description of how feasible and appropriate mitigation and environmental enhancement measures would be identified and implemented; (b) institutional, training and monitoring requirements associated with the environmental impacts, mitigation measures and enhancements; and (c) effective monitoring, inspection and environmental auditing measures to be followed by the borrower; and, (d) the estimated budget for all the above, sufficiently detailed

The framework for monitoring, inspection and environment audit shall specify parameters, the responsible agencies, reporting procedures, budget and financing, and what other inputs (for example: training) are necessary. In addition, the framework shall specify what action should be taken and by whom in the event that the proposed mitigation measures fail, either partially or totally, to achieve the level of environmental protection expected.

Mechanisms for improved co-ordination between Client and Line departments: Consultants shall examine the various options available for improved and timely co-ordination between various state government departments. These could take the form of written MoUs for specific activities, apex co-ordination committee of top bureaucrats, or any such mechanism that can be effective in reducing delays in ancillary activities such as, but not limited to, tree cutting, shifting of utilities, etc.

Environmental inputs to feasibility study & preliminary project design: The EA consultants shall make design recommendations, related to alignment (major shifts, bypasses or different route alternative), road cross-sections, construction material use, and mitigation & enhancement measures. The EA consultants shall interact regularly with the Clients and familiarize themselves with the project's overall feasibility analyses models, so that the EA inputs are in conformity to the needs of the overall feasibility study (for all the different alternative improvement proposals under consideration).

In the cases of very significant environmental losses or benefits, the consultants shall estimate the economic/financial costs of environment damage and the economic/financial benefits the project is likely to cause. In the cases, the impacts or benefits are not too significant, qualitative methods could be used. In addition, wherever economic and financial costs of the environmental impacts cannot be satisfactorily estimated, or in the cases of significant irreversible environmental impacts, the consultants shall make recommendations to avoid generating such impacts.

Generic Environmental Management Plan (Generic EMP): It is recommended that for the low impact sub-projects separate environmental assessments and separate EMPs would not be required. Local, limited and construction level environmental issues in these sub-projects could be identified using standard or pre-defined environmental screening checklists, and these environmental issues could be addressed by implementing Generic EMPs.

Consultants shall identify, local and construction related issues, which are usually part of all infrastructure related projects. These could be based on a literature survey (including the EA documents of all recent Bank-supported projects in India). For each of these issues, Consultants shall prepare a menu of alternative avoidance, mitigation, compensation, enhancement and mitigation measures. This could also be done through a careful review of the environmental management plans (EMPs) of the recent Bank supported similar infrastructure related projects, and with an evaluation to the applicability to the context of (Name of state). Consultants shall organize consultations with line departments, and finalize this Generic EMP.

Consultants shall provide robust estimates of costs of generic environmental management measures like facilities required at campsite, cost of additional (to regulatory) monitoring of environmental components, etc. These costs shall be verified for common works items in line with the rate analysis for other works.

Building Environmental Management Capacity in the line department: Based on the preliminary findings of the environmental screening, stakeholder consultations, and institutional analysis of the implementing agency's capacity to manage environmental issues, consultants shall prepare a Capacity Building Plan to mainstream environmental management in the Implementing agency's activities by the end of project implementation period. Earmarking staff for environmental management and improving their skill-sets would be simultaneously pursued during project preparation and implementation. In addition, recommendations should be made concerning any changes to guidelines, standards and regulations, which would improve medium and long term environmental management in the Line Departments works.

Environmental Training Plan: A detailed training plan shall be prepared, (a) to ensure that the environmental management framework can be implemented; and (b) to develop and strengthen environmental capacities.

The strategy should include a mix of hands-on training for key staff involved in project preparation, site visits to similar projects, and whenever required, full-fledged academic programs on environmental management at well-recognized institutions. The Consultants shall conduct orientation training for the key client as well as members of other consultant teams like survey, design, etc., early in the assignment. Periodic training at various levels will continue during project preparation to ensure that the knowledge, skills and perspectives gained during the assignment are transferred to the Client and are utilized effectively during project implementation.

Recommendation for Further Work: The Consultant should make recommendations concerning any further studies of environmental issues, which should be undertaken during project implementation and financed under the project. Such studies could comprise, for example, the analysis of what action should be taken with regard to existing roads which traverse critical natural habitats and which have been excluded

from improvement under the project due to potential significant environmental degradation.

Public Disclosure

The Consultants are to provide support and assistance to the client in meeting the disclosure requirements, which at the minimum shall meet the World Bank's policy on public disclosure. The consultants will prepare a plan for in-country disclosure, specifying the timing and locations; translate the key documents, such as the EMF Summary in local language; draft the newspaper announcements for disclosure; and help the client to place all the EA reports in the client's website. The consultants shall prepare a non-technical EA summary report for public disclosure.

Co-ordination among the Engineering, Social, Environmental & Other Studies

The consultants, with assistance from the Client, shall establish a strong co-ordination with the other project-preparation studies – engineering, social and/or institutional development. The consultants shall keep in mind the specific requirements of the project in general, and the engineering/design studies in particular, and shall plan their outputs accordingly. It is recommended that some of the consultation sessions may be organised in co-ordination with the social and engineering consultants, as feasible, and when the stakeholders consulted are the same.

The consultant shall review the contract documents – technical specifications, and rate analysis, to ensure that there are minimal conflicts between the EMP stipulations and specifications governing the execution of works under the project.

Consultants Inputs

The Consultants are free to employ resources as they see fit. Timing is an important essence for the study, which shall be closely co-ordinated with the works of the engineering and social teams, simultaneously involved in preparation of the project. Table 1 gives an indicative allocation of manpower for the study. (Modify, as required given the context of the project.)

Additional expertise, such as on hill ecology or other, shall be provided as demanded by the context of the project. The consultants are encouraged to visit the project area and familiarize themselves, at their own cost, before submitting the proposal; and propose an adequate number and skill-set for the senior specialists and technical support staff for this assignment. Further, the consultant will allocate adequate number of field surveyors, distinct from the technical support staff, to complete the study in time.

The consultants shall provide for all tools, models, software, hardware and supplies, as required to complete the assignment satisfactorily. These should be widely recognized or accepted. Any new model or tool or software employed should be field-tested before use for the purpose of this EA.

The consultants shall make formal presentations, co-ordinated by the client, at key milestones on the (a) proposed work plan after submitting the Inception Report; (b) recommendations from the environmental screening; and (c) design recommendations and details of EMP. The consultants shall co-ordinate with the other consultants working on project preparation for each presentation.

All supporting information gathered by the consultant in undertaking these terms of reference would be made available to the client.

Outputs

The consultant is expected to provide the following outputs, as per the schedule given in table 2. The Consultants are expected to allocate resources, such as for surveys, keeping this output schedule in mind. (Modify based on the number specified in, and schedule of outputs of the Engineering ToR).

Inputs to be provided by the client

(The client can provide office space as necessary. The client will provide no other logistic support – Modify as deemed fit in the context of the project and the client.) It is expected that the Client and the field offices will provide all ready and available information as requested by the consultant. *[Note – Include the list of data Clients will procure for the Consultants.]*

Further, the Client will provide all necessary and reasonable support to the consultant to collect secondary data, such as issuing authorization letters. The Consultant will be responsible for any translation of documents and for processing of data. The Clients will designate an officer to act as the main liaison officer and participate as possible in the study.

(The client may designate/depute a team of professionals to work within the consultants' team for long term capacity building within the client's organization.)

The client will ensure the timely flow of information and documents from one consultant to other. The client will also help in organizing the formal presentations from all consultants engaged in project preparation.

Annexure 8

Standard Terms of Reference for Social Impact Assessment

The social assessment document assists managers and leaders take conscious decisions to avoid social and resettlement impacts. SA in this context is seen as an impact assessment tool where the concerns to be addressed would go far beyond only social and resettlement issues. SA so prepared would take into account the policy implications of the central and state governments apart from the resettlement policies and regulation of the World Bank.

Objectives

The main objective of Social Assessment (SA) is to ensure that the project design and implementation are socially acceptable. Further, the objective of SA shall be to provide inputs for selection of sub-projects, preliminary and detailed design of the project. The Resettlement Action Plans to be developed as part of the SA are to be used during the implementation of the project for executing the resettlement and rehabilitation activities and monitoring measures. In the preparation phase, the SA shall achieve the following objectives:

- Establish the Socio-economic conditions in the study area, and to identify any significant social issues;
- Assess impacts of the project, and provide for measures to address the adverse impacts by the provision of the requisite avoidance and/or compensation measures;
- Integrate the social and resettlement issues in the project planning and design; and
- Develop Resettlement Action Plan for implementing, monitoring and reporting of the social and resettlement compensation measures suggested.

Scope of Work

The SA shall identify all potential social issues in the project; and shall develop management measures for addressing all these issues. To this end, the SA shall consist of

(i) Socio economic baseline established through census surveys;

(ii) Stakeholder Identification & Consultation

(iii) project and regional level social issues that would need to be considered in the analysis of alternatives, planning and design of the sub-projects and establish their criticality in the context of the proposed project;

(iv) A Resettlement Action Plan to address the project and regional social issues;

(v) A training plan for building adequate capacity in the implementing agency (or Client) towards implementation of the plans produced.

(vi) A Monitoring Plan encompassing the monitoring parameters and schedule for monitoring.

Key tasks in this part of the assignment include:

Define likely project impact zone (direct/indirect) based on project proposal

- Collect information through desk review and field visits on existing baseline conditions, include all land uses, structures and people (e.g., demography, socio-economic status, vulnerability, status of infrastructure and access to people, livelihood programs, market rate of assets, medical support for sexually transmitted diseases, its prevalence, awareness on HIV/AIDS, legal status of land through revenue records.) within the likely project impact zone.
- Identification of key stakeholders involved in various aspects of the project (project implementing and executing agencies and groups from civil society; description of socio-economic organizations of local communities that may affect project outcomes; carry out public consultation with the likely affected groups, NGOs, district administration and other stakeholders and document the issues raised and outcomes; and assessment of local capacities in terms of participation in planning, implementation and supervision, and evaluation
- Explore viable alternative project designs to avoid, where feasible, or minimize social impacts (displacement, impact on vulnerable community, cultural properties etc.)
- Identify major and minor social impact issues including loss of assets, livelihood, poverty, gender and health issues and estimate the economic and social impacts on people and land.
- A resettlement plan would be drafted based on the outcome of the SIA to aid minimize, mitigate, or compensate for adverse impacts on the affected communities. The mitigation or management plans developed should be consistent with the nature of the development and the nature of the impacts

Annexure 9

Suggested Structure for Preparing Resettlement Action Plan

Abbreviated Resettlement Action Plan

(Population affected is < 200)

An abbreviated plan covers the following minimum elements

a. a census survey of displaced persons and valuation of assets;

b. description of compensation and other resettlement assistance to be provided;

c. consultations with displaced people about acceptable alternatives;

d. institutional responsibility for implementation and procedures for grievance redress;

e. arrangements for monitoring and implementation; and

f. a timetable and budget.

