National Cyclone Risk Mitigation Project II

(A World Bank Funded Project)

Environment and Social Management Framework

National Disaster Management Authority
Ministry of Home Affairs,
Government of India

Volume I: Main Report

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PREFACE

This Environment and Social Management Framework was originally prepared for the World Bank funded **National Cyclone Risk Mitigation Project I (NCRMP I)**, wherein it was applied and implemented in the two participating states of Odisha and Andhra Pradesh. While the said document was disclosed by the National Disaster Management Authority, Ministry of Home Affairs, Govt. of India and the two participating states in November 2009, it was put into public domain through the World Bank's Infoshop in December 2009.

The framework has now been revised/updated by the National Disaster Management Authority with guidance and support from the World Bank and will be used in the following states proposed to be covered under **National Cyclone Risk Mitigation Project II (NCRMP II):**

- **Gujarat**
- **Kerala**
- **Maharashtra**
- **West Bengal**
- **Karnataka and**
- **Goa**

The revised document reflects the changes in regulatory requirements/procedures that have come into effect post-2009 and takes into account the experiences/ lessons learnt from the implementation of the first project. The revision/updating has also considered the baseline or existing environmental and social characteristics of the six states proposed to be covered under NCRMP II.

This Environment and Social Management Framework was first disclosed on April 28, 2014. Thereafter, two new states, namely Karnataka and Goa, have been added to the project's coverage and where project preparation work has recently been initiated. Appropriate additions/modifications have been made to the April 2014 version of the document, in line with the nature/type of proposed works and the baseline characteristics of these two newly added states.

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Acronyms

APL	Adaptable Programme Loan
BCR	Benefit Cost Ratio
CBO	Community Based Organization
CRZ	Coastal Regulation Zone
CSMMC	Cyclone Shelter Management and Maintenance Committee
CSO	Civil Society Organization
DC	Direct Contracting
DEA	Department of Economic Affairs, Govt. of India
DGM	Deputy General Manager
DIU	District Implementation Unit
DPR	Detailed Project Report
DRM	Disaster Risk Management
EA	Environmental Assessment
EC	Empowered Committee
EOC	Emergency Operating Centre
ESMF	Environment and Social Management Framework
GIS	Geographic Information System
GM	General Manager
GoI	Government of India
GoAP	Government of Andhra Pradesh
GoO	Government of Odisha
GoG	Government of Gujarat
GoGoa	Government of Goa
GoK	Government of Kerala
GoKarnataka	Government of Karnataka
GoM	Government of Maharashtra
GoWB	Government of West Bengal
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
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
MD	Managing Director
MHA	Ministry of Home Affairs, Govt. of India
MIS	Management Information System
NCRMP I	National Cyclone Risk Mitigation Project I
NCRMP II	National Cyclone Risk Mitigation Project II
NDMA	National Disaster Management Authority
NIDM	National Institute of Disaster Management
PPR	Periodic Performance Review
RAP	Resettlement Action Plan
SDMA	State Disaster Management Authority
SPIU	State Project Implementation Unit
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
WB	The World Bank
W&S	Water and Sanitation

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].

1.2 Sectoral and Institutional Context

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

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

has proactively formulated guidelines and procedures for dealing with 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.

The project is part of a broader national multi-hazard mitigation program taken up by the NDMA that includes understanding hazards like seismic risk, floods, landslides and establishment of a National Disaster Management communication network. The main objectives of the project are to: (a) minimize risk and vulnerabilities to cyclones; (b) to strengthen the structural and non-structural cyclone mitigation efforts and; (c) to build capabilities and capacities of people for cyclone risk mitigation in harmony with the conservation of coastal ecosystems in cyclone hazard prone States and Union Territories. The project is being funded by the World Bank as an Adaptable Programme Loan (APL).

1.3 Project Development Objective

The Project Development Objective (PDO) is to reduce vulnerability to cyclone and other hydro-meteorological hazards of coastal communities in project States, and increase the capacity of the State entities to effectively plan for and respond to disasters. The key intent of the project is:

- ➔ Reduction in vulnerability of coastal states through creation of appropriate infrastructure which can help mitigate the adverse impacts of cyclones, while preserving the ecological balance of a coastal region.
- ➔ Strengthening of cyclone warning systems enabling quick and effective dissemination of warning and advisories from source/district/sub-district level to the relevant communities.

1.4 Project Coverage

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 National Cyclone Risk Mitigation Project (NCRMP) with World Bank assistance has been launched with a view to address the cyclone risks in the country. The project identified thirteen (13) cyclone prone states and Union Territories (UTs) with

varying levels of vulnerability. These coastal States/UTs have further been divided into two categories based on their vulnerability to such risks:

➔ **Category I**

High vulnerability coastal States/UTs - Andhra Pradesh, Gujarat, Odisha, Tamil Nadu and West Bengal.

➔ **Category II**

Low vulnerability coastal States/UTs - Goa, Karnataka, Kerala, Maharashtra, Andaman & Nicobar Islands, Daman & Diu, Lakshadweep and Pondicherry.

Based on the frequency of occurrence of cyclones, population size and the existing institutional mechanisms for disaster management, the States have been divided into three groups with regard to their coverage under the program/project:

Phase I

- Andhra Pradesh and
- Odisha

Phase II

- Gujarat
- Kerala
- West Bengal
- Maharashtra
- Karnataka and
- Goa

The project (NCRMP) was designed as a horizontal Adaptable Program Loan (APL) in three phases. Phase I (called **NCRMP-I**) is currently under implementation in the states of Odisha and Andhra Pradesh. The Financing and Project Agreements related to NCRMP covering the states of Andhra Pradesh and Odisha were signed between the Department of Economic Affairs, World Bank and the concerned State Governments on January 14, 2011. This Phase I of the project is to be implemented over a period of five years by NDMA in co-ordination with the State Governments of Andhra Pradesh and Odisha and National Institute of Disaster Management (NIDM) as a Centrally Sponsored Scheme at the cost of INR 1496.71 crores.

NCRMP I is on-course to achieve its Project Development Objective despite some initial delays and the impact of cyclone Phailin. The project amount is US$455 million (US$359 million IDA credit and US$96 million counterpart funds) being implemented through the NDMA in coordination with the states of Andhra Pradesh and Odisha and the National Institute of Disaster Management (NIDM), New Delhi. It includes a US$319 million project (US$255 million IDA credit and US$64 counterpart funds) approved in 2010, and Additional Financing of US$136 million (US$104 million IDA credit and US$32 million counterpart funds) approved in 2013 after Cyclone Phailin.

Despite a slow start, the project has achieved significant progress: construction of 110 multi-purpose cyclone shelters as well as 550km of evacuation roads and 11 bridges has already been completed. Odisha, one of the two participating states,

has awarded all of its contracts while Andhra Pradesh has only three contracts remaining to be awarded. As of December 2014, the original project has a committed amount of almost 95% and 43% disbursement (US$106.5 million).

The second phase of the project (**NCRMP II**) is proposed to include states of Gujarat, Maharashtra, Kerala, Karnataka and Goa on the west coast, and West Bengal on the east coast, for which this document has been prepared.

The programmatic approach allows for incorporation of lessons learned from earlier phases, and helps in introducing new ideas and technological advancements in management of risks in subsequent phases of the project. The programmatic approach will also help in gradual strengthening of monitoring and evaluation capacities of the NDMA and other state nodal agencies.

1.5 Project Scope and Key Interventions

The National Cyclone Risk Mitigation Project seeks to minimize vulnerability in the cyclone hazard prone states and Union Territories of India and make people and infrastructure disaster resilient, in harmony with conservation of coastal ecosystem. The project seeks to achieve its objectives by undertaking the following structural and non-structural measures:

1) Early warning and communication system by improving the last mile connectivity.
2) Creation of risk mitigation infrastructure. This includes construction and sustainable maintenance of Multi-purpose Cyclone Shelters (MPCSs); improved access and evacuation to these and already existing MPCSs and habitations through construction of roads and bridges, and; strengthening/repair of coastal existing embankments at selected places for protection against storms, flooding and storm surge in high risk areas.
3) Enhanced capacity and capability of local communities to respond to disasters and;
4) Strengthening Disaster Risk Mitigation (DRM) capacity at Central, State and Local levels in order to enable mainstreaming of risk mitigation measures into the overall development agenda.

1.6 Project Components

The Project will have five key components:

1) Early Warning Dissemination Systems
2) Cyclone Risk Mitigation Infrastructure
3) Technical Assistance for Multi-Hazard Risk Management and
4) Project Management and Implementation Support.

Components A and C will be implemented by NDMA with support from the states. Component B will be implemented by the six participating states: Gujarat, Maharashtra, Kerala, West Bengal, Karnataka, and Goa. All infrastructure proposed

under the project[3] has been screened for potential short and long-term climate impacts, mainly the increase in frequency and severity of hydro-meteorological disasters, and their design has been adjusted appropriately. The Technical assistance for DRM capacity and understanding Multi-hazard Risk Management will be available to all the thirteen (13) coastal states and Union Territories and will be centrally managed by NDMA/NIDM/MHA.

A description of objectives and activities in each of the components is given below:

Component A: Early Warning Dissemination Systems (EWDS)

The objective of this component is to reduce the vulnerability of coastal communities by addressing the existing gap in dissemination of warning to the communities. Currently NDMA is leading the development of EWDS for the states of Andhra Pradesh and Odisha, as part of NCRMP I, which includes the necessary equipment and training. This component will support the expansion of EWDS to Gujarat, Maharashtra, Kerala, West Bengal, Karnataka, and Goa. It will assist in the installation and operating EWDS allowing the state and/or district/sub district level control center to send communications directly to the villages using Global System for Mobile Communications (GSM)/Code Division Multiple Access (CDMA) based technology including strengthening emergency operation centers to channel the warning through different communication channels.

The component also includes providing satellite phones/alternative technology to key officials to fail proof the EWDS and also expand a new radio based wireless communication technology in selected blocks in each state; and strengthening the capacity of officials and village representative in operating, maintaining and using these EWDS equipment in disaster preparedness and response by preparing disaster management plans and organizing mock drills and similar exercises.

Component B: Cyclone Risk Mitigation Infrastructure

The objective of this component is to increase the preparedness and reduce the vulnerability of coastal communities through strategic infrastructure investments, i.e., improving their capacity/access to emergency shelter, evacuation routes and protecting critical infrastructure against cyclones and hydro meteorological hazards to reduce potential damages and ensure continuation of services. To determine the number, characteristics and location of risk mitigation infrastructure, in each of the project states, identification mechanisms included vulnerability assessment of the areas, availability and current status of structures, land availability, access to the sites, public consultations, and other ongoing programs in the coastal areas. The portfolio of risk mitigation infrastructure under this component includes a broad range of investment such as multipurpose emergency shelters, up-grading roads, underground electric cabling, bridges, up-grading saline embankments and bunds.