Complete Resettlement Action Plan

(Population affected is > 200)

The scope and level of detail of the resettlement plan vary with the magnitude of land acquisition and complexity of resettlement. The plan is based on up-to-date and reliable information about (a) the proposed compensation payment and resettlement of adversely affected groups, and (b) the legal issues involved in resettlement. The resettlement plan covers the elements below, as relevant. When any element is not relevant to project circumstances, it should be noted in the resettlement plan.

i. **Description of the sub- project**. General description of the project and identification of the project area.

ii. **Potential impacts**. Identification of: **(**a) the project component or activities that give rise to land acquisition and resettlement (b) the alternatives considered avoiding or minimizing land acquisition and resettlement; and (c) the mechanisms established to minimize resettlement, to the extent possible, during project implementation.

iii. **Objectives.** The main objectives of the resettlement program.

iv. **Results of census socioeconomic surveys.** The findings of surveys to be conducted in the early stages of project preparation and with the involvement of potentially affected people, including:(a) the results of a census survey covering; (b)current occupants of the affected area to establish a basis for the design of the compensation payment and resettlement program and to exclude subsequent inflows of people from eligibility for compensation and resettlement assistance;(c)standard demographic and socio-economic characteristics of affected households,(d) the magnitude of the expected loss—total or partial—of assets, and the extent of impacts, physical or economic;(e) public infrastructure

and social services that will be affected; and(f)social and cultural characteristics of affected communities, including a description of formal and informal institutions (e.g., community organizations, ritual groups, nongovernmental organizations (NGOs) that may be relevant to the consultation strategy and to designing and implementing the resettlement activities.

v. **Eligibility.** Definition of affected persons and criteria for determining their eligibility for compensation and other resettlement assistance, including relevant cut-off dates.

vi. **Valuation of and compensation for losses.** The methodology to be used in valuing losses to determine their replacement cost; and a description of the proposed types and levels of compensation under local law and such supplementary measures as are necessary to achieve replacement cost for lost assets

vii. **Resettlement measures.** A description of the packages of compensation and other resettlement measures that will assist each category of eligible affected persons to achieve the objectives of the policy. In addition to being technically and economically feasible, the resettlement packages should be compatible with the cultural preferences of the displaced persons, and prepared in consultation with them. Any measures necessary to prevent land speculation or influx of ineligible persons at the selected sites. The provisions of housing, infrastructure (e.g., water supply, feeder roads), and social services (e.g., schools, health services); plans to ensure comparable services to host populations. Additional measures to ensure that such vulnerable groups as indigenous people, ethnic minorities, the landless, and women are adequately represented.

viii. **Income Restoration Measures.** Wherever the livelihoods are affected, appropriate measure for improvement or restoring of livelihoods including assistance during the transition period will be proposed which should be compatible with the cultural preference and skill of the affected people.

ix. **Community participation**. Involvement of affected people for consultation with and participation in the preparation and implementation;(b)a summary of the views expressed and how these views were taken into account in preparing the resettlement plan;(c) a review of the alternatives presented and the choices made by affected persons wherever options available to them, including choices related to forms of compensation and resettlement assistance.

x. **Integration with host populations.** Measures to mitigate the impact of resettlement on any host communities, including: (a)consultations with host communities and local governments;(b)arrangements for prompt tendering of any payment due the hosts for land or other assets provided to resettlers;(c)arrangements for addressing any conflict that may arise between resettlers and host communities; and (d) any measures necessary to augment services (e.g., education, water, health, and production services) in host communities to make them at least comparable to services available to resettlers.

xi. **Implementation Arrangements:** The description of agencies responsible for implementation of compensation payment and resettlement activities should be outlined and an assessment of the institutional capacity of such agencies and NGOs; and any steps that are proposed to enhance the institutional capacity of

agencies and NGOs responsible for resettlement implementation.

xii. **Grievance procedures.** Affordable and accessible procedures for redressal of disputes arising from resettlement; such grievance mechanisms should take into account the availability of judicial recourse.

xiii. **Implementation schedule.** An implementation schedule covering all payments of compensation and other applicable resettlement activities from preparation through implementation, including target dates for the achievement of expected benefits to resettlers and hosts and terminating the various forms of assistance. The schedule should indicate how the resettlement activities are linked to the implementation of the overall project.

xiv. **Costs and budget.** Tables showing itemized cost estimates for all compensation payments and associated resettlement activities other contingencies; timetables for expenditures; sources of funds; and arrangements for timely flow of funds, and funding for land acquisition and resettlement should be described.

xv. **Monitoring and evaluation**. Arrangements for monitoring of compensation payments and resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation

Annexure 10

Resettlement & Rehabilitation Framework (Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement)

Definitions of some of the key words used in the Social Entitlement Framework are as follows.

- Project Affected Persons (PAP): People who lose land, livelihood, homesteads, structures and access to resources as a result of project activities.
- Encroacher: A person who has extended their building, agricultural lands, business premises or work places into public/government land without authority.
- Squatter: A person who has settled on public/government land, land belonging to institutions, trust, etc and or someone else's land illegally for residential, business and or other purposes and/or has been occupying land and building/asset without authority.

Definition of 'Affected Families' (RFCTLR&R Act 2013).

Land Owners

1. Family or company whose land/other immovable properties have been acquired;
2. Those who are assigned land by the Governments under various schemes;
3. Right holders under the Forest Rights Act, 2006

Livelihood Losers

1. Over the last three years, a family whose livelihood is primarily dependent on the land being acquired, including agriculture labourers, tenants or sharecroppers
2. Over the last three years, families which are dependent on forests or water bodies for their livelihoods when these are acquired; including forest gatherers, hunters, fisher folk and boatmen
3. Over the last three years, any family whose livelihood is dependent primarily on the land being acquired in the urban areas or any family who is residing on the land being acquired in the urban areas

As per Fair Compensation, Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013

Minimum Compensation for Land Acquisition

A Comprehensive Compensation Package **(First Schedule)**

1. Market value of the land

a) the minimum land value, if any, specified in the Indian Stamp Act, 1899 for the registration of sale deeds in the area, where the land is situated; or

b) the average of the sale price for similar type of land situated in the immediate areas adjoining the land being acquired, ascertained from fifty per cent of the sale deeds registered during the preceding three years, where

higher price has been paid; or

whichever is higher:

PROVIDED THAT THE MARKET VALUE SO CALCULATED FOR RURAL AREAS SHALL BE MULTIPLIED BY A MULTIPLIER FACTOR OF UP TO

'TWO' based on the distance of project from urban area, as may be notified by the appropriate government and in case of urban areas multiplier factor is 'One'.

2. **Value of the assets attached to land:** Building/Trees/Wells/Crop etc as valued by relevant govt. authority;

Total compensation = 1+2

3. **Solatium:** 100% of total compensation

4. Where land is acquired for urbanisation, 20% of the developed land will be reserved and offered to land owning project affected families, in proportion to their land acquired and at a price equal to cost of acquisition and the cost of development. In case the project affected family wishes to avail of this offer, an equivalent amount will be deducted from the land acquisition compensation package payable to it

5. The Company for whom land is being acquired may offer shares limited to 25% of the Compensation amount. In case the project affected family wishes to avail of this offer, an equivalent amount will be deducted from the land acquisition compensation package payable to it.

6. Where the market value cannot be determined for the reason that-

   a) The land is situated in such area where the transactions in land are restricted by or under any other law for the time being in force in that area. or

   b) The registered sale deeds or agreements to sell for similar land are not available for the immediately preceding three years.

   c) The market value has not been specified under the Indian Stamp Act, 1899 by the appropriate authority.

   The State Government concerned shall specify the floor price or minimum price per unit area of the said land based on the price calculated in the manner in sub-section (1) in respect of similar types of land situated in the immediate adjoining areas and as per sub-section (3) of 26.

3. Minimum R&R Entitlements

A Comprehensive R&R Package **(Second Schedule)**

1. Subsistence allowance at Rs. 3000 per month per family for 12 months;

2. The affected families shall be entitled to:

   (a) Where jobs are created through the project, mandatory employment for one member per affected family **or**

   (b) Rupees 5 lakhs per family **or**

(c)Rupees 2000 per month per family as annuity for 20 years, with appropriate index for inflation;

The option of availing (a) or (b) or (c) shall be that of the affected family

3. If a house is lost in rural areas, a constructed house shall be provided as per the Indira Awas Yojana specifications. If a house is lost in urban areas, a constructed house shall be provided, which will be not less than 50 sq mts in plinth area.

   In either case the equivalent cost of the house may also be provided in lieu of the house as per the preference of the project affected family;

4. *One acre of land* to each family in the command area, if land is acquired for an irrigation project if possible BUT the same shall be in lieu of Compensation;

5. Rs 50,000 for transportation;

6. A one-time 'Resettlement Allowance' of Rs 50,000;

7. Whenever the appropriate Government withdraws from any such acquisition, the Collector shall determine the amount of compensation due for the damage suffered by the owner in consequence of the notice or of any proceedings thereunder, and shall pay such amount to the person interested, together with all costs reasonably incurred by him relating to the land.

4. Enhanced Role for Panchayati Raj Insitutions esp. Gram Sabhas

- **SIA in consultation with PRIs:** The Social Impact Assessment has to be carried out in consultation with the representatives of the Panchayati Raj Institutions.
- **SIA Reports To Be Shared**: Reports prepared under the Social Impact Assessment are to be shared with these individuals in their local language along with a summary.
- **Representation in Expert Group**: The Expert Group has to have two members belonging to the Panchayati Raj Institutions. This is a powerful body that has the power to reject a project.
- **Hearings in All Gram Sabhas**: In case where an affected area involves more than one Gram Panchayat or Municipality, public hearings shall be conducted in every Gram Sabha where more than twenty five per cent of land belonging to that Gram Sabha is being acquired.
- **Consent of Gram Sabha** : The Consent of Gram Sabha is mandatory for acquisitions in Scheduled Areas under the Fifth Schedule referred to in the Constitution
- **Representation of Panchayat Chairpersons on R&R Committee at Project Level:** The Rehabilitation and Resettlement Committee at Project Level has to have the Chairpersons of the Panchayats located in the affected area or their nominees as representatives.
- **Panchayat Ghars** have to be provided as per the list of Infrastructural

amenities given in the Third Schedule.

Infrastructural Amenities under Resettlement & Rehabilitation

Infrastructural amenities to be provided/proposed to be provided in the Resettlement area as per Third schedule, including:

- Schools and playgrounds;
- Primary Health Centres and sub-health centre within two kilometres range;
- Roads and electric connections;
- Proper drainage as well as sanitation plans executed before physical resettlement
- Assured sources of safe drinking water for each family as per Govt. norms;
- Provision for drinking water for cattle.
- Grazing land as per proportion acceptable in the State.
- Appropriate seed-cum-fertilizer storage facility if needed
- Basic irrigation facilities to the agricultural land allocated to the resettled families if not from the irrigation project, then by developing a cooperative or under some Government scheme or special assistance.
- All new villages established for resettlement of the displaced persons shall be provided with suitable transport facility which must include public transport facilities through local bus services with the nearby growth centres/urban localities.
- Panchayat Ghars as appropriate;
- Anganwadi"s providing child and mother supplemental nutritional services as per Govt norms;
- School as per the provisions of the Right of Children to Free and Compulsory Education Act, 2009 (35 of 2009)
- Playground for Children
- One community centre for every hundred families.
- Places of worship and chowpal/tree platform for every fifty families for community assembly, of numbers and dimensions consonant with the affected area.
- Village level Post Offices, as appropriate, with facilities for opening saving accounts;
- Fair price shops and seed-cum-fertilizer storage facilities if needed.
- Burial or cremation ground, depending on the caste-communities at the site and their practices.
- Facilities for sanitation, including individual toilet points.
- Separate land must be earmarked for traditional tribal institutions.
- The forest dweller families must be provided, where possible, with their

forest rights on non-timber forest produce and common property resources, they must continue to enjoy their earlier rights to the aforesaid sources of livelihood.

- Appropriate security arrangements must be provided for the settlement, if needed.
- Veterinary service centre as per norms

Specific Timelines

1. Compensation will be given within a period of **three months** from the date of the award;
2. Monetary R&R entitlements will be provided within a period of **six months** from the date of the award;
3. Infrastructure R&R entitlements will be provided within a period of **eighteen months** from the date of the award;
4. **No involuntary displacement will take place without completion of R&R.**

Annexure 11

Generic Activity-specific Environment Management Plans

GEMP for Roads/Bridges

The Contractor will abide by the environmental, occupational health and safety measures listed in the Environment Management Plan (EMP) given in the table below. The Engineer's check and certification for payment shall also include the performance review of the Contractor with regard to Environment Management Plan compliance.

S. No.	Activity	Measures to be Implemented by the Contractor
1.	Work Plan for EMP implementation	The Contractor's Project Manager shall be responsible for implementation of EMP provisions and will coordinate the over-all implementation of the said plan. Along with the Work Programme, the Contractor shall submit a plan including method statement and timeline about specific actions that will be taken by him to implement the provisions laid out in the EMP.
2.	Regulatory Permissions and Consents	The Contractor shall obtain all requisite statutory clearances prior to commencement of civil works, which includes obtaining permissions/consents for setting-up construction camp; plants and equipment; borrow areas and quarry operations. The Contractor shall abide by all conditions laid out in the said clearances. This includes: ▪ Consents for establishment and operation of plants from State Pollution Control Board ▪ PUC certification for all vehicles/equipment used for construction ▪ Permission/consent of District Administration/Mining Department/other agencies for quarrying and/or borrowing operations for materials like sand and earth ▪ Authorization for storage and transportation of explosive material.
3.	Consultation and Community Consent	The Contractor shall consult and obtain written consents of landowners (individual/panchayat/govt. agency) for temporary use of land for all construction related activities including: ▪ setting-up and operation of construction and labour camps;

S. No.	Activity	Measures to be Implemented by the Contractor
		▪ borrow areas and ▪ disposal of debris and other waste material.
4.	Construction/ Labour Camp	▪ Location: The location of camp and plant site/s shall be as per the environmental siting criteria given in the ESMF. Consent of the land owner/local authorities shall be required and needs to be submitted to the Engineer for approval. Construction camp sites (including plant sites, and material stock yards) shall be located (preferably in the downwind direction) at least 500 mts. from the nearest settlement and at least 1000 mts. away from designated/protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserve Forests and Ramsar Sites).
		▪ Accommodation and Basic Amenities: All weather shelter with the required tenement size and toilets shall be provided, as per provisions of Labour Laws. Separate toilet facilities shall be provided for women workers. If a common mess is not provided/operated, additional space for cooking shall be provided. The contractor shall ensure that hygienic conditions are maintained during the operation of such camps/facilities.
		▪ Fuel for Cooking: The Contractor shall ensure that fuel wood is not used as a cooking medium in the construction/labour camp.
		▪ Potable water supply: Drinking water supply of at least 40 lpcd with the required supply points shall be provided.
		▪ Fire Safety: Adequate fire safety precautions shall be taken and the required fire safety equipment (such as fire extinguishers) shall be provided by the Contractor.
5.	Site Clearance	▪ All required precautions/measures to prevent damage to road side vegetation outside the formation cutting and filling areas shall be taken. No tree cutting is to carried out without the written instruction from the Employer, who in turn will ensure that relevant regulatory permission/s
		▪ The non-timber grade trees are to be stacked and possession is to be given to Employer/concerned