- **Sub-component B.1:** Cyclone Risk Mitigation Infrastructure in Gujarat – US$93.4 million (US$70.0 million Bank financing). To finance: i) 112 multi-purpose cyclone shelters (MPCS), ii) 27km of access roads and bridges, and iii) 65km of underground electrical cabling.
- **Sub-component B.2:** Cyclone Risk Mitigation Infrastructure in Maharashtra – US$73.7 million (US$55.3 million Bank financing). To finance: i) 13 MPCS, ii)

[3] Screening of Goa's investments will be finalized during implementation.

130 km of underground electrical cabling, and iii) 50km of saline embankments and bunds.

- **Sub-component B.3:** Cyclone Risk Mitigation Infrastructure in Kerala – US$22.3 million (US$16.7 million Bank financing). To finance: i) 27 MPCS; ii) and rehabilitation of 13km of access roads and footbridges.
- **Sub-component B.4:** Cyclone Risk Mitigation Infrastructure in West Bengal – US$106.7 million (US$80.0 million Bank financing). To finance: i) 150 MPCS and flood shelters; and ii) 60km of underground electrical cabling.
- **Sub-component B.5:** Cyclone Risk Mitigation Infrastructure in Karnataka – US$18.6 million (US$14.0 million Bank financing). To finance: i) 15 MPCS, ii) rehabilitation of 20km of embankments and canals; and iii) construction and rehabilitation of 25km of roads and bridges.
- **Sub-component B.6:** Cyclone Risk Mitigation Infrastructure in Goa[4] – US$18.6 million (US$14.0 million Bank financing). To finance: i) 40 MPCS, ii) rehabilitation of 30 km of bunds; iii) 25km of underground electrical cabling; and iv) construction and rehabilitation of 30km of roads and bridges.

Component C: Technical Assistance for Multi-Hazard Risk Management

The objective of this component is to improve the quality of available information on multi-hazard risks for decision making, and strengthen multi-hazard risk management at a national level.

- **Sub-component C.1:** Multi-hazard risk modeling and assessment – US$8 million. The objective of this subcomponent is to help understand risk and vulnerabilities better, and prepare the key institutions for addressing them effectively across all coastal states and UTs. As part of NCRMP I, NDMA is undertaking a hazard and risk assessment of coastal India. The understanding of risk and vulnerabilities from NCRMP I will be carried forward through improved probabilistic risk modeling allowing for modeling of multi-hazard and cascading impacts of disasters along coastal India.
- **Sub-component C.2:** Strengthening Emergency Recovery Capacity – US$2 million. This subcomponent will finance the implementation of the key findings from the Capacity Building study (at national, state and local level) undertaken by NIDM in NCRMP I focused on risk and damage assessment. The findings will feed into developing training modules that will focus on strengthening capacity of the State's disaster responders.
- **Sub-component C.3:** Enhancing the Capacity for Disaster Risk Management and response in non-coastal states – US$ 14.5 million. This will entail the following: a) Multi-hazard risk assessment– This will finance a systematic assessment of the current and future disasters and climate risks, focusing on urban areas in non-coastal states. A web-based GIS platform will be established to store and manage the data gathered. Modeling will also be undertaken on a pilot basis for high risk flood areas and potentially landslide risk areas to factor in cascading multi-hazard disaster impacts; b) Pilot physical structural assessment– entailing a pilot initiative to train engineers on the assessment of

[4] Investments in Goa are based on a preliminary proposal which will be finalized during implementation.

the physical vulnerability of identified public buildings and critical infrastructure to seismic and other hazardous events. This will entail the development of identifying vulnerable critical infrastructure, a comprehensive multi-hazard check-list and accepted assessment guidelines; and c) Strengthening capacity for disaster response – This would entail the strengthening the capacity of emergency responders (local governments, first responders and other agencies involved in disaster response) in selected urban areas that are considered highly vulnerable to the impacts of earthquakes or landslides. It will include: (i) operating, maintaining and regular use of the EWDS equipment by officials and village representatives; and (ii) of communities in disaster preparedness and response through disaster management plans, arranging mock drills etc. It will also facilitate upgrading search and rescue equipment's coupled with proper training in the use and deployment of these tools.

- **Sub-component C.4:** Hydro-meteorological Resilience Action plans – US$3 million. This subcomponent would assist states in preparing resilience action plans that will focus on extreme weather events; develop resilience solutions/recommendations for sectors impacted by disasters such as agriculture, livelihoods, energy, infrastructure etc.; and focus on urban hot-spot areas in helping develop urban resilience plans.
- **Sub-component C.5:** Design of a National Seismic Risk Mitigation Program – US$2 million. This subcomponent would assist the MHA and the NDMA in the design of a comprehensive National Seismic Risk Mitigation Program. This will encompass activities that will strengthen risk assessment capabilities, raising public awareness, strengthening of building codes and land-use regulations, piloting retrofitting of critical infrastructure, and developing risk financing framework.

Component D: Project Management and Implementation Support

This component will finance the incremental operating costs of the Project Management Unit (PMU) and the State PIUs. In addition, the component will include consultancies required for the preparation and supervision of specific activities, trainings, exposure visits and knowledge exchange programs. The component allocation is as follows: NDMA US$5.3m, Gujarat US$4.9m, Maharashtra US$4.5m, West Bengal US$5.5m, Kerala US$1.3m, Karnataka US$1m and Goa US$1m.

1.7 Project Financing

The total estimated project financing will be to the tune of USD 403.3, of which IDA financing will be USD 320 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 (USD) (million)	IDA financing (US$M)	Financing
Component A: Early Warning Dissemination Systems and Capacity building of coastal communities	15.0	15.0	100%
Component B: Cyclone Risk Mitigation Infrastructure			75%
• *Subcomponent B.1: Gujarat*	93.4	70.0	
• *Subcomponent B.2: Maharashtra*	73.7	55.3	
• *Subcomponent B.3: Kerala*	22.3	16.7	
• *Subcomponent B.4: West Bengal*	106.7	80.0	
• *Subcomponent B.5: Karnataka*	18.6	14.0	
• *Subcomponent B.6: Goa*	18.6	14.0	
Component C: Technical Assistance for Multi-Hazard Risk Management			100%
• *Subcomponent C.1: Multi-hazard risk modelling and assessment*	8.0	8.0	
• *Subcomponent C.2: Strengthening Emergency Recovery Capacity*	2.0	2.0	
• *Subcomponent C.3: Enhancing the Capacity of Disaster Risk Management and Response in Non-Coastal States*	14.5	14.5	
• *Subcomponent C.4: Hydro-meteorological Resilience Action Plans*	3.0	3.0	
• *Subcomponent C.5: Design of a National Seismic Risk Mitigation Program*	2.0	2.0	
Component D: Project Management and Implementation Support	23.5	23.5	
Total	**403.3**	**320.0**	**-**

The lending instrument will be Investment Project Financing. The Project is the second in a series, which started with an on-going Adaptable Program Loan. 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 states.

2.1 Need for Environmental and Social Management

The primary objective of the proposed project is supporting the National Disaster Management Authority and the participating states 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 six states that are proposed to be covered under the project. 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 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 start work on 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. 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 of the Environment 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 environmental legislations, standards and policies and World Bank safeguard policies that are relevant in the over-all project context.

- Process to be followed for environmental and social screening to guide decision-making 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 required) for selected sub-projects.
- Preliminary assessment of anticipated environmental and social impacts in the context of broad/known project interventions.
- Generic environment management plans measures to avoid, minimize and mitigate anticipated impacts.
- Entitlement matrix to guide the preparation of Resettlement Action Plans, as and when needed
- Institutional arrangements 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, as appropriate in consultation with the World Bank and the implementing agencies/departments.

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 fueled 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.

Classification

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

Cyclone Category	Wind Speed in Km/h	Damage Capacity
04	210-250	Extreme
05	250 and above	Catastrophic

Destruction Caused by Cyclones

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

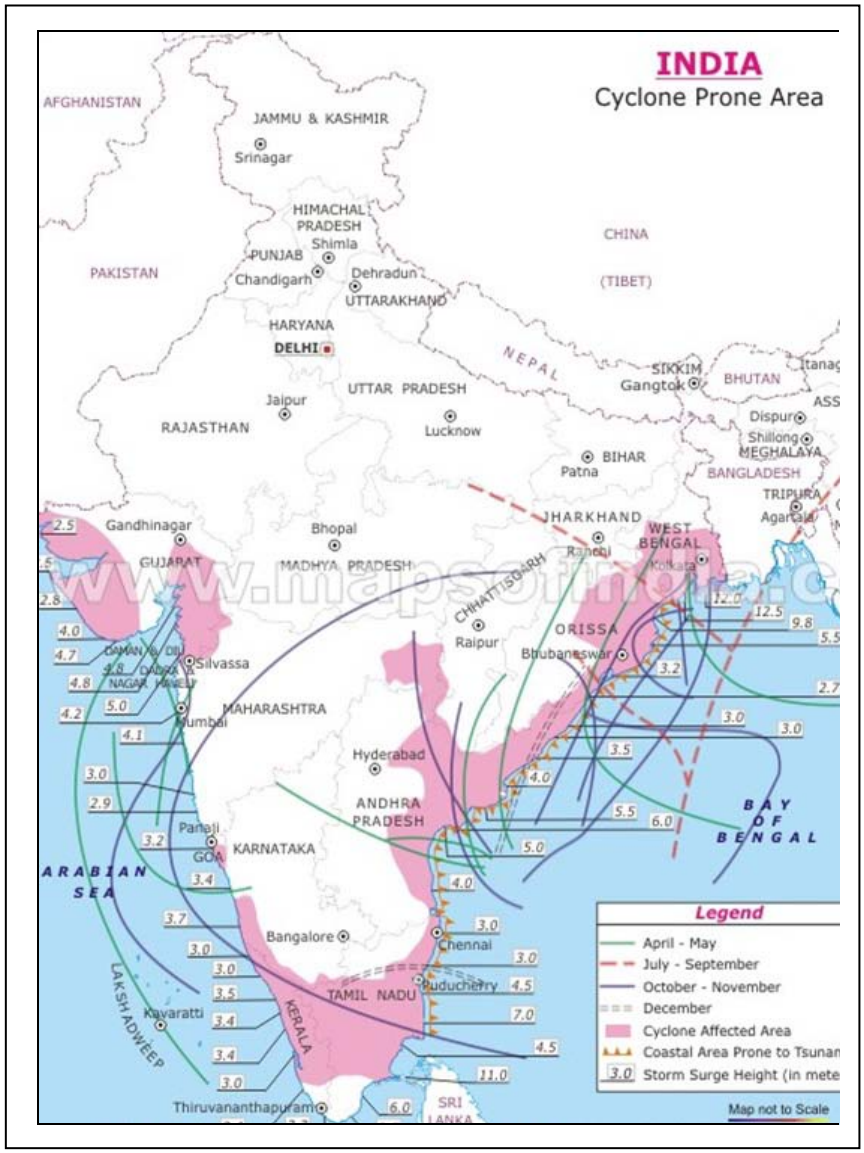
1) **Strong Winds/Squall:** Cyclones are known to cause severe damage to infrastructure through high speed winds. Very strong winds which accompany a cyclonic storm damages installations, dwellings, communications systems, trees etc., resulting in loss of life and property. Gusts are short but rapid 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.