S. No.	Activity	Measures to be Implemented by the Contractor
		Govt. Department.
		▪ The Contractor shall strip, store, preserve and reinstate top soil in work fronts.
6.	Protection of Properties and Resources	The Contractor shall take due care to protect and prevent damages to the following resources during preparatory and construction work: a. Water supply lines b. Irrigation canals c. Cart, cattle and/or foot trail/tracks d. Cultural properties and sites/structures of religious importance e. Houses, Farmlands, Pastures, Orchards and/or Trees In case of damage due to construction activity, the restoration/repairs shall be carried out by the Contractor at his own cost.
7.	Slope Stability	The Contractor shall ensure that civil work and related activities such as clearing and grubbing, stacking of materials and debris disposal are carried out in a manner that minimises slope instabilities of near-by water bodies.
8.	Quarry Establishment and/or Operations	(a) The Contractor shall procure material from quarries that have been approved/licensed by the State Govt. A copy of such an approval shall be submitted to the Engineer prior to procuring material.
		(b) All requirements for ensuring health and safety of workers, including use of effective dust suppression arrangements at crusher sites and on haul roads; safety precautions prior to blasting operations; provision and enforcement of Personal Protective Equipment use and proper storage of blasting and other inflammable materials shall be followed by the Contractor.
		(c) First-aid and Emergency Response Arrangements: First-aid facility and emergency response arrangements shall be maintained at the quarry and crusher site.

S. No.	Activity	Measures to be Implemented by the Contractor
		(d) In the event of Contractor opening a new quarry for the project, the following additional conditions shall apply - ▪ Location: Location of quarry site shall be at least 1000 mts. from the nearest settlement; archeologically/culturally protected/locally important sites; designated/ protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserved Forests and Ramsar Sites); other ecologically rich sites with Forest and/or areas with Wildlife presence and; water supply sources. Other location selection criteria as defined under Govt. regulations/rules will also apply. ▪ Site preparation. Area shall be demarcated as approved in the permit and shall be reconfirmed by the Engineer. Site clearance shall take place only within the demarcated area. Top soil, if any, shall be stripped, stacked and preserved for re-use. ▪ Operation: The quarry shall be operated by adopting/implementing environmental, health and safety measures as specified in the permit conditions and as specified under Point 5 (b) of this table. ▪ Closing and restoration. Proper drainage provisions shall be provided prior to closure of the quarry. Restoration shall be done as per the permit conditions.
9.	Borrow Areas	(a) Borrow areas for the project will be selected by the Contractor following the stipulations given below. The finalization of all such locations shall be dependent on the approval of the Engineer on technical and environmental grounds. This includes on-site verification to cross-check the accuracy of details provided by the Contractor. Only after receipt of the written approval from the Engineer, the Contractor shall enter into a formal agreement with landowner.
		(b) The Contractor shall not procure any kind of construction material (such as aggregates, sand and earth) from ecologically protected areas.

S. No.	Activity	Measures to be Implemented by the Contractor
		(c) Identification and Selection • The borrow area should not be located in agriculture field/s unless unavoidable i.e. barren land is not available. In case borrowing needs to be done on an agricultural land, top-soil stripping, stacking and preservation is a must. Damage to productive and fertile areas has to be minimal and this includes appropriate planning of haul roads. • Borrow pits shall not be located within a distance of 100 mts. from any NH, SH or other roads. • Borrow pits shall be preferably located 500 mts. away from settlements/ habitations. • No borrow pits shall be located within 500 mts. from schools, colleges, playgrounds, religious structures and health centers. • No borrow area shall be opened within 500 mts. from a reserved or protected forest area, protected sites, wildlife movement zone and cultural heritage site.
		(d) Operation • Area up to which material will be extracted shall be clearly demarcated on ground. • A 15 cm topsoil layer will be stripped and preserved in stockpiles. • Borrowing of earth should be preferably limited to a depth of 1.5 mtr from the existing ground level. • Slope at the edges will be maintained not steeper than 1:3 (Vertical: Horizontal).
		(e) Rehabilitation of Borrow Areas • Rehabilitation shall be satisfactorily undertaken immediately after the use has ceased and at least three weeks prior to monsoon. • Preserved top soil has be spread uniformly over land (except in cases where borrow area is developed as a water body) used as a borrow area.

S. No.	Activity	Measures to be Implemented by the Contractor
10.	Water Extraction/ Use	Water for construction and for use at construction camps (including labour camps) is to be extracted with prior written permission of (a) the individual owner, in case the source is private well/tube well; (b) Gram Panchayat in case the source belongs to community; and (c) Irrigation Department in case the source is an irrigation canal or a river.
11.	Traffic Safety and Management	(a) In areas where traffic is to be diverted during construction, the traffic detour shall be planned and publicized to the local people. Necessary information signage shall be erected to inform the road users.
		(b) Traffic safety arrangements (including provision of warning signage, barricades and delineation) shall be made by the Contractor to ensure safety of road users, local people and workers.
		(c) Material shall be covered during transportation to prevent spillage, accidents and pollution.
12.	Worker's Safety	(a) All measures required for ensuring safety and health of the workers shall be taken up by the Contractor. This includes provision and enforcement of appropriate personal protective equipment; first aid facilities at camp, plant sites and work zones; emergency response arrangements; proper storage of hazardous/toxic and polluting materials and; measures for ensuring fire, electrical and mechanical safety arrangements in camps and in work fronts.
		(b) Material safety data sheet record of fuel and other inflammable chemicals shall be maintained at the site.
13.	Air Pollution	(a) Wind barriers or screens shall be provided in the downwind direction at air pollution causing sources like plant sites and fine material storage stock yards.
		(b) Fugitive dust emissions have to be eliminated or at least reduced by providing dust suppression/control measures, based on activity and site conditions..
		(c) All plants and equipment shall comply with pollution control norms.

S. No.	Activity	Measures to be Implemented by the Contractor
		(d) Water shall be sprinkled at least twice during dry day on haulage roads passing through or near settlements (including at least 100 m before and after the settlement).
14.	Water pollution	(a) All measures (including provision of temporary silt fencing to control sediment run-off) required for avoiding adverse impacts to water bodies (such as ponds, streams, canals and rivers), water sources (such as hand pumps and wells) and adjacent farmland shall be undertaken by the Contractor.
		(b) Storage of materials like fuel, chemicals, cement and bitumen shall be done in a manner (with impervious layer on bottom and a covered shed on top) that does not contaminate land and ground/surface water.
15.	Noise Pollution	(a) All noise causing activities within 1km radius of settlements shall be stopped during night time (9:00 PM to 6:00 AM).
		(b) Ear plugs shall be provided to the labour facing risk from high noise pollution (such as plant sites, blasting zones and those working near generators, heavy equipment/machinery) in construction zone.
16.	Disposal of Debris and Wastes	(a) All debris and spoils generated during construction works are to be reused to the extent feasible (technically and economically). Residual debris and spoils, if any, shall be disposed in locations pre-approved by the Engineer in a manner that it does not contaminate the environment.
		(b) Location of Debris Disposal Sites: Debris disposal sites shall be located preferably away from farmlands, water sources and water bodies. In no case, debris shall be disposed within 500 mts. of ecologically sensitive areas, including forests, wetlands and protected natural habitats.
		(c) Site preparation and disposal method: Site will be prepared by stripping and storage of top-soil. The disposal shall be carried out as per the Engineer's approval. In case of bituminous waste, dumping shall be carried out over a 60 mm thick layer of rammed clay so as to eliminate any chances of

S. No.	Activity	Measures to be Implemented by the Contractor
		leaching.
		(d) Closure: Disposal sites shall be properly dressed with top-soil re-laid on site surface; drainage provision to divert run-off water away from the site and; vegetation (grass/shrub) plantation, based on site conditions.
17.	Restoration and Rehabilitation of Sites	All work sites and areas under temporary use (including construction and labour camps, plant sites, haul roads and borrow areas) shall be restored/ rehabilitated to a better condition (if not at least to its original condition) and to the satisfaction of the Engineer and land owner upon completion of construction work by the Contractor. Completion of work will also include completion of rehabilitation and clean-up of the work sites including camps, plants, in and along road and structure construction sites; disposal of debris/construction wastes at pre-approved locations and; restoration of borrow areas and other sites/locations used for material sourcing.
18.	Liabilities	Any liability arising out of Contractor's agreement with landowners/ local people/gram panchayat (including those related to temporary use of land, water extraction and disposal of debris) shall be settled by the Contractor.

Generic EMP for Cyclone Shelters

S. No.	Activity	Measures to be Implemented by the Contractor
1.	Work Plan for EMP implementation	The Contractor's Project Manager shall be responsible for implementation of EMP provisions and will coordinate the over-all implementation of the said plan. Along with the Work Programme, the Contractor shall submit a plan including method statement and timeline about specific actions that will be taken by him to implement the provisions laid out in the EMP.
2.	Arrangements for temporary	The Contractor as per prevalent rules shall carry out negotiations with the landowners for obtaining their

S. No.	Activity	Measures to be Implemented by the Contractor
	land	consent for temporary use of lands for workers camp, construction sites etc. Written permission (no objection certificate) shall be taken from the Sarpanch/ Village Head and the land owner prior to location selection and a copy shall be submitted to OSDMA for approval. It is the responsibility of the Contractor to clean up the site prior to handling over to the owner (after construction or completion of the activity)
3.	Construction/ Labour camp – location	• Construction camps shall not be proposed within 500 m from the nearest settlements to avoid conflicts and stress over the infrastructure facilities with the local community. • Camp site shall not be located within 250 m from a water body including village pond. • A distance of at least 500 m shall be maintained from designated/protected natural habitats (such as National Parks, Sanctuaries, Biosphere Reserves, Reserve Forests and Ramsar Sites, if any) and Coastal Regulation Zone.
4.	Labour Camp Management	**Accommodation:** The Contractor shall follow all relevant provisions of the Factories Act, 1948 and the Building and the other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 for construction and maintenance of labour camp. **Potable water:** The Contractor shall: a) Supply of sufficient quantity of potable water (at least 40 lpcd) in labour camp at suitable and easily accessible places and regular maintenance of such facilities. b) If any water storage tank is provided, the bottom of the tank shall be kept at least 1mt. above the surrounding ground level. **Fuel for Cooking:** The Contractor will be responsible for providing LPG Cylinder/Kerosene in labour camp to avoid cutting of trees for fuel wood from the adjoining areas. **Sanitation and sewage system:** The Contractor shall

S. No.	Activity	Measures to be Implemented by the Contractor
		ensure that: • The sewage system for the camp shall be designed, built and operated in such a fashion that it should not pollute the ground water or nearby surface water. • Separate toilets/bathrooms, shall be arranged for men and women • Adequate water supply is to be provided in all toilets and urinals • • All toilets in workplaces are with dry-earth system (receptacles) which are to be cleaned and kept in a strict sanitary condition • Night soil (human excreta) is to be disposed off by putting layer of it at the bottom of a permanent tank prepared for the purpose and covered with 15 cm. layer of waste or refuse and then covered with a layer of earth for a fortnight. **Waste disposal:** The Contractor shall provide garbage bins in the camps and ensure that these are regularly emptied and disposed off in a hygienic manner. **Fire Safety:** Adequate fire safety precautions shall be taken and required fire safety equipment (such as fire extinguishers) shall be provided by the Contractor.
5.	First aid	The Contractor shall arrange for – • A readily available first aid unit including adequate supply of sterilized dressing materials and appliances as per the Factories Rules in work zone • Availability of suitable transport at all times to take injured or sick person(s) to the nearest hospital
6.	Labour's Safety	The Contractor shall provide: • Protective footwear and protective goggles to all workers employed on mixing cement, concrete etc. • Protective goggles and clothing to workers engaged in stone breaking activities • Earplugs to workers exposed to loud noise, and workers working in concrete mixing operation.

S. No.	Activity	Measures to be Implemented by the Contractor
		• Adequate safety measures for workers during handling of materials at site. The Contractor shall comply with all the precautions as required for ensuring the safety of the workmen as per the International Labour Organization (ILO) Convention No. 62 as far as those are applicable to this contract. The Contractor shall make sure that during the construction work all relevant provisions of the Factories Act, 1948 and the Building and other Construction Workers (regulation of Employment and Conditions of Services) Act, 1996 are adhered to. The Contractor shall not employ any person below the age of **14 years** for any work and no woman shall be employed on the work of painting with products containing lead in any form. The Contractor shall also ensure that no paint containing lead or lead products is used except in the form of paste or readymade paint. He shall provide facemasks for use to the workers when paint is applied in the form of spray or a surface having lead paint is rubbed and scraped. The Contractor shall mark 'no smoking' in high risk areas. These shall be reflected in the Construction Safety Plan to be prepared by the Contractor during mobilization and shall be approved by competent authority.
7.	Labour requirements	Local people shall be given preference for unskilled and other jobs created during construction phase of the project. The contractor would notify requirement of unskilled labours in nearby/surrounding villages. In case local labours are not interested/available then a certificate/letter shall be issued by the Panchayat officials to the Contractors in this regard.
8.	Site Clearance	Only ground cover/shrubs that impinge directly on the permanent works or necessary temporary works shall be removed with prior approval from competent authority.. The Contractor, under any circumstances shall not cut or damage trees. Trees identified under the project shall be cut only after receiving clearance from the State Forest Department or after the receipt of written permission from competent authority.

S. No.	Activity	Measures to be Implemented by the Contractor
10	Construction vehicles, equipment and machinery	All vehicles, equipment and machinery to be procured and brought to site for construction shall confirm to the relevant Bureau of India Standard (BIS) norms and the manufacturer's specifications. The discharge standards promulgated under the Environment Protection Act, 1986 shall be strictly adhered to. Noise limits for construction equipment to be procured shall not exceed the value specified in the Environment (Protection) Rules, 1986. The equipment proposed to be used for construction and installed close to waterway/streams, must be checked and certified fit, especially with respect to the potential leakage of oil and grease. The inspection should verify that: • Equipment is clean (free of mud, dirt and oil) • Equipment is in good working order. • A drip pan is available for equipment that shall be stored on site. • Contractor has a spill kit • Operator is trained on the re-fuelling, maintenance and emergency spill procedures. • Adequate inspections shall be conducted during the construction period.
12.	Construction water	Water for construction and for use at construction camps (including labour camps) is to be extracted with prior written permission of (a) the individual owner, in case the source is private well/tube well; (b) Gram Panchayat in case the source belongs to community; and (c) Irrigation Department in case the source is an irrigation canal or a river. The Contractor shall take all precaution to minimize the wastage of water in the construction process.
13.	Air pollution	• The Contractor shall take every precaution (water sprinkling etc.) to reduce the level of fugitive dust generating from construction site. • Water shall be sprinkled at least twice during dry day on haulage roads passing through or near settlements (including at least 100 m before the settlement). • Wind barriers or screens shall be provided in the downwind direction at air pollution causing sources like plant sites and fine material storage stock yards. • Truck carrying construction materials will be duly

S. No.	Activity	Measures to be Implemented by the Contractor
		covered to avoid spilling. • The Contractor shall ensure that all vehicles, equipment and machineries used for construction are regularly maintained and confirm that pollution emission levels comply with the relevant requirements of State Pollution Control Board (SPCB). • The Contractor shall submit PUC certificates for all vehicles/ equipment/machinery used for the project and maintains a record of the same during the contract period.
14.	Noise Pollution	The Contractor shall confirm the following: • All plants and equipment used in construction shall strictly conform to the CPCB noise standards. • All vehicles and equipment used in construction shall be fitted with exhaust silencers. • Servicing of all construction vehicles and machinery shall be done regularly and during routine servicing operations, the effectiveness of exhaust silencers shall be checked and if found defective shall be replaced. • At the construction sites within 150 m of the nearest habitation, noisy construction work shall be stopped during the night time between 9.00 pm to 6.00 am.

S. No.	Activity	Measures to be Implemented by the Contractor
15.	Water Pollution	***Water pollution from construction wastes*** The Contractor will take all precautionary measures to prevent the wastewater generated during construction from entering into streams, water bodies or the irrigation system. He will avoid construction works close to streams or water bodies during monsoon. All measures (including provision of temporary silt fencing to control sediment run-off) required for avoiding adverse impacts to water bodies (such as ponds, streams, canals and rivers), water sources (such as hand pumps and wells) and adjacent farmland shall be undertaken by the Contractor. ***Water pollution from fuel and lubricants*** • The Contractor will ensure that all construction vehicle parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance sites are located at least 100 m away from any water body. The Contractor will also ensure that spillage of fuels and lubricants do not contaminate the ground. • If fuel storage and re-fuelling areas are located on agricultural land or areas supporting vegetation, the top soil will be stripped, stockpiled and returned after cessation of such activities. • Storage of materials like fuel, chemicals and cement shall be done in a manner (with impervious layer on bottom and a covered shed on top) that does not contaminate land and ground/surface water.
16.	Solid Waste	Solid waste from the project during construction will be mainly domestic scraps & wastes from the construction camp and construction spoils from construction sites. • The small amount of construction debris will be disposed of in suitable preidentified or existing dumping areas in tune with the local condition to avoid land degradation & water logging due to indiscriminate dumping. • Dumping areas will be biologically reclaimed through top soil cover. • Regular inspection of haul roads, construction site & camp will be carried out to ensure regular and

S. No.	Activity	Measures to be Implemented by the Contractor
		timely removal of construction debris to the dumping sites.
17.	Drainage & Flood Control	The Contractor will ensure that construction materials like earth, stone are disposed off so as not to block the flow of water of any watercourse and cross drainage channels.
18.	Restoration and Rehabilitation of Sites	All work sites and areas under temporary use (including construction and labour camps, plant sites, haul roads and borrow areas) shall be restored/ rehabilitated to a better condition (if not at least to its original condition) and to the satisfaction of land owner upon completion of construction work by the Contractor. Completion of work will also include completion of rehabilitation and clean-up of the work sites including camps, plants, in and around the construction site; disposal of debris/construction wastes at pre-approved locations and; restoration of borrow areas and other sites/locations used for material sourcing.
19.	Liabilities	Any liability arising out of Contractor's agreement with landowners/ local people/gram panchayat (including those related to temporary use of land, water extraction and disposal of debris) shall be settled by the Contractor.

Annexure 12

Activity-specific Guidelines

A. Strategy for Integrated Pest Management

Intensive and improved plantation practices are also more vulnerable to increased pest infestations and related problems. Introduction of hybrid varieties and excessive use of fertilizers has led to increased incidences of insect and pest attacks. Till recently, great emphasis was laid on application of chemical pesticides, which initially proved beneficial. But their hidden ill effects became evident only after continuous and indiscriminate use and are summarized below:

- Development of resistance in target insects/pests and they are no longer eliminated with recommended doses. Until 1984 more than 447 insect species and 100 plant pathogens had developed resistance to various chemicals.
- Resurgence of pests, as they are not wiped out and reappear time and again.
- Destruction of useful insects that were natural predators of problem-insects due to continuous use of chemical insecticides
- Pollution of soil and water sources resulting in reduced soil productivity
- Deposition of pesticide residues in the environment that ultimately enters the human food chain leading to health hazards in the form of severe disorders, such as, cancer, miscarriage, infertility, birth-defects, kidney problems etc.
- Secondary outbreak of pests due to loss of natural enemies

IPM is a broad ecological approach of pest control (insects, diseases, weeds, rodents etc) employing all methods and techniques viz. cultural, mechanical, regulatory, biological and chemical in a compatible manner to keep pest population below economic threshold level (ETL) and also reduces the residual effects of chemicals on plants. The project will greatly benefit with the implementation of IPM but will require a lot of efforts and support, as at present there is very little or no awareness regarding IPM.

Objectives of IPM approach

- Maximize production minimize inputs
- Minimize environmental pollution
- Manage pests below ETL through bio-control involving release of indigenous natural enemies of pests
- Popularize IPM approach in remote areas through sensitizing line departments
- Replacement of chemicals by substituting with biological inputs (bio-fertilizers, FYM, vermin -compost, bio -agents, bio -pesticides etc.)

Components of Integrated Pest Management

Cultural Methods: Cultural methods of pest control consist of regular nursery

operations so performed, which either destroy the pests or prevent them from causing economic losses. These practices have been used since long for pest control and needs thorough knowledge of crop production, biology and ecology of pests and their natural enemies. The various cultural practices can be grouped under the following heads:

- Removal of plant debris, trimming of bunds, treating of soil and deep summer ploughing which kill various stages of insects.
- Testing of soil deficiencies for micronutrients on the basis of which fertilizers should be applied.
- Proper plant spacing.
- Optimum use of fertilizers at appropriate time. It is well-known fact that high doses of Nitrogen fertilizers increase pest incidence.
- Proper water management
- Proper weed management. It is well-known fact that the weeds besides competing with crop for micronutrients also harbour many pests.

Mechanical and physical methods: In this process manual labour is involved where we also take the help of some tools. Various practices involved are grouped as under:

- Collection of egg masses, larvae, pupae and adults where possible and either destroy them or place them in cage-cum-bird purhers for conservation of natural enemies and withholding of pest species.
- Removal and destruction of diseased or pest infested portion of plant parts.
- Use of light traps and destruction of trapped pests.
- Use of pheromon traps for monitoring and suppression of pest population.

Regulatory methods: Rules formed by various agencies and Government are implemented under this method. Quarantine rules are enforced strictly disallowing infected materials to be imported and transported to other parts where there is no pest problem. Ban on certain dangerous chemicals and pesticides (Schedule-1 pesticides listed in WHO) is also enforced and regulated.

Bio-control methods: Control of insect pests and diseases through biological means is one of the most important components of IPM. In broadest sense, bio-control is use of living organisms to control unwanted living organisms (pests). In other words deliberate use of parasites, predators and pathogens to maintain pest population at a level below those causing economic losses either by introducing a new species into the environment or by increasing the effectiveness of those already present. The different types of biocontrol practices are grouped as under:

- **Introduction:** In this process a new species of bio-agent is introduced to a locality for its establishment against its host. Introduction is made only after laboratory examination and field trials for its efficiency.
- **Augmentation:** In this process the population of natural enemies already present in an area is increased by releasing either laboratory reared or field collected bio-agents of same species in such number as would require to

suppress the population in that area.

- **Conservation:** This is the most important component of biological control and plays a major role in pest suppression. In this process natural enemies already present in the nature are protected from being hilled. The different practices required to protect the natural enemies are listed below:
- Collection of egg masses and placing them in bamboo cage-cum-bird percher for allowing emergence of parasites and withholding of pest larvae.
- Chemical spray should be adopted as last resort and that too after observing pest defender ratios and economic threshold level (ETL).
- Use of broad spectrum pesticides should be avoided.
- Use of selective and relatively environmental friendly (REF) pesticides.
- Strip or spot application of pesticides.
- Augmentation of plant defenders by release of egg and larval parasites and predators
- User recommended dose and concentration of pesticides.

Chemical methods: Use of chemical pesticides is the last resort when other methods fail to keep the pest population below economic threshold level (ETL). Although there is advancement in pest management research, pesticides would continue to play an important role in crop protection. Therefore, use of pesticides should be judicious, based on pest surveillance and ETL to minimize not only the cost but also reduce the associated problems. While going for chemical control the following points must be strictly followed:

- Economic threshold level should be observed.
- Selection of relatively environmental friendly pesticides.
- Ensure that nursery workers are sensitized to the use and safe disposal of insecticides, fertilizers etc. and that these harmful chemicals are not used beyond their expiry
- If the pest is present in strips or in isolated patches, whole plantation should not be sprayed
- Pest and defender ratio must be observed. If ratio is 1:1, there is no need of pesticide spray

Pest Surveillance

As part of IPM strategy, pest surveillance should be undertaken. Though not a method of pest control, pest surveillance is a pre-requisite in adoption of IPM. Pest surveillance is an effective tool as an information system, which renders all pest control methods more effective. It aims at monitoring and forewarning of likely buildup of pests in order to facilitate planning and adoption of suitable control strategy based on ETL. In other words pest surveillance acts as a guiding principle in determining the areas and time needing the pest control.

Constraints/Risks in IPM Implementation and Mitigation Strategy

Constraint/Risks	Mitigation
Availability of selective pesticides, effective against crop pests but not against natural enemies of pests, is a problem.	Make available selective bio-pesticides to farmers, as per their requirements
One of the basic points of IPM is ETL, which have not been worked out for all the pests and combination of pests for different varieties and regions.	Support research programmes to work out ETL for various pests within different project districts and areas and use this information to implement chemical pesticides, insecticides etc.
Potential of bio-control agents has not been evaluated fully for many agents	Do not introduce bio -control agents that have not been worked out in detail and are still in study stage. Use only ready to release and duly approved bio –control agents.
Techniques of mass rearing of several bio agents are still not well developed	Ensure timely breeding and supply of predators to plantations; improve linkages with relevant line departments and other institutions
Plantation workers, by and large, are not well educated and have different socio-cultural environment, which is also a constraint in introducing a new technology.	Ensure that demonstrations are alongside awareness building and that there is no gap between demonstration and supply of new technology, lest people will loose interest

List of relatively environment friendly pesticides and insecticides

i. Insecticides: Endosulfan, Monocrotophos, Phosphamidon, Phosalone, Malathion, Exydemeton methyl, Carbofuran (for soil application)
ii. Fungicides: Copper oxycholoride, Carbendaxim, Mancoseb, Thiram, Streptocycline.
iii. Weedicides: Anilofos, Pendimethalin, Thiobencarb, Butachlor, Oxyfluorfan, 2,4 – D.
iv. Rodenticide: Zinc phosphide, Bromodiolone.