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

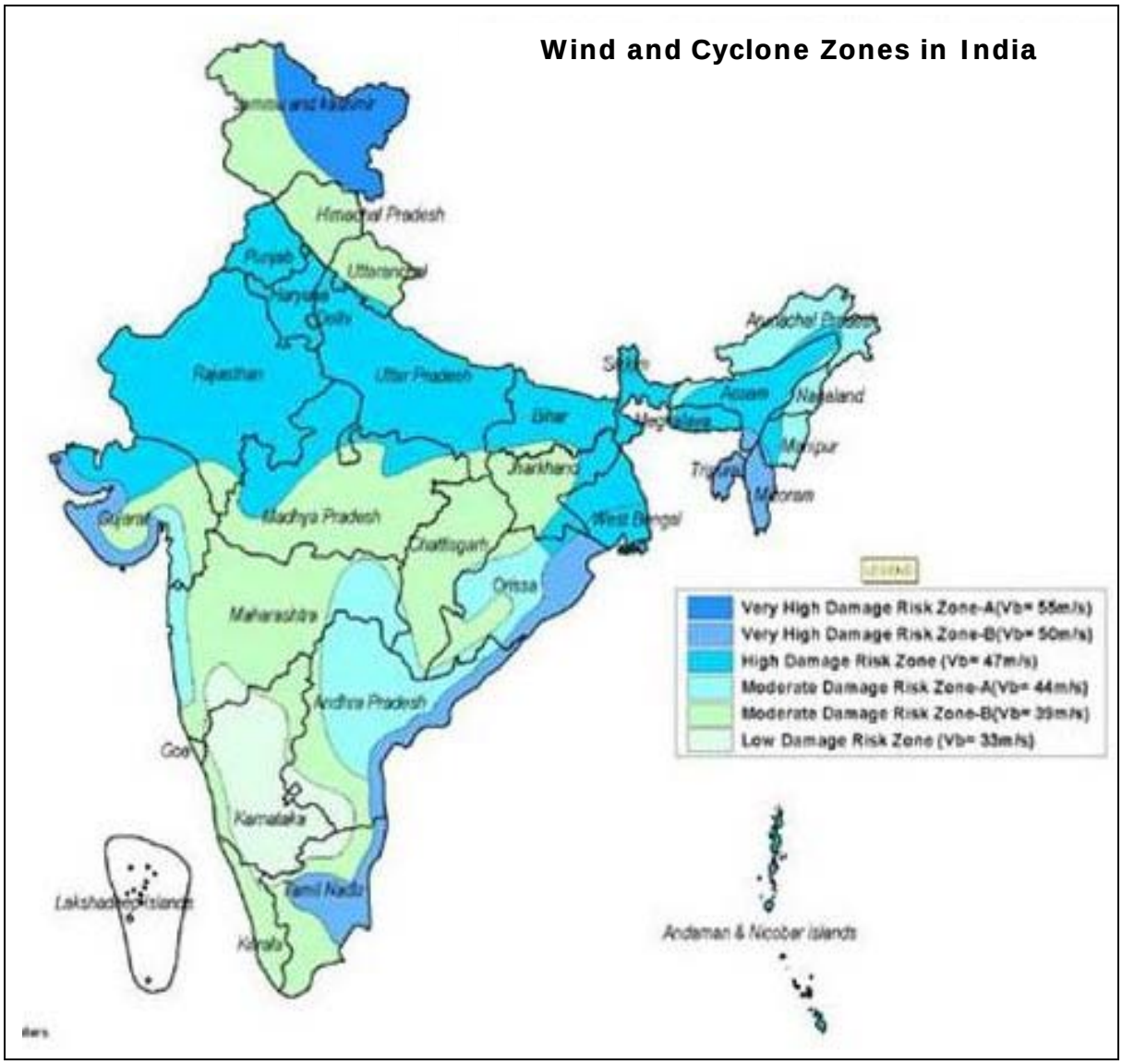
Major Cyclones in India

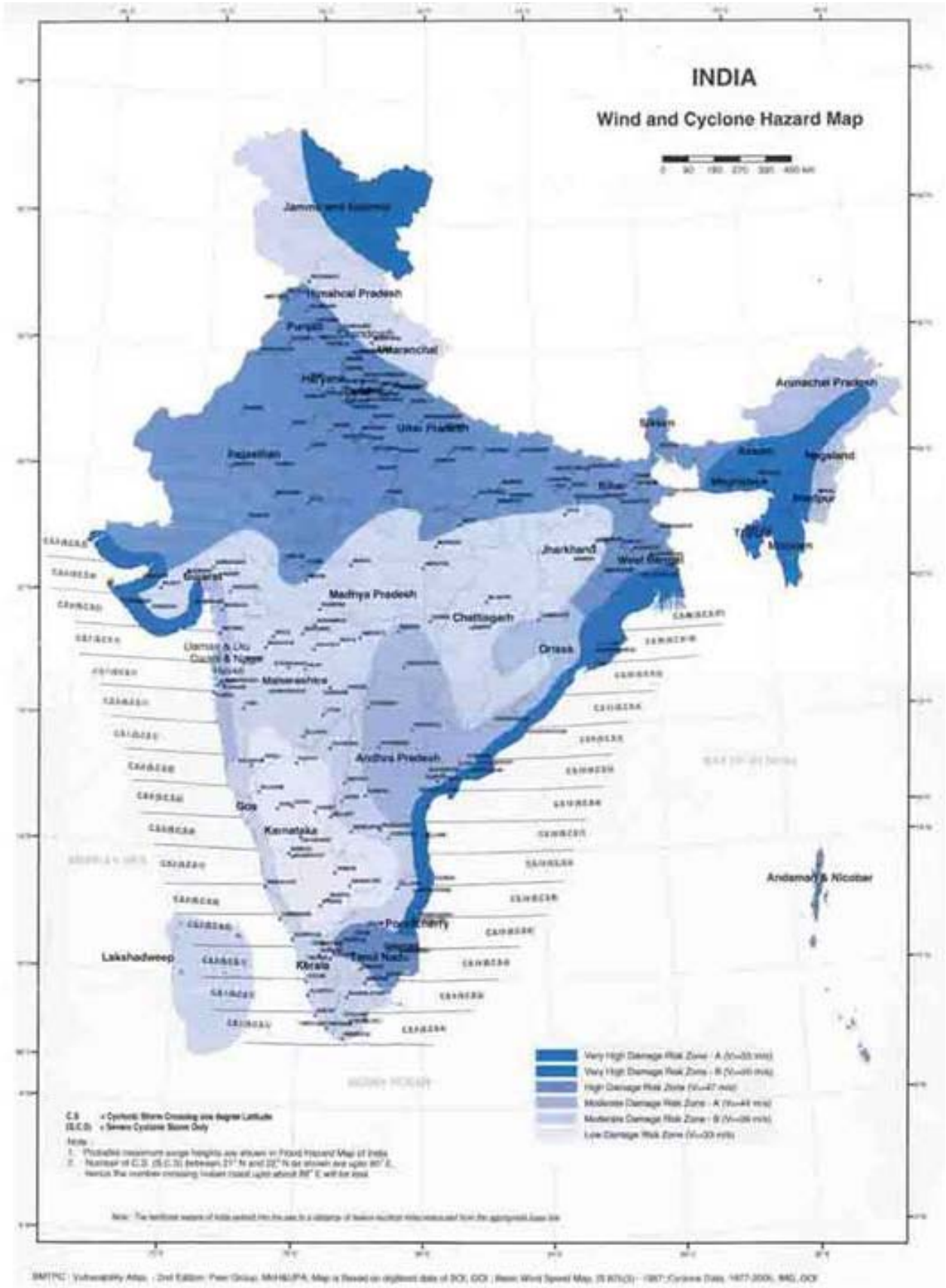
The major Tropical cyclones which struck the coastal districts in India during the period 1891-2006 are as under:

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
	Bhavnagar	4
	Amereli	4
	Junangarh	7
	Jamnagar	6
	Kachchh	5

EAST COAST		
State	**Coastal Districts**	**No. of Cyclones**
West Bengal (69)	24 Paragana (North and South)	35
	Midnapur	34
Odisha (98)	Balasore	32
	Cuttack	32
	Puri	19
	Ganjam	15
Andhra Pradesh (79)	Srikakulam	14
	Vishakhapatnam	9
	East Godavari	8

EAST COAST		
State	**Coastal Districts**	**No. of Cyclones**
Andhra Pradesh	West Godavari	5
	Krishna	15
	Guntur	5
	Prakasam	7
	Nellore	16
Tamil Nadu (54)	Chennai	18
	Cuddalore	7
	Southarcot	5
	Tanjavur	12
	Pudukkottal	5
	Ramnathpuram	3
	Tirunelveli	2
	Kanyakumari	2
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. 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.

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.

Key Statistics of Coastal Area in 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 genera 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
Marine Fisheries	
No. of Marine Fishing Villages	3288
Fishermen Population	About 4 million comprising in 864,550 families
Number of Fishing Harbours	Major fishing harbours: 6 Minor fishing harbours: 40
Number of Fish Landing Centres	1511
Estimated marine Fish Landing	38,20,207 tonnes (2011)
Fishing craft	194,490 crafts Mechanized: 37% Motorized: 37% Non-Motorized: 26%
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

3.3 Profile of the Participating States

The National Cyclone Risk Mitigation Project II is a multi-state and multi-sectoral project. It is spread over a wide geographical area and has a large number of direct beneficiaries. The project will be developed under a multi-sector framework with investment activities aimed at reducing risk and enhancing mitigation along coastal Gujarat, Maharashtra, Kerala, West Bengal, Karnataka and Goa. While a brief description for each of the six participating states is provided here, more details are in Volume II of this ESMF.