New introductions: Neem based insecticides, such as, Neem oil based emulsion containing 0.9% azadirachitin, Neem kernol based emulsion containing 0.15% Asadirachtin

B. Preliminary/basic Guidance for Zoological Park Works

IUCN Technical Guidelines on the Management of Ex-situ Populations for Conservation + Policy, Guidelines and Strategy – 2014 for Zoos in India issued by Central Zoo Authority (CZA), MoEFCC, Govt. of India will be referred and used.

Ex- Situ Conservation & Management- IUCN Guidelines

Ex situ conservation is defined (as per IUCN), as "the conservation of components of biological diversity outside their natural habitats". Ex situ collections include whole plant or animal collections, zoological parks and botanic gardens, wildlife research facilities, and germplasm collections of wild and domesticated taxa (zygotes, gametes and somatic tissue).

The Ex- situ conservation goals, as part of re-development of IGZP, shall be in line with national and international obligations[21] and include the following:

1. Increasing public and political awareness and understanding of important conservation issues and the significance of extinction;
2. Coordinated genetic and demographic population management of threatened Taxa (such as Indian Wild Dog)
3. Institutional strengthening and professional capacity building;
4. Appropriate benefit sharing;
5. Fundraising to support all of the above.

General Guidelines

The general guidelines for ex situ conservation and management are based on IUCN Technical guidelines[22].

- All ex situ populations must be managed so as to reduce risk of loss through natural catastrophe, disease or natural/man-made disasters. Safeguards include effective quarantine procedures, disease and pathogen monitoring.
- Consideration must be given to institutional viability and capacity before embarking on a long term ex situ project.
- While some ex situ populations may have been established prior to the formulation of the guidelines, all ex situ and in situ populations should be managed in an integrated, multidisciplinary manner, and in accordance with the principles and provisions of CZA norms.
- Extreme/Emergency situations, where taxa/populations (both within the zoo and in the wild) are in imminent risk of extinction, must be dealt with on priority basis. This action must be implemented with the full consent and support of the State.

[21] Refer Central Zoo Authority (CZA) Legislation, Policy, Guideline and Strategy 2014and IUCN Technical Guidelines on the Management of Ex-situ Populations for Conservation.

[22] Refer IUCN Technical Guidelines on the Management of Ex-situ Populations for Conservation

- The management of ex situ populations must minimise any damaging effects of ex situ management, such as loss of genetic diversity, artificial selection, pathogen transfer and hybridisation, in the interest of maintaining the genetic integrity and viability of the population.

The zoo, through ex situ conservation should aim to increase public awareness, concern and support for biodiversity, and to support the implementation of conservation management, through education, fundraising and professional capacity building programmes

Facilitating effective and scientific management – Central Zoo Authority Guidelines

The guidelines are based on Central Zoo Authority Legislation, Policy, Guidelines and Strategy 2014 and in consonance with Rule 10 of Recognition of Zoo Rules, 2009 (Amendment) Rules, 2013[23].

1. **Providing naturalistic environment in the zoo -** The Zoo should endeavour to maintain the basic naturalistic features of the zoo site such as water bodies, natural ridges and vegetation there on intact. Planting of bushes, hedges and trees should also be done wherever vacant space is available and maintain the same to serve as habitat for free ranging species of wild animals and birds.
2. **Regulation of the movement of the visitors in a manner that the animals are not unduly disturbed –** The Zoo should not permit in its premises the activities which are inconsistent with the objectives of the zoo and are likely to raise levels of pollution and obstruct the smooth movement of visitors (like meetings, conferences, exhibitions, melas and social functions).
3. **Provision of appropriately designed barriers -** The perimeter barrier and the entry gate of each zoo should be so designed, constructed and maintained that stray dogs, domestic livestock and number of security guards should also be made to keep a close watch so that unauthorized persons do not cause any breaches in the perimeter barrier to get access to the zoo and cause damage to the zoo property or harm to zoo animals. All breaches in the perimeter barrier, whether accidental or manmade should be repaired promptly.
4. **Administrative and Staffing Pattern –** The zoo should have a detailed chart indicating duties and responsibilities of all levels of staff also indicating the chain of command for reporting and promptly dealing with the matters pertaining to maintenance and operation of the zoo and the emergencies that may arise during such operations. In the absence of a particular functionary, alternate arrangement should be available for looking after his/her functions. Specific responsibility should be assigned to the zoo personnel with appropriate seniority to attend and redress the problems faced by the visitors. All concerned should be suitably notified about the same. Subject to availability of staff, a senior staff member should be designated as ex-officio "Public Relations Officer". Director/ In-charge of the zoo shall be responsible for smooth functioning of the zoo, proper housing upkeep and health care of the animals, proper visitor management and ensuring their safety. The

23 Refer Central Zoo Authority Central Zoo Authority Legislation, Policy, Guidelines and Strategy 2014.

directions issued by the zoo Director should be binding on all zoo personnel. The detailed list of the duties for the posts which are mandatory under the rules, has been provided in CZA Norms 2014.

Acquisition of Animals

- Except for obtaining founder animals for approved breeding programme and infusion of new blood into inbred groups, the zoo shall not collect animals from the wild.
- The zoo shall not enter into any transaction involving violation of the law and provisions of international conventions on wildlife conservation.
- The zoo shall not enter into any transaction in respect of its surplus animals with any commercial establishment. Even the animal products should not be utilised for commercial purposes. The trophies of the animals could, however, be used for educational or scientific purposes.

Animal Housing

- Every animal in the zoo shall be provided housing, upkeep and health care that can ensure a quality of life and longevity to enable the zoo population sustain itself through procreation.
- The enclosure for all the species displayed or kept in the zoo shall be of such size that all animals get adequate space for free movement and exercise and no animal is unduly dominated or harassed by any other animal.
- Each animal enclosure in the zoo shall have appropriate shelters, perches, withdrawal areas, wallow, pools drinking water points and such other facilities which can provide the animals a chance to display the wide range of their natural behaviour as well as protect them from extremes of climate.

Upkeep of Animal Collections

- The zoo shall provide diet to each species, which is similar to its feed in nature. Where for unavoidable reasons any ingredients have to be substituted, due care will be taken to ensure that the substitute fulfills the nutritional requirement of the species.
- For the well being of the animals, round the clock supply of potable drinking water shall be made available to all animals kept in the zoo.
- With the objectives of avoiding human imprinting and domestication of animals, the zoo shall prevent physical handling of animals by the staff to the extent possible.
- The Zoo shall not allow any animal to be provoked or tortured for the purpose of extracting any performance or tricks for the benefit of the visitors or for any other reason.

Health Care

- The zoo shall ensure availability of the highest standards of veterinary care to all the animals in its collection.
- Adequate measures shall be taken by the zoo for implementing wildlife health and quarantine rules and regulations.

- Appropriate vaccination programmes shall also be taken up for safeguarding against infectious diseases. Timely action to isolate infected animals from the zoo population shall be taken to avoid further spread of disease.

Research And Training

- The zoo shall encourage research on the biology, behaviour, nutrition and veterinary aspects of animals in their collection. They shall also endeavor for creation of expertise on zoo architecture and landscape designing, cooperation of recognised institutions already working in relevant fields in this regard shall be taken.
- The zoo shall endeavor for transfer of technical skills available in the field for zoo personnel. The Central Government, Central Zoo Authority and the State Government shall provide due support to the zoo in these efforts. Assistance of Wildlife Institute of India (WII), India Veterinary Research Institute (IVRI) and other institutions within India and abroad, having appropriate expertise shall be taken in this regard.
- The zoo shall also endeavour for dissemination of information on scientific aspects of management through publication of periodicals, journals, newsletters and special bulletins. Help of non-governmental organisations (NGOs) and government institutions shall also be availed in such efforts.

Breeding programme for species

- Before taking up breeding programmes of any species, the zoo shall clearly identify the objectives for which the breeding programme is being taken up. The targeted numbers for the programme would be decided keeping in view the identified objectives.
- The zoo shall cooperate in successful implementation of identified breeding programmes by way of loaning, pooling or exchanging animals for the programme and help creation of socially, genetically and demographically viable groups even at the cost of reducing the number of animals or number of species displayed in its capacity.
- Breeding programme shall be taken up by the zoo after collection of adequate data like biology, behaviour and other demo graphic factors affecting the programme including the minimum number of founder animals and the quantum of housing facilities available.
- Programmes for breeding of zoo animals for re-introduction in the wild shall be taken up after getting approval of the State Government, the Central Zoo Authority and the Central Government as the case may be.
- The zoo shall give priority in their breeding programmes to endangered species representing the zoo-geographic zones in which they are located.
- For carrying out breeding programmes in a scientific and planned manner the zoo shall mark every individual animal involved in the programme in an appropriate manner and maintain appropriate records.
- The zoo shall take utmost precaution to prevent inbreeding. It shall avoid artificial selection of traits and make no explicit or implicit attempts tointerbreed various genera, species and sub-species.

- Special efforts shall be made to avoid human imprinting of the stocks raised for reintroduction purposes by providing off exhibit breeding facilities.

Education and Out-reach Activity

- The zoo should have a well-drawn-up plan for educating the visitors as well as others in the community. Zoos shall keep a close liaison with other ex-situ facilities in this regard.
- The central theme of the zoo education programme being the linkage between the survival of various species and protection of their natural habitat, enclosures which allow the animals to display natural behaviour are crucial to zoo education. Zoo shall, therefore, display animals in such enclosures only where the animals do not suffer physiological and psychological restraint.
- Attractive and effective signage methods and interactive displays to explain activities of various species to visitors, published education material and audio-visual devices are proven methods for driving home the conservation's message. A formal education programme should also be pursued for strengthening the education message.
- Beside signage, the zoo shall also use guided tours, talks by knowledgeable persons and audio-visual shows for effectively communicating the message of conservation to the visitors.
- The help of universities, colleges and non-governmental organization shall be taken to educate the students about the benefits of supporting nature conservation programmes.

Extension Activities

- To provide the urban population with a window to nature and to serve as green lungs for the polluting environment, the zoo shall extend its expertise and help to State Governments and local authorities to create nature parks extending over extensive areas near big cities.

Amenities to Visitors

- Zoo shall provide basic civic amenities to the visitors like toilets, drinking water points, shelters and first-aid facilities. Ramps shall also be provided for the benefit of visitors in wheel chairs for approach to animal enclosure and other civic amenities.
- Zoos shall not provide any infrastructure for recreation/entertainment of visitors that is inconsistent with the stated objective of zoos.

C. Guidance for Dealing with Physical Cultural Resources

Introduction

This note on Physical Cultural Resources (PCR) aim to preserve and protect cultural heritage by avoiding, minimizing or mitigating the adverse impacts that projects might cause to cultural heritage. In addition, the project can play a role in promoting awareness of and appreciation for cultural heritage. Where the project proposes to use cultural heritage of a community, the note seeks to ensure that the development benefits accruing from the use of cultural heritage flow equitably to the affected communities. The below outlines the guidance note to the PMU on protecting cultural heritage in the course of project operations.

Cultural Heritage

Cultural heritage, also termed cultural property, cultural patrimony or cultural resources, can be defined as the present manifestation of the human past. It refers to sites, structures, and remains of archaeological, historical, religious, cultural, or aesthetic value. In conserving this heritage, the Project conserves those elements of our past that have the potential to contribute to our understanding of human history.

Cultural heritage refers to tangible and intangible forms of cultural heritage. Tangible cultural heritage is considered a unique and non-renewable resource that possesses cultural, scientific, spiritual or religious value and includes moveable or immovable objects, sites, structures, groups of structures, natural features, or landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic or other cultural value. Intangible forms of culture, such as cultural knowledge, innovations and practices of communities embodying traditional lifestyles, are also included under PCR.

The requirements of this PCR apply to cultural heritage regardless of whether or not it has been legally protected or previously disturbed.

Critical Cultural Heritage

Critical cultural heritage consists of (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; and (ii) legally protected cultural heritage areas.

The APDRP will not significantly alter, damage, or remove any critical cultural heritage. In exceptional circumstances, where the project may significantly damage critical cultural heritage, and its damage or loss may endanger the cultural or economic survival of communities who use the cultural heritage for long-standing cultural purposes, the PMU will: (i) meet the requirements of all policies and laws; and (ii) conduct a good faith negotiation with and document the informed participation of the affected communities and the successful outcome of the negotiation. In addition, any other impacts on critical cultural heritage must be appropriately mitigated with the informed participation of the affected communities.

Integration of preservation and protection of cultural heritage into the assessment

Process and management systems of projects is essential because damage to cultural heritage can result from activities other than direct excavation or

refurbishing buildings. Some project aspects may also impact cultural heritage in less direct ways, for example by increasing erosion to a coastal site, or building a road into a previously inaccessible area. The PMU should consider these possible impacts and address them through appropriate measures.

When in doubt about whether something is cultural heritage, the PMU should seek the knowledge and advice of local and international experts, government authorities, and members of local communities and Indigenous Peoples. The knowledge of local communities is particularly important for identifying cultural heritage that may be tied to the natural environment and not evident to outsiders.

This note applies to cultural heritage that have been undisturbed as well as disturbed. The PMU may undertake measures for the protection of cultural heritage that has already been disturbed that are different from measures for the protection of untouched cultural heritage.

Examples of project activities that might impact PCR include:

• Civil works or construction activities may obliterate community PCR such as a public garden or cemetery.

• In a project having large work camps, PCR theft can be an issue, especially if the project is in an area well known for the trafficking of movable PCR.

• In the case of a linear project involving a long canal, highway or pipeline passing through a populated area, the project may cut off access to the community's places of worship, or sacred burial areas.

• Vibration due to the use of heavy equipment in an urban setting can damage historic or culturally important buildings in the vicinity.

• For a project involving inundation, the potential submerging of PCR such as registered and unregistered archaeological sites, is frequently an issue.

Note that the project's impact area is often different from, and much larger than, the actual construction area, or 'project area'. Just as, for example, pollution impacts may take place in areas far from the project area, so PCR impacts, particularly arising from phenomena such as theft, or changes in the access, may occur in areas outside the project area.

Protection of Cultural Heritage in Project Design and Execution

In addition to complying with relevant national law on the protection of cultural heritage, including national law implementing the country’s obligations under the Convention Concerning the Protection of the World Cultural and Natural Heritage and other relevant international law, the PMU will protect and support cultural heritage by undertaking internationally recognized practices for the protection, field-based study, and documentation of cultural heritage.

Chance Find Procedures

The PMU is responsible for siting and designing a project to avoid significant damage to cultural heritage. Either during construction or operations, the PMU will implement chance find procedures established through the Social and Environmental Assessment. The PMU will not disturb any chance finds further until an Assessment by a competent specialist is made and actions consistent with the requirements established standards are identified. Some basic guidance for this is

given below:

Protection of Archaeological and Historical Sites

Where historical remains, antiquity or any other object of cultural or archaeological importance are unexpectedly discovered during construction in an area not previously known for its archaeological interest, the following procedures should be applied:

a) Stop construction activities.

b) Delineate the discovered site area.

c) Secure the site to prevent any damage or loss of removable objects. In case of removable antiquities or sensitive remains, a night guard should be present until the responsible authority takes over.

d) Notify the responsible foreman/archaeologist. Who in turn should notify the responsible authorities, the General Directorate of Antiquities and local authorities (within less than 24 hours).

e) Responsible authorities would be in charge of protecting and preserving the site before deciding on the proper procedures to be carried out.

f) An evaluation of the finding will be performed by the General

g) Directorate of Antiquities. The significance and importance of the findings will be assessed according to various criteria relevant to cultural heritage including aesthetic, historic, scientific or research, social and economic values.

h) Decision on how to handle the finding will be reached based on the above assessment and could include changes in the project layout (in case of finding an irrevocable remain of cultural or archaeological importance), conservation, preservation, restoration or salvage.

i) Implementation of the authority decision concerning the management of the finding.

j) Construction work could resume only when permission is given from the concerned authority after the decision concerning the safeguard of the heritage is fully executed.

In case of delay incurred in direct relation to Archaeological findings not stipulated in the contract (and affecting the overall schedule of works), the contractor may apply for an extension of time. However the contractor will not be entitled for any kind of compensation or claim other than what is directly related to the execution of the archaeological findings works and protections.

The final form of these procedures will depend upon the local regulatory environment, including any chance find procedures already incorporated in legislation dealing with antiquities or archaeology. For APDRP, chance finds procedures will contain the following elements:

Definition

In some cases the chance finds procedure is confined to archaeological finds; more commonly it covers all types of PCR. In the absence of any other definition from the local cultural authorities, the following definition could be used: "movable or immovable objects, sites, structures or groups of structures having archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance".

Ownership

The identity of the owner of the artefacts found should be ascertained if at all possible. Depending on the circumstances, the owner could typically be, for example, the state, the government, a religious institution, the land owner, or could be left for later determination by the concerned authorities.

Recognition

As noted above, in PCR-sensitive areas, recognition and confirmation of the specific PCR may require the contractor to be accompanied by a specialist. A clause on chance finds should be included in every contractor's specifications.

Procedure upon Discovery

Suspension of Work

If a PCR comes to light during the execution of the works, the contractor shall stop the works. Depending on the magnitude of the PCR, the contractor should check with MOMA for advice on whether all works should be stopped, or only the works immediately involved in the discovery, or, in some cases where large buried structures may be expected, all works may be stopped within a specified distance (for example, 50meters) of the discovery. MOMA's decision should be informed by a qualified archaeologist.

After stopping work, the contractor must immediately report the discovery to the Resident Engineer. The contractor may not be entitled to claim compensation for work suspension during this period. The Resident Engineer may be entitled to suspend work and to request from the contractor some excavations at the contractor's expense if he thinks that a discovery was made and not reported.

Demarcation of the Discovery Site

With the approval of the Resident Engineer, the contractor is then required to temporarily demarcate, and limit access to, the site.

Non-Suspension of Work

The procedure may empower the Resident Engineer to decide whether the PCR can be removed and for the work to continue, for example in cases where the find is one coin.

Chance Find Report

The contractor should then, at the request of the Resident Engineer, and within a specified time period, make a *Chance Find Report*, recording:

- Date and time of discovery;
- Location of the discovery;
- Description of the PCR;
- Estimated weight and dimensions of the PCR;
- Temporary protection implemented.

The *Chance Find Report* should be submitted to the Resident Engineer, and other concerned parties as agreed with the cultural authority, and in accordance with national legislation. The Resident Engineer, or other party as agreed, is required to inform the cultural authority accordingly.

Arrival and Actions of Cultural Authority

The cultural authority undertakes to ensure that a representative will arrive at the discovery site within an agreed time such as 24 hours, and determine the action to be taken. Such actions may include, but not be limited to:

- Removal of PCR deemed to be of significance;
- Execution of further excavation within a specified distance of the discovery point;
- Extension or reduction of the area demarcated by the contractor.

These actions should be taken within a specified period, for example, 7 days. The contractor may or may not be entitled to claim compensation for work suspension during this period. If the cultural authority fails to arrive within the stipulated period (for example, 24 hours), the Resident Engineer may have the authority to extend the period by a further stipulated time. If the cultural authority fails to arrive after the extension period, the Resident Engineer may have the authority to instruct the contractor to remove the PCR or undertake other mitigating measures and resume work. Such additional works can be charged to the contract. However, the contractor may not be entitled to claim compensation for work suspension during this period.

Further Suspension of Work

During this 7-day period, the Cultural authority may be entitled to request the temporary suspension of the work at or in the vicinity of the discovery site for an additional period of up to, for example, 30days.The contractor may, or may not be, entitled to claim compensation for work suspension during this period. However, the contractor will be entitled to establish an agreement with the cultural authority for additional services or resources during this further period under a separate contract with the cultural authority.

Consultations

Where a project may affect cultural heritage, the PMU will consult with affected communities who use, or have used within living memory, the cultural heritage for longstanding cultural purposes to identify cultural heritage of importance, and to incorporate into the PMUs decision-making process the views of the affected communities on such cultural heritage. Consultation will also involve the relevant national or local regulatory agencies that are entrusted with the protection of cultural heritage.

Removal of Cultural Heritage

Most cultural heritage is best protected by preservation in its place, since removal

is likely to result in irreparable damage or destruction of the cultural heritage. The PMU will not remove any cultural heritage, unless the following conditions are met:

- There are no technically or financially feasible alternatives to removal
- The overall benefits of the project outweigh the anticipated cultural heritage loss from removal
- Any removal of cultural heritage is conducted by the best available technique

Annexure 13

Construction Camps and Basic Amenities for Labour

Foreseeing the involvement of women, both direct and indirect in the construction activities, IA shall ensure certain measures that are required to be taken by the construction contractor towards welfare and wellbeing of women and children during the construction phase such as:

(a) **Temporary Housing:** During the construction the families of labourers/workers should be provided with residential accommodation suitable to nuclear families.

(b) **Health Centre:** Health problems of the workers should be taken care of by providing basic health care facilities through health centres temporarily set up for the construction camp. The health centre should have at least a doctor, nurses, General Duty staff, medicines and minimum medical facilities to tackle first-aid requirements or minor accidental cases, linkage with nearest higher order hospital to refer patients of major illnesses or critical cases. The health centre should have MCW (Mother and Child Welfare) units for treating mothers and children in the camp. Apart from this, the health centre should provide with regular vaccinations required for children.

(c) **Day Crèche Facilities:** It is expected that among the women workers there will be mothers with infants and small children. Provision of a day crèche may solve the problems of such women, who can leave behind their children in such a crèche and work for the day in the construction activities. If the construction work involves women in its day-night schedules, the provision of such a crèche should be made available on a 24-hour basis.

The crèche should be provided with at least a trained ICDS (Integrated Child Development Scheme) worker with '*Ayahs*' to look after the children. The ICDS worker, preferably women, may take care of the children in a better way and can manage to provide nutritional food (as prescribed in ICDS and provided free of cost by the government) to them. In cases of emergency, a trained ICDS worker can tackle the health problems of the children much more efficiently and effectively and can organise treatment linking the nearest health centre.

(d) **Proper Scheduling of Construction Works:** Owing to the demand of a fast construction work, it is expected that a 24 hours-long work-schedule would be in operation. Women, especially the mothers with infants, should to be exempted from night shifts as far as possible. If unavoidable, crèche facilities in the construction camps must be extended to them in the night shifts too.

(e) **Education Facilities:** The construction workers are mainly mobile groups of people. They are found to move from one place to another taking along their families with them. Thus, there is a need for educating their children at the place of their work. Wherever feasible, day crèche facilities may be extended with primary educational facilities or some kind of informal education facilities could be created at the construction camp.

(f) **Control on Child Labour**: Minors, i.e. persons below the age of 14 years, should be restricted from getting involved in the constructional activities. It will be the responsibility of IA and social and environmental experts of DPIUs to ensure that no child labourer is engaged in the activities. Exploitation of women is very common in such camps. IA shall keep strong vigilance to ensure cessation of such exploitation.

(g) **Special Measures for Controlling STD, AIDS:** Solitary adult males usually dominate the labour force of construction camps. They play a significant role in spreading sexually transmitted diseases. In the construction camps as well as in the neighbouring areas, they are found to indulge in high-risk behaviour giving rise to STDs and AIDS.

While it is difficult to stop such activities, it is wiser to make provisions for means of controlling the spread of such diseases. IA shall conduct awareness camps for the target people, both in the construction camp and neighbouring villages as well. IA shall have to tie up SACS for awareness and IEC materials, and supply of condoms at concessional rate (or free) to the male workers may help to a large extent in this respect.

Annexure 14

Supervision Protocol for implementing EMP/ESMF

The purpose of this annex is to assist the implementing agency in establishing a mechanism for effective implementing environmental management tools for the project such as ESMF and EMP

Objectives

- Establish a system for environment management within the implementing agency.
- To ensure implementation of Environmental Management Plans (EMPs), judge effectiveness of EMPs, identify modifications required and implications such as variation orders on the Contractors agreements
- To ensure compliance of Bank's Safeguard Policies
- To ensure complaince of Government of India (GoI)'s regulatory conditions
- To identify other environment issues that may indirectly have arisen which may affect the project implementation or overall environment performance in the area. In this context, to explore the possibilities of sub-projects and to establish the institutional linkages with the primary implementing agency.
- To gather and document information on practices / issues that could provide feedback into project design for future projects.
- To help the implementing agency in developing strategies for improved environment management by:
- Facilitating improved coordination with other GoI departments,
- Facilitating better coordination between Supervision Consultants and Contractors teams
- Facilitating coordination between Non-Governmental Organizations (NGOs) implementing the RAP and the environment teams, especially in the case of identifying opportunities for enhancements and other environment management aspects of resettlement sites that may be created on relocation of displaced people, market / vendor areas, temples, ponds etc.
- Facilitating coordination with the engineering teams on ensuring the implementation of EMPs on aspects such as road safety, construction management at work site, construction management at contract camp and labor sites including gender and child labor issues.
- Facilitating better monitoring of EMPs
- Facilitating improved reporting systems by helping to develop formats for better coordination of corporate or head-quarters (Project Implementation Units / PIUs or Environmental & Social Management Units / ESMUs) and field offices, suggesting internationally accepted systems on environment management such as ISO 14001.
- Facilitating and providing resource information on training and capacity building programmes on environment management.