Gujarat

The state of Gujarat has a large number of key ports and coastal settlements along its 1,600 km coastline. It serves as gateway for importing petroleum, gas and other bulk goods to North India. Gujarat has the largest share (at 23%) of the total Indian coastline. The width of its coastal tract varies from 7 to 15 km. The

Gujarat coast has a high diversity of terrain, shelf depths and hydrology. Some parts of the coast are extremely flat and low lying. The highest tidal ranges in the Indian coast are witnessed in the Gulf of Khambat (up to 8 m). These characteristics can amplify storm surges and impact wide stretches unlike many other coastal regions of India. Two cyclone seasons are experienced in Gujarat: March to July (advancing southwestern monsoon) and September to November (retreating monsoon).

GUJARAT	
Geographic location	Latitude: 23.2167° N, Longitude : 72.6833° E
Geographic area	1,96,024 km2
Forest area	19113
Coastline	1,600 km (longest coastline in the country)
Normal Rainfall	33 to152 cms.
Demographic Indicators	
Total Population	62,700,003 (Census 2011)
Rural Population	34,694,609
Urban Population	25,745,083
Population Density Sq. Km	308/km2
Literacy rate	79.3% (Census 2011)

Ports and Harbours	
Major Ports	1
Minor/ Intermediate Ports	39
Administrative information	
Number of coastal districts	12
Number of towns (including Census Towns)	190

Maximum wind speed class of >200km/h (100 year return period) have been observed along the Saurashtra coast, specifically in Porbandar, Jamnagar and Junagadh districts which are exposed to the highest intensity of cyclonic and storm impact. The 182-200 km/h sub-class extends further inland to cover much of Jamnagar, part of Rajkot, Junagadh and Kachchh districts. About 90,000 houses mostly in Biomass spread over 1300 settlements are vulnerable to severe damages due to 100 year return period cyclones. A simulation of storm surge along the Gujarat coast substantiated by field work and observations indicate an estimated 291 settlements are prone to storm surges of various intensities along the Gujarat coast.

Kerala

Kerala has a geographical area of 38,863 square km. It lies between the Arabian Sea on the west and the Western Ghats on the east. Kerala's coast runs 580 km in length, while the state itself varies between 35 –120 km in width. Kerala receives an average annual rainfall of 3,100 mm mostly through seasonal monsoons and averages 120–140 rainy days per year. The excessive rainfall that the state receives every season, including from tropical cyclones, makes Kerala prone to severe landslides, flooding and coastal erosion.

The density of coastal urban population is 4,228 persons per square km, nearly twice the average urban density in the state. This puts a huge number of coastal communities at risk, exposing them to

multiple natural hazards. Continuous occurrence of high intensity rainfall for a few days is the primary factor contributing to extreme floods in the State. Kerala has a unique need that of providing shelter to families affected by storms and flooding for up to 4 weeks duration during the monsoon season i.e. until flood waters recede. The shelters,

therefore, need to be designed considering the need for longer periods of stay in terms of space, functional aspects and amenities.

Between1891 to 2007, 31 Cyclonic Storms / Severe Cyclonic Storms have affected the Kerala coast. During the past 35 years, Kerala has seen a total of severe Cyclonic Storms that originated over Bay of Bengal, crossed the eastern coast of India and reemerged into the Arabian Sea as a depression. Cyclones are usually accompanied by tidal waves which, on occasion, enter land up to a distance of 10 km, along with heavy rains and winds with speeds exceeding 50 km/h. People residing in habitations within a distance of 5 km from the sea coast are generally the worst affected with the inundation (varying between approximately 2.5 to 5 m) lasting for over 5-6 days. The Kerala coast was significantly affected by the 2004 Indian Ocean tsunami with maximum damages reported in the low coastal land of Kollam, Alleppey and Ernakulam districts.

KERALA	
Geographic location	Longitude 8.5074° N Latitude 76.9720° E
Geographic area	38863 sq.km
Forest area	11268 sq.km
Coastline	590km
Normal Rainfall	3000 mm a year
Demographic Indicators	
Total Population	1,60,27,412
Rural Population	84,08,054
Urban Population	76,19,358
Population Density Sq. Km	819
Literacy rate	93.91%
Ports and Harbours	
Major Ports	13
Administrative Information	
No. of District	14
Number of villages	1364
District panchayats	14
Number of towns	159
Municipality (M)	60
No of Gram Panchayats	979
Revenue Villages	1453
Continental Shelf Area in different Depth Zones	
Depth Zones (in m)	Area
18m depth	5000
18-73	25000
73-182	Balance area
Types of Coast Line	

Sandy beach (%)	80
Rocky Coast (%)	5
Muddy flats (%)	15
Marshy coast(%)	-
Total Length(km)	569.7
Continental Shelf area	41 sq km
Total inland water bodies (lakh Ha)	6.93
Length of coast line (Km)	1,076

Maharashtra

Maharashtra, located in the north center of India along the west coast, is the second largest state in terms of population and the third largest in terms of area and is spread over 307,713 square km. Maharashtra has the country's second largest urban population, and is about 43% urbanized. Mumbai, Maharashtra's capital city is the principal financial center and a major commercial hub of the country. The Sahyadri mountain range (Western Ghat) rises to an average elevation of 1000m. It falls in steep cliffs, to the Konkan on the west. Owing to this mountain range and its topography, the coastal part of the state, west of the Sahyadri is prone to heavy rainfall while the eastern part is dry.

Maharashtra is prone to a host of hazards. It is at moderate risk to Cyclones and storms. During the period from 1890 to 1995, 210 cyclonic depressions were recorded in the Arabian Sea. Out of these 19 (including 6 major ones) affected the Maharashtra-Goa coast. The Konkan region lies in the cyclone moderate to low

damage risk zone since wind speeds rarely exceed 155km/h. Heavy urbanization has also increased vulnerability to hazards like urban flooding.

MAHARASHTRA	
Geographic location	Latitude: 18.9600° N Longitude: 72.8200° E
Geographic area	307713Sq.km
Forest area	61939Sq.km
Coastline	720 km
Demographic Indicators	
Total Population	115,997,674
Rural Population	55,777,647
Urban Population	41,100,980
Population Density Sq. Km	315
Literacy rate	82.9 percent
Ports and Harbours	
Major Ports	2
Minor/ Intermediate Ports	51
Administrative Information	
No. of District	35
No. of sub-districts	259
Number of villages (including Uninhabited villages)	55393
Number of towns	394
No of Gram Panchayats	27920
Literacy rate	82.9%
Types of Coast Line	
Sandy beach(%)	17
Rocky Coast(%)	37
Muddy flats (%)	46
Marshy coast(%)	-
Total Length(km)	652.6
Fishery Resources	
Continental Shelf area	1.12 lakh sq. km
Total inland water bodies (lakh Ha)	3.48
Marine Fish Landings	7.26%

West Bengal

West Bengal is a relatively small state in India's east but with a population of more than 90 million it is amongst the highest density states in the country. West Bengal has suffered from cyclones, floods, droughts and earthquakes. The coastal stretch of WB is highly vulnerable to cyclones and the frequency of storms crossing this belt

is high. The most destructive element associated with an intense cyclone is storm surge which leads to inundations and coastline washout/ erosion. High storm surge in coastal WB is due to its peculiar bathymetry and the nature of the coastal belt. The northern part of the Bay of Bengal is very shallow. The coast is also landlocked on three sides. As a result, when a very severe cyclonic storm or cyclone approaches the coast, the enormous storm surge generated by the wind pressure submerges the coastal belt. Another peculiar characteristic of this coast are the innumerable rivers and rivulets criss-crossing islands that have elevations of 4 to 5 m above sea level. This makes these islands and the populations inhabiting them highly vulnerable.

On May 25th 2009, a severe cyclone, “AILA” lashed the WB coast causing destruction not only in the coastal blocks but also far inland. Coastal communities in WB are usually poor and often live in houses made of mud walls and thatched roofs, making them highly vulnerable to cyclones, high speed winds, precipitation and inundation.

WEST BENGAL	
Geographic location	Latitude: 22.5697°E Longitude : 88.3697°N
Geographic area	87,853 (sq. km.)
Forest area	11,879 km2
Coastline	158km
Normal Rainfall	1,439 mm
Demographic Indicators	
Total Population	80176197
Rural Population	5,77,34,690
Urban Population	2,24,86,481
Population Density Sq. Km	904
Literacy rate	68.6%
Scheduled Caste	23.02 %
Scheduled Tribe	5.50 %
Ports and Harbours	

Major Ports	1
Administrative Information	
No. of Districts	19
No. of Blocks	341
Number of villages	40,782 (including Uninhabited Villages)
Uninhabited	1237
Total Urban Units (Except OG)	375
Number of towns	375
Municipality (M)	113
No of Gram Panchayats	3354
No of Sub-dividions	66
Cantonment Board (CB)	1
Types of Coast Line	
Sandy beach (%)	-
Rocky Coast (%)	-
Muddy flats (%)	51
Marshy coast (%)	49
Total Length (km)	157.5

Karnataka

The state has a total area of 191,791 km2, and it's the 7th largest state in India by area, and 8th by population. The total coast length is 320km, along which there is one major port, the New Mangalore Port Trust, and more than 10 medium and small ones. The three coastal districts (Uttar Kannada, Udupi, and Dakshina Kannada) have a total population of about 5 million. Of these, the people at highest risk (the ones 5km from the coastline) are about 2.8 million, of which close to 40% are below the poverty line.

The state falls under moderate and low risk zones for cyclones, however it has experienced floods related to low pressure systems and cyclonic circulation over the Bay of Bengal and Arabian Sea. The last major hydro-meteorological

event, in 2009, affected more than 4,000 houses causing major damage.

Goa

The state has a total area of 3,702 km2, divided in two administrative districts, and a total population of 1,457,000 as per 2011 census. Goa has a coastline of 105 kms with seven of its twelve talukas having a proximity to the sea. Goa has also a floating population of about 1,500,000 as the state is a famous international tourist destination. Though Goa has experienced only two cyclones in the last 75 years, its risk level is driven by high levels of exposure with concentration of population (around 60%) and assets (particularly tourism infrastructure) along the coastline.

Goa	
Population	1,458,545 (2011)
Male	739,140
Female	719,405
Population Growth	8.23%
Percentage of total Population	0.12%
Sex Ratio	973
Child Sex Ratio	942
Density/km2	394
Density/mi2	1,021
Area km2	3,702
Area mi2	1,429
Total Child Population (0-6 Age)	144,611
Male Population (0-6 Age)	74,460
Female Population (0-6 Age)	70,151
Literacy	88.70%
Male Literacy	92.65%
Female Literacy	82.16%
Total Literate	1,165,487
Male Literate	615,823
Female Literate	549,664

Out of the geographical area about 40% is susceptible to winds and cyclones, falling under moderate or low risk zone. Goa also has about 18,000 ha of Khazan lands, which are below the mean sea level, and are protected by 420 km of bunds.