Annexure 15

Summary of Public Consultations

A total of five public consultations were conducted; two at Visakhapatnam on one on 26th February 2015 and 03 April 2015, one each at Srikakulam and Vizianagarm on 02 April 2015, one at Tuni on 04 April 2015. The summary of these consultations is given below:

Summary of Discussions

During all the consultations the participants were given a brief of the project components; 1) Underground Cabling for Visakhapatnam, 2) Reconstruction Roads belonging to R&B and Panchayat Raj Departments and rehabilitation of Cyclone shelters, 3) Reconstruction of Visakhapatnam Beach front and 4) Reconstruction of IG Zoo Park Visakhapatnam and Kambalakonda Eco-Park and Plantations and Nurseries. Further the project safeguard principles, ESMF provisions and the need for community engagement during all stages of the sub-project cycle were explained in detail to the participants. Each of these consultations have lasted for 2 to 3 hours. During the discussions the following issues were noted:

Design Related

Sub-Project Designs- Roads: The participants were informed of 'Build Back Better' project concept for resilient infrastructure construction. The participants expressed their doubts that that the roads are being designed in the usual manner with repairs and re-carpeting of the roads without much changes to designs to make them resilient. It was clarified that the department officials would investigate the causes of road damage and design in such a manner that the roads would withstand vagaries of nature. Many participants requested for increase of road height above the flood level and provision of more cross drainage works so as to minimize the damage during floods. The department assured the participants that the designs would involve thorough investigations and consultations with the community for resilient construction.

Critical Infrastructure Provision

Redundant Infrastructure: After the public consultation at Vizianagaram, upon the request of the participants the Team visited Konada village (of Pusapatirega Mandal in Vizianagaram district) and its surroundings and found that the Roads and Cyclone Shelters constructed under NCRMP and proposed under present project will not be accessible and useful unless the flooding of village and its surroundings is stopped. This requires construction of left side flood bank for Champavathi River near Konada village. The construction of the bank would reduce vulnerability of the community and pave way for usage of the other facilities during floods.

Underground Cabling: Many participants asked if the Underground Cabling work could be taken up in areas other than Visakhapatnam. They were informed that after the Underground Cabling work at Visakhapatnam, the Government could take this conversion for other areas as well, under different projects/ programs, as there are benefits of doing so.

Other Critical Infrastructure Provision: Many participants have proposed for basic civic amenities such as; drinking water and drainage facilities, nutrition centers, livelihoods, hospitals, etc. They were informed that these will not be taken up by the present project as the project is limited in scope to rebuild the damage caused by Hudhud, but Government can take up such important works through other projects and programs.

Environmental Issues/Concerns Raised

Sensitive Receptors: As some of the roads are close to schools, the R&B Department officials assured the participants that the DPRs for roads will include safeguards measures such as noise barriers near educational institutions schools, hospitals and places of worship with due public consultations for each DPR.

Safety Measures: Many participants have asked for safety measures such as cautionary safety signs, speed breakers and other road furniture at appropriate places. They requested the department to take into account and address visibility issues at sharp curves for roads in hill sections and in cutting.

Disposal of Debris: Many participants suggested that the debris generated by the project need to be disposed out of sight and in low lying areas, but not near the sea shore.

Disclosure: Many participants requested that the DPRs and estimates be made available to for them at the Gram Panchayat offices and to arrange for display of information about each sub-project at prominent places.

Disaster Management: The participants have asked for transfer of disaster management skill to people through involvement of NGOs, as many of the NGOs are local and have long standing reputation. They added that the local educational institutions be equipped with disaster management skills and involved in disaster management initiatives. The participants suggested that the disaster management skills be built taking each Gram Panchayat as a unit.

Livelihoods

Nurseries and Saplings: Many participants suggested that the nurseries should supply samplings such as coconut, cashew, and other horticulture crops for livelihoods.

Community Engagement: Most participants urged that NGOs be engaged by the project to mobilize community; in particular for plantation works and nurseries to sustain livelihoods. They also suggested that VSS be involved in the project.

Women Involvement: The women participants have requested to encourage the women involvement in cashew and pepper plantations and nurseries to improve their socio-economic conditions, in rural areas especially coastal villages where the severe plant damages occurred due to Hudhud. They requested for NGO involvement to achieve this.

Social Issues/Concerns Raised

Land Requirements: The participants were informed that for PR roads, in all likelihood additional land may not be required. Any small parcels of land required

would be procured through a system of consultations, consensus and voluntary donation as in case of PMGSY. The participants were aware of this and agreed to donate small parcels, if does not amount to alienation of substantial portion of their lands. For proposed R&B road widening, when land is required, they would go for voluntary donation or direct purchase as appropriate. When the participants mentioned that there were encroachments into the RoW at many places, they were informed that such impacts would be meticulously noted during DRP preparation through Transect Walks and the ESMF provisions will be applied for rehabilitation.

Common Property Resources: The participants were informed that the any common property resource, such as hand pumps, places of worship, etc. will be rebuilt after due consultation with the community.

Community Participation: Many participants suggested formation of village and Mandal level committees to study and identify the needs of the public, coordinate with the implementing agencies and to create awareness among the people. They were assured that this will be considered after discussions at the project level. The participants were informed that the project teams will visit the sub-project sites for screening and DPR preparation and the communities can interact with them and give their suggestions for resilient construction.

Tribals: Some participants informed that the project area has a substantial tribal population and the relief, rehabilitation and reconstruction efforts should reach them first.

Gender Issues: The women participants and NGOs have requested that the project should have a gender and vulnerables focus, as it is the women, children, aged, sick, etc. who are most affected during such disasters.

Other Concerns Raised

Project Take-off: The participants were informed that the project should in all likelihood take off by July 2015 and works could start before Hudhud anniversary.

Delays in Relief: Many participants belonging to fishing community have represented that their losses are yet to be compensated for. They were assured that this matter will be intimated to the concerned government department.

Database: Many participants have suggested that a data base of all departments, institutions, NGOs, individuals involved in disaster management be developed duly capturing the skills and resources of these agencies.

The participants have thanked the project for taking up key infrastructure provision. They suggested that Underground Cabling should be extended to rural areas as well. They mentioned that the plantations along the coast will reduce the intensity of cyclones, the nurseries will improve livelihoods and the mangrove plantation will be of help the fishing community. Many participants thanked the project that the reconstructed roads would be of great help in transporting their agricultural produce, their children reaching schools and patients and pregnant women reaching hospitals in time, worker reaching the factories for work, etc. They requested that the sub-project works be taken up and completed early.

List of Participants

Date: 02 April 2015

Place: Srikakulam District Head Quarters

Venue: Z.P. Meeting Hall, Srikakulam.

S.No.	Name	Designation/ Position	Village/Place	Mobile Number
1	B.Dananjaya Rao	AEE	PR	9440302209
2	S.Rama Krishana	AEE	PR	9441708121
3	S.Srinivasa Rao	AEE	R&B	9441355095
4	D.Vikram	AEE	R&B	9542561600
5	P.T.Raju	AEE	R&B	9440819130
6	K.Jhon wychiffe	Dy.EE	R&B	9440819131
7	R.Lalitha Gowri	AEE	R&B	9440819135
8	A,Gopalu	AEE	R&B	9703072873
9	M.P.R.A.Raju	AEE	R&B	9160281977
10	N.Dhanunjaya	DEE	R&B	9440818232
11	B.Gowreeswar rao	DEE	R&B	9440818233
12	E.Ravi Kanth	AEE	R&B	94404519219
13	K.M.V.Prasadarao	DEE	PR	9441229783
14	B.Narasimharao	AEE	PR	9490204759
15	S.G.Ramarao	DEE	PR	9949093870
16	P.Shankara Rao	AEE	PR	9440384377
17	P.Mohan	AEE	PR	9490622799
18	S.Ranadhev	DEE	PR	9490489330
19	G.Manmadharao	MPTC		9550720681
20	J.Appalanaidu	Sarpanch		9441586310
21	Lanka Mohan Reddy	Local		9441932549

22	Ch.Krishna Reddy	Local		8985625731
23	L.Udaya Bhaskar	Local		9492777461
24	Landa Neeladri Reddy	Local		
25	L.Bhojharaju	Local		9765732039
26	B.Mohan Reddy	Local		9492245793
27	S.Kodanda Rao	Local		9989602905
28	P.Govinda Rao	AEE	PR	9441478870
29	G.S.N.Moorthy		EGIS	8978780220
30	S.Nagi Reddy		EGIS	9849562403
31	A.Dharma Rao	Local		9989230808
32	G.Ramarao dasu	Sarpanch		
33	S.S.Ramarao	DEE	PR	9949093870
34	B.Laxamanrao	PA to SE	PR	7093722637
35	K.Hemalatha	AEE	PR	9440230547
36	G.Ramakrishanarao	AEE	PR	9490344525
37	R.Appanna	Sarpanch		9866292374
38	G.Malleswara Rao	EX-MPTC		9493468608
39	R.Krishana rao	Sarpanch		9491550869
40	M.Srinivasarao	MPTC		9989337091
41	G.Rama Krishna Rao	Secretary	PR	9441730420
42	S.Kondala Rao	Youth Organisation	Local	9441121079
43	M.Rama Rao	MPTC		
44	B.Surya Rao	Sarpanch		
45	K.Jagadeesh	Sarpanch		9949087764
46	G.Himagiri	Sarpanch		7893788891

47	D.KrishnaRao	Local		9949283651
48	D.Lokesh	Sarpanch		9492267006
49	D.Paparao	Ward Member		
50	B.Appa Rao	Ward Member		9937357272
51	M.Mannarao	Senior Citizen		9490761987
52	S.Laxmanarao	Senior Citizen		9666089975
53	D.Somaiah Naidu	Donkuru		8186835905
54	P.Ramarao	Local		9177136845
55	V.Papamma	Local		
56	D.Thirupathi Rao	Teacher, Donkuru		9492294541
57	D.Prakash	Youth President , Donkuru		8184970642
58	D.Kameswara Rao	Youth, Donkuru		9492120171
59	D.Thirupathi Naidu	Local		
60	Ch.Surya Narayana	EX-MPTC		8790377332
61	A.Ravi Kumar	Local		9550414790
62	T.Ramesh	Local		9493044016
63	P.Appala Naidu	Local		8333862927
64	A.Srinivas	Director, Mahila Margadarsi NGO		9848564895
65	K.Sanyasi Naidu	Sarpanch		9908924319
66	M.Sitha Rama Rao	Sarpanch		9440412606
67	D.Nadhweer	Sarpanch		9704160165
68	K.Ramesh Babu	Sarpanch		9490344519
69	Y.Krishan Rao	Sarpanch, Polanki		9912308709
70	G.Geeraju	Sarpanch		9492773773
71	S.Govinda Rao	MPTC		944028325

72	B.Laxamanrao	Sarpanch		9652765721
73	M.Ramamurthy	Vice President		8897875649
74	Ch.Lalitha Ravikiran	Sarpanch		9949230944

Date: 02 April 2015

Place: Bhogapuram of Vizianagaram District

Venue: Mandal Praja Parishad Hall

S.No.	Name	Designation/ Position	Village/Place	Mobile Number
1	Sri.P.,Narayana Swamy Naidu	MLA, (Cons)	Nelimarla	
2	M.Chinnama Naidu	MPP,	Poosapatirega	
3	A.Prasada Rao	ZPTC,	Poosapatirega	
4	K.Bhangaru Raju	ZPTC,	Poosapatirega	
5	D.Bholaka	Ex-Sarpanch	Konada	
6	M.Simhachalam	Vice-MPP	Konada	
7	B.Satyanarayana Raju	AMC, Vice Chairman,	Revada	
8	P.Thammu Naidu	President	Konada	
9	M.Thatarao	MPP,	Palipalli	
10	P.Appala Narayana	ZPTC,	Donkada	
11	Appanna	Sarpanch	Donkada	
12	K.Satyanarayana	Sarpanch,	Palipalli	
13	R.Varaprasada babu	EE		8332929116
14	E.Anandakumar	EE		9440818146
15	KVL.Narasimharao	AEE		9440819377
16	K.J.Prakasharao	DEE		9440818246
17	GBSV.Prasad	DEE		9440818242
18	B.Janardhanarao	DEE		9440818241
19	V.V.Narasimhamurthy	DEE		9440818243
20	D.Ramakrishna	Village Elder,	Garjupalli	9441851890
21	B.Thirupathi Rao	Village Elder		9492019590

22	A.Suresh	AEE		9440819394
23	K.Subba Rao	AEE		9440819380
24	K.V.Radha Krishna	DEE		9949096338
25	KGJ.Naidu	DEE		9440592516
26	V.Venkata Rao	DEE		9441260928
27	SMV.Balakrishna	Ex-Sarpanch		9440771308
28	S.Sivaji Reddy	W.Number		8498993716
29	S.Gurunath	Sarpanch		9676813478
30	P.Appala Raju	Local		9704435616
31	M.Venkata Rao	HWO, Social Welfare		9440843198
32	PR.Naidu	AEE		8985235276
33	B.Bhaskar Rao	AEE		9494945608
34	T.V.Ramana Murthy	DEE		9440395076
35	K.Srinivasarao	AEE		9440195869
36	P.Apparao	AEE		9441186978
37	B.Durgayya	Student		8174369027

Date: 03 April 2015

Place: Visakhapatnam District Head Quarter

Venue: Zilla Parishad Metting Hall, Visakhapatnam

S.No.	Name	Designation/ Position	Mobile Number
1	D.Sathyanarayana	Contractor	9949233575
2	P.V.Seetha Rama Raju	Farmer	9440191828
3	L.Nageshwara Rao	Sarpanch	9963602032
4	V.Srinivasa Rao	Sarpanch	9963602032
5	V.Bothulu	Farmer	9666943260
6	D.Sivaji	Farmer	7731089107
7	R.Ghiridhar	DEE(PR)	9949023399
8	D.Ramesh Babu	AEE	8142384569
9	P.V.D.Prasad	PACS PRECIDENT	9849417466
10	KONA Rama Rao	Farmer	9247404655
11	D.Ganapathi Rao	Farmer	9849518643
12	P.Sathya Narayana	Sarpanch	9502091111
13	T.V.Sivaji	Sarpanch	9492260317
14	G.Naren Kumar	AEE(PR)	9849334616
15	D.Hanumanthu	Sarpanch	--
16	G.Venu Gopal Rao	AEE	9440940003
17	K.Sudhakar Rao	AE	9440399215
18	T.Maheshwara Rao	DEE	9440207274
19	G.Hari	Sarpanch	9989590107
20	T.Appala Naidu	T.D.P.President	9959702892
21	S.Appa Rao	Ex.PA.CS	9441141148
22	B.Appa Rao	Ex-Director	9951557919
23	K.Sathya Rao	Social Worker	9848108713

24	E.Mohan Rao	Exmik Society President	9247558290
25	M.Nukaraju	President	9959364141
26	B.Aruna	Social Worker	9010393328
27	Y.Lakshmi	Social Worker	7659011693
28	K.Anand	Social Worker	9014154674
29	P.Raju	Farmer	9866669906
30	PVLN Eshwar	Farmer	885437899
31	K.V.Shekar	M.P.T.C.	--
32	S.RamuNaidu	MPTC-S.RAYAVARAM	9949225781
33	D.Srinivasarao	Sarpanch	8463952878
34	V.Venkatlalitha	Seethampeta	9618940799
35	M.Sreenivasa Kumar	DEE	9705414948
36	P.Jagannada Rao	ZPTC(PARWADA)	9866692499
37	M.Appala Naidu	MPP(PARWDA)	9866692499
38	L.Sathya Narayana	AEE	9866508131
39	SK.Ismail	SADHANA N.G.O.	9849258779
40		E.V.Jagannadha Rao – AWARD N.G.O.	9515877877
41	Y.Anand	Social Worker	--
42	Y.Rama Rao	Social Worker	8978808310
43	Y.Ramana	Social Worker	9959276158
44	G.Srinivasa Rao	Social Worker	9948781469
45	K.Uma Nageshwara Rao	Sarpanch(Malpaka)	9948781469
46	G.Sreenivasulu	Social Worker	9948781469
47	KV.R.Sekhar	Ex-M.P.T.C.(Melupaka)	8500192626
48	K.Uma Nageshwara Rao	Sarpanch (Malpaka)	8008455599

49	K.Sreenu	Vise-Sarpanch(LV Palem)	9704776324
50	S.Annapurna	Bheemili	9848821788
51	K.Damodhara Rao	Z.P.T.C.-Padmanabham)	9704202264
52	K.A.S.Prakash	Bheemili DEE(PIU-PR)	9491266233
53	Appalanaidu	EX-Sarpanch	9291651830
54	K.Surya Rao	Farmer	9849392407
55	K.Jogi Naidu	NGO, SVGS	9347260022
56	L.Sreenu	Farmer	9866635709
57	Y.Ravi Kumar	AEE	9618072131
58	S.Nagi Reddy	TPQA, NCRMP	9849562403
59	S.Narayana Murthy	RECS Director, Sabbavaram	9885845999
60	K.Appu Sreenu	Farmer	9866637977
61	S.Demudu	Ex-Sarpanch	9885942284
62	B.Ramavatharam	Petasudhipuram	9248391349
63	Suresh	Farmer	8885388801
64	S.Bikshu	Farmer	9705415499
65	S.Muthyala Naidu	MPP Sabbavaram	9885448226
66	P.Srinivasa Rao	AEE	9440818764
67	M.Sathya Vani	AEE	9440818775
68	B.Gurumurthy Reddy	LGS(R&B)	9949727794
69	G.Madhu Babu	Social Worker	9863758499
70	B.V.Aruna Kumari	Bheemili N.G.O.-ABILITY	9052811791
71	Ch.Vara Lakshmi	Bheemili N.G.O.-ABILITY	8897803983
72	H.Lakshmi	Bheemili N.G.O.-ABILITY	9885010403
73	K.Anasuya	S.P.N.R. Society N.G.O.	9177214173

74	P.Giribabu	G.K.Welfare Society(NGO)-GOLUGONDA	9440304605
75	B.K.M.Hidem	M.J.W.S Society-KOYYURU	9492347167
76	P.Surya Bhaskar Rao	Secretary, Adhithya-NGO, Bheemili	8008896487
77	R.Ravi Sankar	Sarpanch-PEDAUPPALAPALEM	9014023731
78	R.VaraLakshmi	MPP-Pendhurthi	9441887233
79	Narayana Rao	Sarpanch-Ramapuram	9441887233

Date: 04 April 2015

Place: Surya Rao Peta and Tuni of East Godavari district

Venue: 1. Surya Rao Peta Gram Panchayat Office, Surya Rao Peta

2. Mandal Praja Parishad Hall, Tuni.

S.No.	Name	Designation/ Position	Village/Place
1	Y.Babji	Sarpanch, Surya Rao Peta	Surya Rao Peta
2	Chinthansagi pansandu	Farmer	Surya Rao Peta
3	B.Suribabu	Sarpanch (Kanasupalem)	Kanasupalem
4	Isarapu Ganapathi	Farmer	Surya Rao Peta
5	Nakka Demullu	Farmer	Kanasupalem
6	K.Sathyanarayana	Farmer	Surya Rao Peta
7	Alli paparao	Farmer	Surya Rao Peta
8	N.Venkannadara	Farmer	Surya Rao Peta
9	B.Devudu	Farmer	Surya Rao Peta
10	Jagu. Appa Rao	Farmer	Kanasupalem
11	B.Appa Rao	Sarpanch (Pydikonda)	Surya Rao Peta
12	Ramesh Babu	Farmer	Kanasupalem
13	M.Nagaraju	DE/PIU/KAKINADA	Kakinada
14	V.M.Srinivas	DEE/PIU/KATHIPUDI	Kathipudi
15	A.S.S.Prakash Rao	DEE(R&B)PEDDAPURAM	Peddapuram
16	K.Ravikumar	AE(R&B)TUNI	Tuni
17	P.U.Ramakrishna	DEE/PIU/KATHIPUDI	Kathipudi
18	G.Koteshwara Rao	AE/R&B/KAKINADA	Kakinada
19	K.V.S.Nageshwara Rao	DEE/PR/TUNI	Tuni
20	Y.Babji	Sarpanch, Surya Rao Peta	Surya Rao Peta
21	10+ Women		

Annexure 16

Format for Voluntary Land Donation

Voluntary Donation of Land

On a Rs. 10/- Stamp Paper

This deed of voluntary donation is made and executed on ………………………. day of ……………………. between Sri/Smt ……………………………………S/o W/ The project will hire about 30 community/social mobilisers for the ------------- component. Age………… Occupation ……………………………………. Resident of …………………………………………………………… herein after called the "Title holder / Encroacher" on one part. This expression shall mean and include his legal representatives, successors – in-interest, heirs, assignees, nominees etc.

AND

Sri. …………………………….……. S/o W/o ………………………….. Aged…………
Designation……………………………. Herein after called the "Recipient" which term denotes to "for and on behalf of Project Management Unit, Andhra Pradesh Disaster Recovery Project, Government of Andhra Pradesh" on the other part and shall mean and include his successors –in-office, nominees and assignees etc.

1. Whereas, the details of the Location of the, land are given below:

Location Details		
Village		
Gram Panchayat		
Block		
District		
Title Holder/ Encroacher Details		
Name of Title Holder/Encroacher		
Father/ Husband's Name of Title Holder/Encroacher		
Status:		Title Holder/ Encroacher
Age: occupation: Residence:		
Gender:		

Schedule –Land Details/Structure	
Land in Question	
Area	
Location	
North Boundary	
East Boundary	
West Boundary	
South Boundary	

Note: Detailed Map to the scale is appended.

2. Where as the Title Holder is presently using/ holds the transferable right of the above mentioned piece of land in the village mentioned above. Whereas the Encroacher does not hold any transferable rights of the above mentioned piece of land in the village mentioned above but has been a long standing encroacher, dependent on its usufruct hereditarily.
3. Whereas the Title Holder/Encroacher testifies that the land is free of encumbrances and not subject to other claims/ claimants.
4. Whereas the Title Holder/Encroacher hereby voluntarily surrenders the land/structure without any type of pressure, influence or coercion what so ever directly or indirectly and hereby surrender all his/her subsisting rights in the said land with free will and intention.
5. Whereas the Recipient shall construct and develop infrastructure facilities under the project, APDRP, and take all possible precautions to avoid damage to adjacent land/structure/other assets.
6. Whereas both the parties agree that the infrastructure so constructed/developed shall be for the public purpose.
7. Whereas the provisions of this agreement will come into force from the date of signing of this agreement.

Signature of Title Holder/Encroacher		Signature of BDO	
Name of Title Holder/Encroacher		Name of BDO	
Date		Date	
Identified by			
1. Name:	Signature:		
2. Name:	Signature:		
Witnesses			

Signature of Gram Panchayat President/ ULB Chairperson	
Gram Panchayat President/ ULB Chairperson Name	
Signature of GP Secretary/ ULB Commissioner	
Name of GP Secretary/ ULB Commissioner	
Signature of DIU Representative	
Name of DIU Representative	
Designation of DIU Representative	

Annexure 17

References / Accessing Key Information

Baseline Data

More baseline data/information can be obtained from various sources such as:

1. Official State Government Website: www.aponline.gov.in
2. State of Environment Reports published by Environmental Information System (ENVIS) of Environment Protection Training and Research Institute (EPTRI)
3. Andhra Pradesh Information Commission – www.apic.gov.in/
4. Building Materials & Technology Promotion Council – www.bmtpc.org
5. National Disaster Management Authority: http://ndma.gov.in/wps/poratl/NDMAPortal
6. State disaster Management Authority Website: www.disastermanagement.ap.gov.in

Legislations

The legislations applicable to different sub-project activities can be obtained from:

1. Ministry of Environment & Forests - http://envfor.nic.in/legis/legis.html Contains legislations on:
    a. Water Pollution
    b. Air Pollution
    c. Environment Protection
    d. Coastal Regulation
    e. Environmental Clearance
    f. Hazardous Substances Management
    g. Loss of Ecology
    h. Noise Pollution
    i. Animal Welfare
    j. Wildlife
    k. Forest Conservation
    l. Biodiversity
2. Department of Environment & Forests – http://forest.and.nic.in/
    a. CRZ Notification
    b. Forest Conservation Act
3. Department of Land Resources, Ministry of Rural Development –

http://dolr.nic.in/

a. The Land Acquisition Act (LA)

b. National Rehabilitation and Resettlement Policy, 2007

c. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013

4. National Disaster Management, Ministry of Home Affairs – http://www.ndmindia.nic.in/

5. World Bank Guidelines for preparing Cyclone Risk Mitigation investments in States/UTs

6. India's international obligations - http://coe.mse.ac.in/iio.asp

Environment Management Plan

The environment management plan for the various sub-project activities is based on different standards laid down by the Government of India. They can be accessed from the following sources:

1. National Building Code of India 2005 – http://bis.org.in/sf/nbc.htm
2. Indian Standards on Earthquake Engineering – http://bis.org.in/other/quake.htm
3. Indian Road Congress – http://irc.org.in/
4. Mandate (Mangrove Database) – www.mangroveindia.org
5. Wildlife Institute of India – List of threatened plants:http://www.wii.gov.in/nwdc/threatened_plants_andhra_pradesh.pdf