Chapter 4: Policy and Regulatory Framework

The implementation of the activities proposed under the NCRMP 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 NCRMP I, 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. However, Environment Clearance will not be required for 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 require 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	Not Relevant. Project interventions will not be located in designated or notified protected areas, such as Wildlife Sanctuaries and National Parks. Such areas shall be avoided during the selection of sites and through screening exercise.

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 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 triggered.
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

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.

Saline Embankment; Road/Culvert/Bridge; Transmission Tower; Shelter Belt and Mangrove 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 clearance requirement shall be established on a case to case basis.

Coastal Regulation Zone Notification (CRZ)

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

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower; Shelter Belt and Mangrove Plantation

- 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.

Application of the Act

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower; Shelter Belt and Mangrove Plantation

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

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower

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

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower

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

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower

According to the Ramsar list of Wetlands of International Importance, there are 25 designated wetlands in the country which are required to be protected. Activities undertaken in the proximity of these wetlands should follow the guidelines of the convention.

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
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, Rehabilitation and Resettlement Act, 2013.

It 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 will supersede all the previous act of Land Acquisition (LA) of 1894 amended in 1985 and National Rehabilitation and Resettlement Policy, 2007.

The private land acquisition will be guided by the provisions and procedures outlined in this Act. As per this Act:

- The District Collector or any other officer designated will function as the Land Acquisition Officer on behalf of the Government.
- Under the new law, activity for 'public purpose' must fall strictly within parameters prescribed under this law.
- There is a formula for quantum of compensation could be paid to those displaced.
- Now the possession can only be taken once all the requirements under the law relating to the payment of compensation, rehabilitation and resettlement have been discharged.

Application of the Act

Cyclone Shelter; Saline Embankment; Road/Culvert/Bridge; Transmission Tower, Shelter Belt

Any land acquisition required for the said activities should be in compliance with the aforesaid Act and the policy adopted by the state government.

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.** Construction of cyclone risk mitigation infrastructure such as improvement of roads, bridges cyclone shelters and repair/up-grade of coastal embankments may have some potential adverse environmental and social impacts. Such impacts will depend upon the location, nature and magnitude of the intervention. More precise information about impacts will emerge once the results from environment and social screening exercises are available.

Policy	Key Features	Applicability to this project
		Planning and construction of these investments would require avoidance/mitigation measures to ensure that adverse impacts are minimized and properly managed. OP 4.01 has been triggered to ensure that all infrastructure investments are planned and designed to be environmentally sound by integrating appropriate principles and approaches into the overall decision making process of the project.
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.** Since the project itself is located in the coastal realms that are marked by various degrees of vulnerability and sensitive environmental features, including natural habitats, there are some risks or issues that need to be managed through appropriate planning and upfront care during the site selection process. The exact nature and quantum of impacts, if any will be ascertained for every sub-project through the screening exercise. While the proposed project interventions are not likely to cause significant conversion or damage to natural habitats, OP 4.04 is being triggered to ensure that appropriate measures are built into the sub-project selection, design process and further in the implementation/construction process, if some a specific sub-project site is located in close proximity to a sensitive feature/area.
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 the borrower's responsibility in the context of a project's EA.	**Not Applicable.** OP 4.09 is not being triggered for this project as biological/environmental control methods or reliance on synthetic chemical pesticides is not envisaged. The Project will not fund any procurement or usage of pesticides. Planation works, if any would be carried out organic methods of pest control and manures.

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.	**Not Applicable.** No commercial logging is or will be supported under the project. Some minor re-alignments of roads, in cases where current alignment is not usable may require going into a forest area. Through the screening mechanism, such impact/s will be identified early-on and avoided in most cases. In a few instances, if it identified that there is no impact on health/quality of the forest; prior regulatory clearance/s will be sought.
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 also provides guidance on dealing with chance finds during the sub-project implementation, which remains a possibility.
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, 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.

Policy	Key Features	Applicability to this project
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.
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**	Aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. Promotes participation of displaced people in resettlement planning and implementation	**Applicable.** Some investments proposed under Component 2 may require some land than that in possession with the line departments. Also, the project may displace some squatters and encroachers, which may lead to loss of shelter, livelihood or sources of livelihood.
OP 4.10 **Indigenous People**	Underscores the need to identify indigenous people, consult with them, ensure that they participate in, and benefit from Bank-funded operations in a culturally appropriate way. Seeks to avoid adverse impacts on them are avoided, or where not feasible, minimized or mitigated.	**Not Applicable.** OP 4.10 has not been triggered as there are no tribal habitations with unique socio-cultural identity vis-à-vis the mainstream population in the proposed project locations. This is based on the assessment (both field level and documentary) conducted for the preparation of the ESMF for this project.

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.

4.2.2 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)
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. **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. 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.

4. 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.

Chapter 5: Potential Environmental and Social Impacts

While the National Cyclone Risk Mitigation 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 Component B of the project (NCRMP II), for the development of new physical infrastructure for cyclone risk mitigation, a few sub-project activities have been proposed/identified. Not all activities will be implemented in each participating state. The category, list and location of proposed works have been/are being identified by the participating states and complete documentation on specific sub-projects is being/will be captured in the Screening Reports.

5.1 Activities Proposed Under the Project

Since activities proposed under Component B are relevant from an environment and social management perspective, a brief description of the key activities is presented below:

Multi-purpose Cyclone Shelters (MPCS): Cyclone shelters will help the vulnerable sections of the community in accessing safe shelters at the time of cyclones or floods. These shelters will also act as a nodal point for receipt and dissemination of cyclone warnings and for carrying out post disaster response and relief activities. When there are no emergencies, they can be used as schools or for other community purposes.

Construction/Repair of Road Links and Bridges: Roads/Culverts/Bridges would aid in improving the connectivity to Cyclone shelters. Roads/Culverts/Bridges are essential for pre and post disaster responses. The activity aims at construction/ repair/retrofitting of the infrastructure to ensure all weather serviceability and to ensure fast and timely movement of men, material and machinery in the pre and post disaster period.

Upgrading/Repair of Existing Saline Embankments: Saline embankments help protect people, livestock, dwellings, and agricultural fields from saline water inundation/storm surge. The sub-project activity involves (i) the upgrading of existing embankments by increasing the height (and widening the base) as needed in carefully selected high risk areas, including construction of locking gates or works for embankment protection from soil erosion; (ii) strengthening/repair of the existing embankments, gap filling and renovation of sluices for improved drainage; and (iii) laying the top of the embankment with water-bound macadam (in selected sections) for use as an access road by local communities.

Underground Electrical Cabling: During cyclones, the electrical infrastructure gets badly affected resulting in breakdown of electricity, causes injury and even death and hampers relief and rescue. Re-establishing of infrastructure is not only time consuming, affecting business, industry, school, hospitals and everyday living but also costly. The conversion of HT (high tension) & LT (low tension) overhead lines into HT&LT underground cables will be carried out based on the vulnerability of existing electrical infrastructure.

5.2 Existing Environmental Issues in Coastal Areas

Coastal environmental issues in the Indian 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, 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 National Cyclone Risk Mitigation Project focuses on reducing the vulnerability of coastal states through creation of appropriate infrastructure, which can help minimize and mitigate adverse impacts of cyclones. 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 Impacts – Activity/Sub-project wise

<table>
<tr><td colspan="2">Cyclone Shelters (including multi-purpose facilities for use during non-cyclone periods)</td></tr>
<tr><td>1.</td><td><u>Designated use of Cyclone Shelter</u>
Impacts due to poor site selection
Tree Cutting
Potential of Flooding
Destruction of critical / endangered species habitat
In addition to emergency use, if regular designated use is not defined, the shelters could lead to socio-cultural impacts, and vandalism</td></tr>
<tr><td>2.</td><td><u>Solid Waste Management (SWM)</u>
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 (as illegal waste dumping grounds, vandalize shelters, etc.)</td></tr>
<tr><td colspan="2"><u>Water, Sanitation, and Drainage</u>
Lack of adequate water supply, sanitation, and site drainage with adequate connectivity to existing facilities, and maintenance provisions could lead to impacts such as coastal water and land pollution, and health impacts</td></tr>
<tr><td colspan="2">Saline Embankments/Bunds</td></tr>
<tr><td colspan="2">Impacts of salt water intrusion in the adjoining areas due to inappropriate planning and design of embankments
Impacts on coastal flora / fauna due to changes in movement of tidal waters
Impacts of flooding and changes in local drainage patterns
Impacts of erosion due to poor selection criteria for borrow areas.</td></tr>
<tr><td colspan="2">Roads / Culverts / Bridges</td></tr>
<tr><td colspan="2">Impacts on natural drainage pattern due to inadequate cross drainage works</td></tr>
</table>

• Impacts of physical environment (air, water and noise) due to increased traffic • Impacts on coastal flora / fauna due to increased traffic movement and other induced developments • Issues of road safety and increased accidents due to faster movement of vehicles / increased traffic
Underground Electric Cabling Works
• Disruption to public from temporary closure of access to properties/facilities • Disruption to traffic movement • Issues of safety and increased risk of accidents (including workers) • Impacts of physical environment (in the local context from dust/debris etc.) Improper restoration of site/facility after completion of the cabling work • Disruption to utilities/services

Potential Impacts - Construction Stage

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

The impacts identified above relate to construction stage and are common to the infrastructure project, irrespective of their location.

However, 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

While the project is expected to benefit the coastal communities in the participating states by reducing their vulnerability to cyclone and other hydro-meteorological hazards through creation of cyclone risk mitigation infrastructure and early warning

systems, the proposed investments may have some adverse environmental and social impacts.

The proposed investments under Component 2 of the project to create risk mitigation infrastructure include construction of multi-purpose emergency cyclone shelters, improvement/upgrading of roads to provide connectivity to cyclone shelters, underground electric cabling works, construction of bridges and strengthening of saline embankments/bunds. These activities are central to the approach and design for environment management and safeguards aspects of the project since they have a potential to create significant or irreversible impacts on natural and physical environment in a coastal area, if not managed appropriately. Activities under other components would focus on multi-hazard risk modeling and assessment, capacity building for Disaster Risk Management; implementation support and other such softer aspects. Any significant or irreversible adverse impact on environment is not envisaged from the implementation of such proposed interventions.

Potential adverse impacts on account of activities/works proposed under Component 2 of the project may include: (i) direct/indirect impacts resulting due to poor site selection for sub-projects (example: salt water intrusion due to inappropriate planning and design of embankments); (ii) impact on the drainage pattern of the area, including impact on coastal flora and/or fauna due to changes in tidal water flow or drainage congestion resulting from obstruction to natural flow of water due to the improper storage of materials or dumping of construction wastes; (iii) felling of trees and clearance of vegetation for sub-project construction; (iv) impacts on water resources used by the people; (v) occupational health and safety concerns that may arise during the construction stage; (vi) impacts due to construction material (sand, water, earth, aggregate) sourcing and transportation and; (vii) concerns arising out of improper management of debris and other construction wastes.

Since works would be largely carried out in the coastal realms of states that are marked by various degrees of vulnerability and are marked with sensitive environmental features, there are some risks or issues that need to be managed through appropriate planning and upfront care during the site selection process, particularly in case of sub-projects located close to the shoreline or high tide line influence area or in low lying area/s. Without this, it is likely to have significant adverse environmental impacts that could be sensitive, diverse and in some cases adversely affect directly or indirectly a larger area.

In view of the potential/likely impacts on the environment, Bank's OP 4.01 on Environmental Assessment, OP 4.04 on Natural Habitats 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 and implementation of management measures, the project interventions are not likely to cause large scale, significant or irreversible damage to natural and/or physical environment.

5.4 Likely Social Impacts due to the Project

A description of the activities (provided in Chapter 1) clearly indicates that the implementation of such sub-projects is not expected to lead to serious/significant adverse social impacts. The activities are small civil works which do not require

extensive manpower or machinery and can be well executed with locally available resources. The impacts, if any, are expected to be minor, localized and readily managed. The aim of undertaking these sub-project activities is to directly or indirectly protect the communities from cyclones. The adverse social impacts as well as other positive impacts likely to arise due to execution of one of the sub project activities are:

Sub-project / Activity	Likely Social Impacts	Positive Impacts
Construction of cyclone shelter	• Acquisition of small amount of private lands • Use of public lands • Impacts to non-title holders on public lands • Resettlement of families • Damages to standing crops and plantations. • Loss of livelihoods	• Safe shelter in case of a cyclone • Building of social infrastructure for community use (school, health centre etc)
Construction of Linkroads/bridges and culverts	• Acquisition of small amount / linear strips of private lands • Use of public lands • Resettlement of families • Impacts to non-title holders on public lands • Damages to standing crops and plantations • Loss of existing structures and community property. • Loss of livelihoods	• Connectivity to main roads or shelters • Evacuation route during the times of a disaster • Connectivity to major business centres in the locality
Strengthening and Upgradng of saline embankments/ Bunds	• Private land acquisition • Use of public lands • Impacts to non-title holders on public lands • Resettlement of families • Damages to standing crops and plantations • Temporary influx of labour • Loss of mangrove ecosystem/ community forest on which near-by residents/local	• Protection of agriculture lands from saline water intrusion, surge and inundation • Protection of habitation from surge and inundation • Connectivity to main roads and evacuation routes

Sub-project / Activity	Likely Social Impacts	Positive Impacts
	population are dependent for fuel wood/grazing	
Towers for communication	• Acquisition of land. • Access restrictions to the land	• Ensuring connectivity through VHF

Note: The above list is only illustrative and any additional activities that may be considered will be mitigated in accordance with requirements and needs.

Conclusion / Remarks

Based on past experience from NCRMP I and the assessment carried out during preparation of this ESMF, land acquisition or population displacement is not envisaged under the project. Primarily, land owned by the government will be used for construction and rehabilitation of shelters, roads and embankments. In cases where institutional land is not available, participatory approaches of voluntary donation or direct purchase or exchange by the sponsoring institutions will be followed for obtaining land. Although it is highly unlikely that private lands and/or public land from private users will be required; considering any remote circumstances that may arise in a few sub-projects, 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.

Further, the field level and documentary assessment conducted for the preparation of the Environment and Social Management Framework (ESMF) reveals that there are no tribal habitations with unique socio-cultural identity vis-à-vis the mainstream population in the project locations in the five participating states. The assessment reveals that: (a) the proposed sub-projects under the operation will be located in coastal zone/non-scheduled areas (non-tribal/non-indigenous people areas); (b) the population in the coastal zone mainly belongs to fishing communities, which are non-tribal/non indigenous in character and practice; (c) the major economic occupations of these populations are fishing, salt making and agriculture and that these occupations are more than subsistence economic pursuits.

In view of the points mentioned above, Bank's OP 4.12 on Involuntary Resettlement has been triggered and based on the assessment, OP 4.10 has not been triggered for this project.

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

To understand, assess and mitigate issues related to environment management, land requirement, displacement and resettlement, the National Disaster Management Authority (NDMA) had conducted a study in participating states for National Cyclone Risk Mitigation Project II. This Environmental and Social Management Framework (ESMF) has been developed for avoiding, minimizing, mitigating and managing the identified environmental and social issues, which are likely to arise due to the implementation of sub-project level activities.

The National Cyclone Risk Mitigation Project proposes to support multiple subprojects covering activities such as provision and repair of cyclone shelters, upgrading/repair of saline embankments and construction/repair of missing road links and bridges in the coastal areas. This approach helps in effective environmental and social management in a scenario where multiple sub-projects are located in different parts of the coastal region across six states and their specific locations are not known at this stage of the project design.

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 Governments apart from meeting the requirements of the relevant Bank policies. The Environment and Social Management Framework is an essential ingredient aligned with the project and sub-project cycle. It is to be followed through the entire project cycle from site identification, screening, review, implementation, and monitoring.

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 dimensions into the over-all project/sub-project preparation and implementation, an Environment and Social Management Framework (ESMF) has been prepared.

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 risk mitigation infrastructure, therefore is central and plays an important role in minimizing the over-all adverse impact in the event of a disaster.

The management of environmental issues in NCRMP I, specifically with regard to the approach used for screening of sub-projects, has been based on a robust and scientific methodology and was successfully used in the first project. The approach and the safeguards requirements set forth within it remain relevant in the context of NCRMP-II as well. Therefore, following the same process, the overall environment management approach for NCRMP II includes the following key steps:

1) **Environment and Social Screening,** which has/will help in early identification of key environmental issues at the sub-project level. The screening process forms the first step in the environment management process for the project and is being carried out in parallel with the project identification/engineering feasibility study for all proposed sub-projects. The environment screening process for the project has used/will continue to use a robust methodology supported by use of scientific tools such as GIS and remote sensing techniques.

2) **For subprojects with the potential for significant adverse environment and social impacts** (which has/will emerge from screening results), **an Environment and Social Assessment (EA/SA) and sub-project specific Environment Management Plan (EMP) and Resettlement/Social Management Plan 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 subproject specific environmental management plans. However, it is expected that subprojects with the potential for significant adverse environment and social impacts will be few in number. These are expected to be limited to Saline Embankment and Underground Electric Cabling works only.

3) **Based on screening results, if a subproject 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 subproject.

6.1.2 Key Steps to be Followed

For an appropriate management of issues, the following key activities would be carried out:

a) **Identification of sub-project site/s.** The identification of site/s for risk mitigation infrastructure would be informed by results from a vulnerability mapping 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 NDMA/states will be used for this purpose.

b) **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.

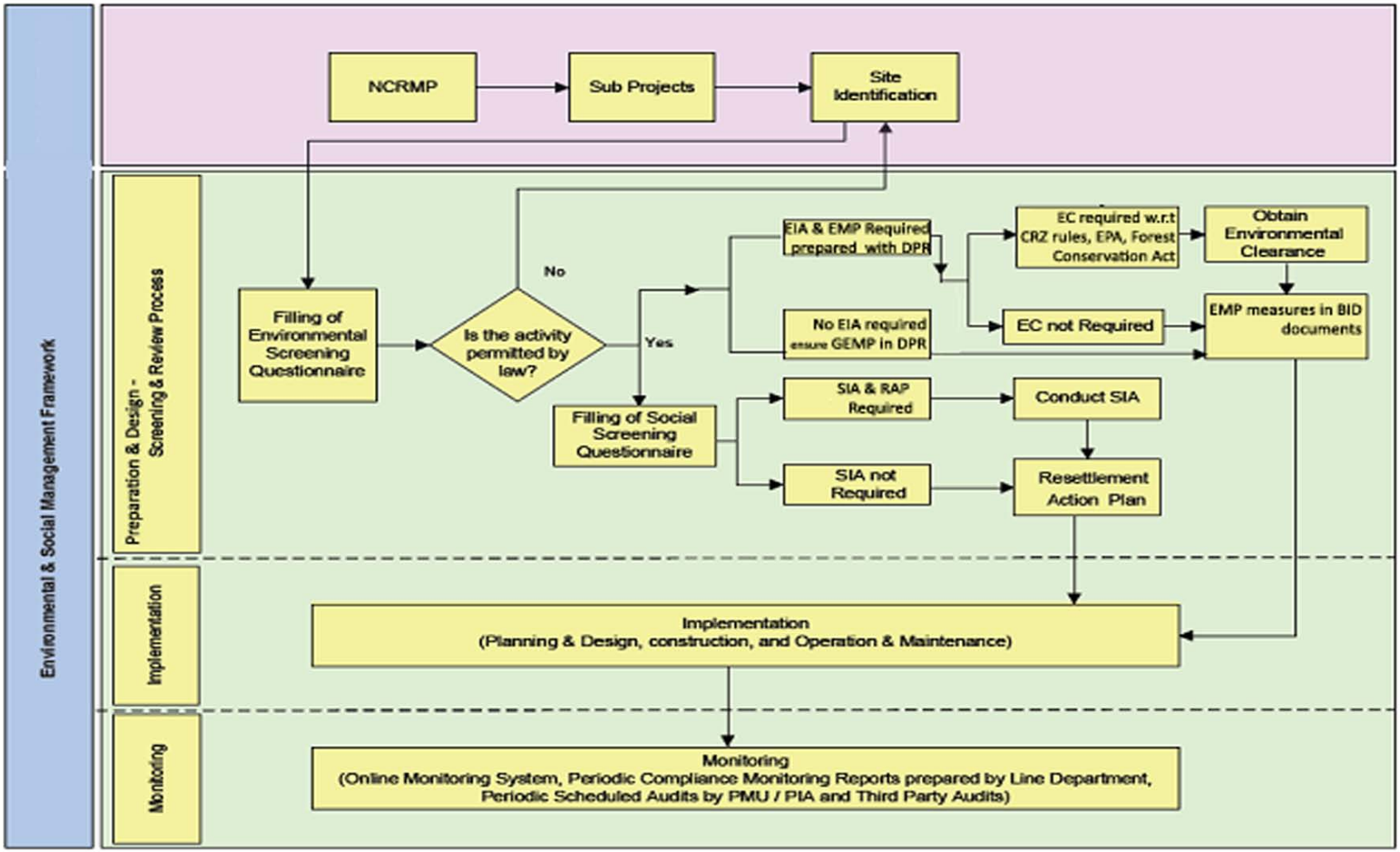
Villages where infrastructure development involves significant environment or social issues and villages falling within the CRZ with no alternative sites close by, will be considered either dropped or taken-up later, subject to the findings of detailed assessments and attaining of required clearances.

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.

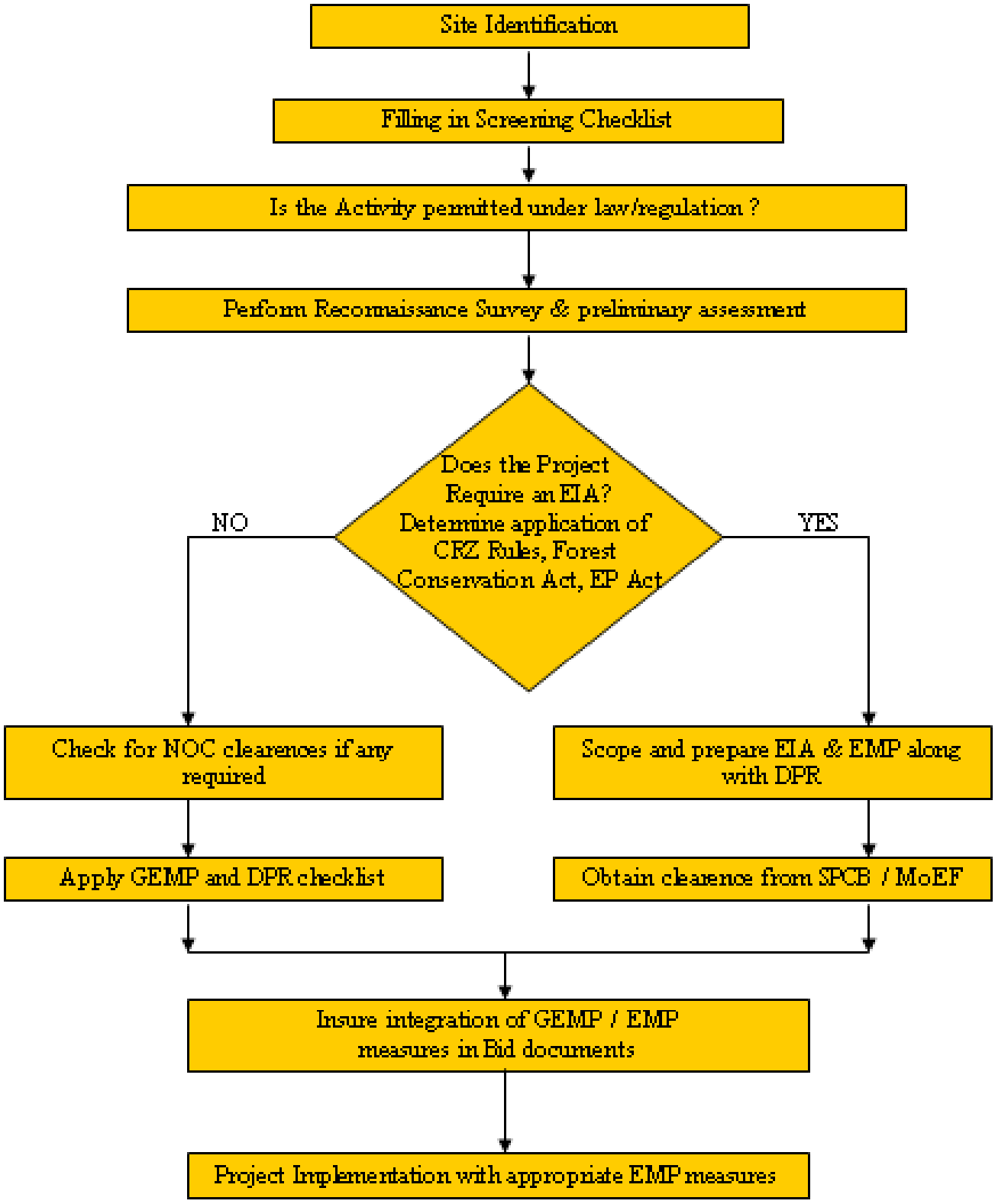
c) **Integration of Environmental and Social Requirements in sub-project selection and design.** The considerations/ requirements will be mainstreamed as part of the over-all decision making and execution process – the selection of sites (screening, including vulnerability assessment will determine this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

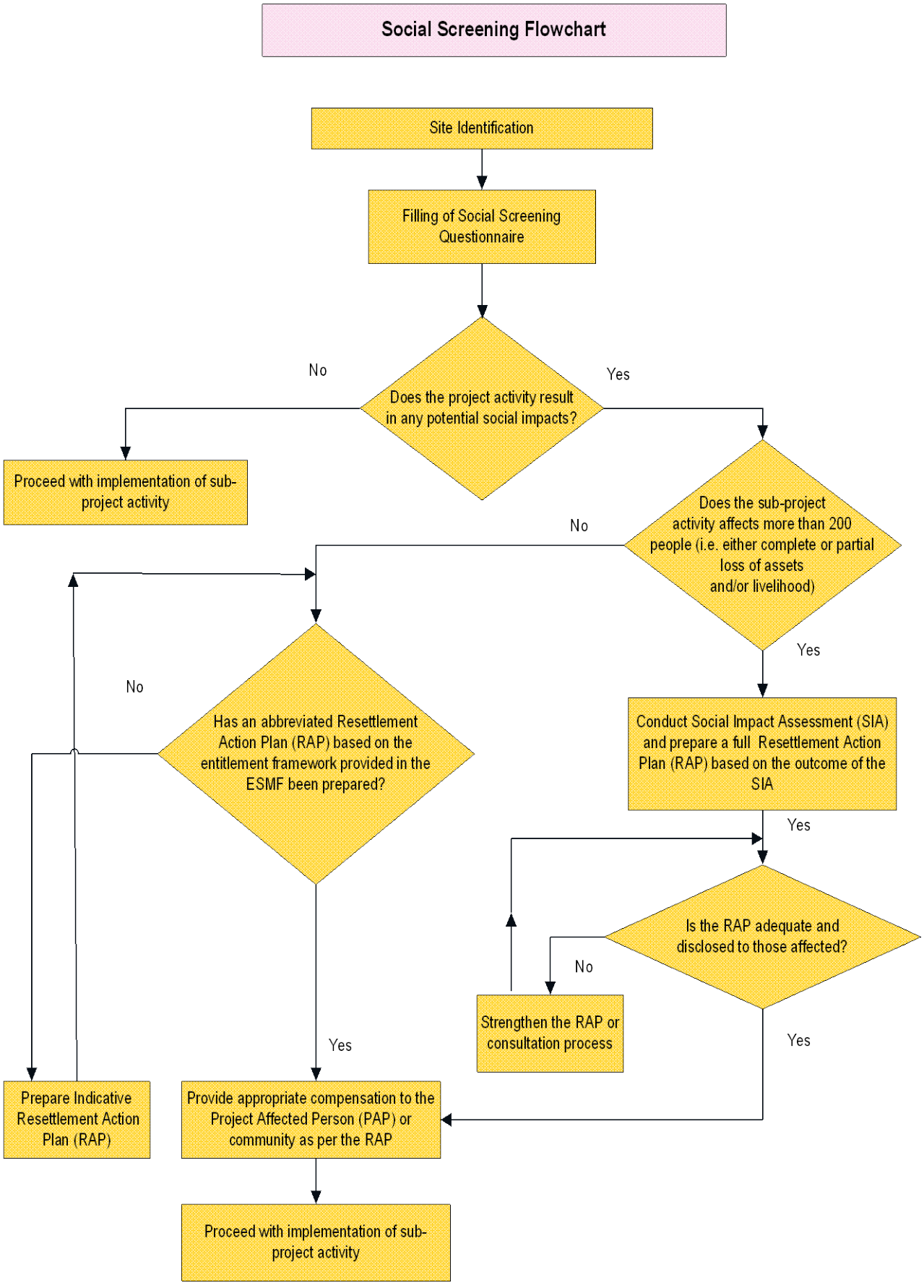
d) **Public consultation.** Consultation with public, particularly the beneficiary groups and likely to be impacted people/communities will be carried out during various stages of the sub-project preparation. This includes consultations and seeking consensus on site identification and selection; designs; 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.

e) **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. For this, Generic Environmental Management Plans have been prepared for the project components/activities proposed under NCRMP. These standardised plans have been provided for use by line 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 to reflect particular site conditions.


Environmental & Social Management Framework
NCRMP
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)

Environmental Screening Flowchart




Social Screening Flowchart
Site Identification
Filling of Social Screening Questionnaire
Does the project activity result in any potential social impacts?
No
Yes
Proceed with implementation of sub-project activity
Does the sub-project activity affects more than 200 people (i.e. either complete or partial loss of assets and/or livelihood)
No
Yes
Has an abbreviated Resettlement Action Plan (RAP) based on the entitlement framework provided in the ESMF been prepared?
No
Yes
Conduct Social Impact Assessment (SIA) and prepare a full Resettlement Action Plan (RAP) based on the outcome of the SIA
Yes
Is the RAP adequate and disclosed to those affected?
No
Yes
Strengthen the RAP or consultation process
Prepare Indicative Resettlement Action Plan (RAP)
Provide appropriate compensation to the Project Affected Person (PAP) or community as per the RAP
Proceed with implementation of sub-project activity

6.2 Guidance on Tools for Addressing Environmental Issues

Screening

Screening is the first step in the ESMF 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 Steps involved in Project Screening

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

Step 1: Ascertain presence of any environmentally sensitive areas as detailed in screening criteria section Part-B and w.r.t. CRZ zones during site identification.

Step 2: Confirm applicability of regulations and whether any of the sub-projects are prohibited as per the existing law / regulations in the proposed sites. Wherein the proposed activity is restricted, Step 1 needs to be performed again.

Step 3: Conduct reconnaissance site visits for ground truthing to incorporate additional information.

Step 4: Revisit the screening check list and ascertain outcomes of the Part B (2) and Part C (2) of the screening checklist. Undertake the detailed screening process for all investments in consultation with the line department.

Step 5: Determine the requirement of an EIA / SIA study & its scope and other applicable rules /regulations and clearances.

Step 6: If EIA/SIA is required, then:

> Step 6.1 Prepare ToR for EIA / SIA studies and appoint Environment and Social Management Consultants.
>
> Step 6.2: Conduct EIA / SIA as per the scope defined in the ToR along with preparation of the detailed DPR documents.

Step 8: Check for applicable NOC / Clearances from MoEF/ State PCB's etc as applicable

Step 9: Ensure integration of GEMP and / or Specific EMP measures (as applicable) with bid documents and contract provisions.

Step 10: Project implementation and monitoring to ensure EMP / GEMP implementation.

- Note 1: 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..
- Note 2: 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.

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 and social screening flowcharts depicted below illustrate the overall screening process.

List of Prohibited Sites

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)

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.

Cultural Property Resources

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.

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.

6.3 Guiding Principles for Addressing Social Issues

6.3.1 Land Acquisition and Involuntary Resettlement

Involuntary Resettlement

Location of facilities has to be planned so as to have least impact on the community. If a particular location is suitable for all factors except for limited resettlement, necessary compensatory measures as per the resettlement framework needs to be worked out. Resettlement impacts due to these interventions would be managed through appropriate compensation and rehabilitation measures as per the entitlements of the PAP. A resettlement action plan to this effect would be prepared to address the impacts. Compensation and rehabilitation measures will be carried out in accordance with the entitlement framework for the sub-project activity.

It needs to be ensured that all R&R activities are to be completed before the construction activity starts. If any resettlement is required for project interventions, resettlement sites required are to be taken up for construction prior to the contractor mobilization at site. Suitable locations for resettlement sites are to be identified in consultation with the PAPs to be relocated.

The participating states have experience of implementing World Bank projects under different initiatives but a Resettlement Policy is already in place along with an Entitlement Matrix. The entitlement matrix needs to be adapted to the project initiatives to arrive at appropriate entitlements for identified impacts. These entitlements should have special privileges to vulnerable people affected by the project. As resettlement impacts in the NCRMP may also be on encroachers and squatters, they need to be assisted following the entitlement matrix.

Eligibility for Benefits

Project Affected Persons (PAPs) are defined as persons whose livelihood or shelter is directly affected by the project activities due to acquisition of the land owned or used by them. PAPs deemed eligible for compensation are:

- Those who have formal legal rights to land, water resources or structures/buildings, including recognized customary and traditional rights;
- Those who do not have such formal legal rights but have a claim to usufruct rights rooted in customary law; and
- Those whose claim to land and water resources or building/structures do not fall within (a) and (b) above, are eligible to resettlement assistance to restore their livelihood.

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 (refer section 7.2.4.1). Details wherever, have been recorded in Annexure 4. In case of need of any particular reference, the annexure may be consulted.

Type of Impact	Unit of Entitlement	Details of Entitlement
Loss of land	Land owner(s) Individual/Household	As per provisions of RFCTLARR Act, 2013 with additional provisions in case of SC/ST families
Loss of structure (Residential or Commercial or Res-cum-Commercial)	Owner/Family	• Replacement cost determined on the basis of R&BD Schedule of Rates as on without depreciation,

Type of Impact	Unit of Entitlement	Details of Entitlement
		• Shifting and transitional/ Resettlement allowance as per provisions of RFCTLARR Act, 2013 • Right to salvage materials from affected land or structure
Unauthorized occupation of government lands by encroachments	Affected Person (Individual/Family)	• Assistance amount equivalent for impacted structures at replacement cost determined on the basis of R&BD Schedule of Rates as on date without depreciation • Encroachers shall be given advance notice of 2 months in which to remove assets
Squatters residing on these lands for residential or commercial use;	Affected person (Individual/Family)	• Assistance amount equivalent for impacted structures at replacement cost determined on the basis of R&BD Schedule of Rates as on date without depreciation • Shifting Allowance as per provisions under RFCTLARR Act, 2013 • Two months advance notice to remove assets
Loss of livelihood due to acquisition of land in urban areas	Individual/Family	• Eligibility to be as per date of Census survey • As per provisions under RFCTLARR Act, 2013
Forseeable and unforeseen impacts likely during the construction stage such as: • Temporary impacts on structures	Owner/ Affected Person	• Payment of damages if any to structures • Temporary access would be provided, where necessary.

Type of Impact	Unit of Entitlement	Details of Entitlement
• Temporary disruption to access or passage, particularly in congested slums if the option of mobile units is not used;		
Temporary loss of income of mobile kiosks, if any; and	Kiosk owner	Two months advance notice to vacate the area
Ailments to residents in adjacent areas due to: • contamination of water during construction as a result of inadequate disposal of debri and could also block natural drainage systems and create breeding grounds for waterborne diseases and	Residents of the area	• Good construction practices and appropriate disposal of waste as per provisions in the EMP. • Continued monitoring by involvement of residents
Loss of or impact on any Common or cultural Property Resource such as shrine, temple, mosque, handpump, 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.
Unforeseen impacts		Any unforeseen impacts shall be documented and mitigated in accordance with the principles and objectives of the Policy

For details on the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 refer Annexure 4.

Acquisition of Land and Payment of Compensation

Voluntary land donation

Land acquisition is likely to take place through a combination of several methods. Identification of available vacant government lands will be the most preferred method. In addition, the lands belonging to temples trusts, Gram Panchayats, etc. will also be explored. In some cases the land owners or Gram Panchayats or temples may come forward for voluntary donation of lands.

Individuals may also elect to voluntarily contribute land or assets, provided the persons making such contributions do so willingly and are informed that they have the right to refuse such contributions. Procedures will be in place to ensure that all donations are voluntary and freely given; that the donor is the legitimate owner of the land; and that the donor is fully informed of the nature of the project, the implications of donating the property, and his entitlements as provided for in the land acquisition and resettlement policy being adopted by the project. The following measures will have to be applied in dealing with land donations, based on their relevance to the cases being encountered:

i. Proof of meeting where the land acquisition and resettlement policy has been discussed with the affected person and acknowledgement by the affected person of his knowledge of the land acquisition and resettlement policy.

ii. Certification from the government body that the land is free of claims or encroachments from any third party;

iii. Deed of donation to the proponent concerned, as witnessed by the government officials, duly registered and Declaration of ownership with waiver of claims for affected assets;

iv. Waiver of rights/quit claim (for plants, trees, houses, structures claimed by tenants, informal settlers)

Land acquisition / private purchase

The private land acquisition will be made through private negotiations or using new LA and R&R Act, 2013. Based on the above support principles, the individual entitlements will be proposed and included in the RP. In case of acquisition of private lands, the compensation rates will be decided by the Land Acquisition Officer in accordance with the prevailing market rates. LA and R&R Act 2013 has outlined the principles and detailed process to be adhered to.

In case of loss to structures, the compensation will be determined in accordance with the Public Works Department's current Schedule of Rates for new construction of similar quality without depreciation.

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; Consent of 70-80% of affected sought.

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, details at Annex-4.

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

6.3.2 Consultation and Information Disclosure

Stakeholders

The primary beneficiaries will be the coastal communities in the five participating states (Gujarat, Kerala, Maharashtra, West Bengal and Karnataka), benefitting from targeted risk mitigation interventions such as cyclone risk mitigation infrastructure and early warning systems. The secondary stakeholders include officials from National Disaster Management Authority, concerned State Disaster Management Authorities, Revenue and Disaster Management Department/s, local governments/village Panchayats; local NGOs; and selected government departments such as Public Works, Irrigation/ Kharland Board and other administrative officials/staff in the five said states associated with the planning, design and implementation of NCRMP II.

Consultations

The ESMF envisages involvement of all the stakeholders' at each stage of the project planning, implementation and post construction phase. The PIU/state level nodal agency will be responsible for ensuring participation of the community at sub-project level. Involvement of the community includes interactions with the community and disclosing relevant information pertaining to the project tasks.

Stakeholder consultation, information dissemination and social mobilization have remained integral part of NCRMP's planning and implementation. In accordance with the applicable Bank policies, public consultations have been/are being carried out in areas where specific investments are proposed for funding under NCRMP II in the five participating states. The public consultation process has been designed in a way that: (i) affected people are included in the decision making process; (iii) public awareness and information sharing on project alternatives/benefits are promoted; and (iii) views on designs and solutions from the communities are solicited.

During the preparation of the ESMF for both NCRMP I and II and during planning of sub-projects, extensive consultation have been/are being carried out with communities, intended beneficiaries, implementing departments, experts (as needed), local NGOs and other stakeholders. The outcomes of these consultations have been considered in the ESMF preparation process and are also documented in the screening reports. Beneficiary

consultations and participatory planning have continued through the implementation period in NCRMP I. The same approach and mechanisms will continue for sub-projects/interventions proposed under this project.

Planning

Dissemination of project information to the community and relevant stakeholders is to be carried out by the PIU at this stage of the project initiative.

Community and other stakeholders should be involved in the decision making to the extent possible. Consultation process shall be inclusive of all stakeholder groups including women, vulnerable groups etc

The community at large shall be made aware of the project alternatives and necessary feedback shall be obtained. This should include the process being followed for prioritisation of the identified sub-projects and the proposed benefits. The consultation process adopted shall ensure that the stakeholders / local community concerns about proposed location are adequately addressed along with other concerns if any.

The consultant/ SDMA / NDMA shall fill in the following details as per the template format.

S. No.	Stakeholder Groups	Issues Raised by the Stakeholders	Steps proposed for resolution of the issues / Reasons for No consideration	Responsible Agency / Person to implement corrective actions including timeline (if applicable)

Specific details / minutes of the meetings conducted and action plans agreed upon may be supplemented in the Annex section of the report and provide a summary of the outcome of the consultations in the below mentioned table

Implementation Stage (Pre-construction)

Consultation during this stage of the project shall be conducted with:

- Land-owners for obtaining their consent for:
  - land requirements if any
  - temporary use of additional land during construction for setting up workers camp, borrow areas, waste disposal sites
- The line departments; and
- Relevant research institutions working on similar components e.g. for the mangrove plantation, if any existing research institution has done any studies on the survival rate for the key species in the area. Consultation with such research organizations will help improve the project outcomes.

The consultant/SDMA/NDMA shall fill in the following details as per the template/format prescribed above.

Specific details / minutes of the meetings conducted and action plans agreed upon may be supplemented in the Annex section of the report and provide a summary of the outcome of the consultations in the below mentioned table:

Implementation Stage (Construction)

Consultations shall be carried with the contractors / line departments for identifying any environmental and social issues arising during the implementation not envisaged in the DPR / EA-EMP/GEMP documents. In addition, the contractor in consultation with the Implementing agency & PIU shall settle any grievances raised by the local community during this stage

The consultant/ SDMA / NDMA shall fill in the following details as per the template/format prescribed above.

Specific details / minutes of the meetings conducted and action plans agreed upon may be supplemented in the Annex section of the report and provide a summary of the outcome of the consultations in the below mentioned table.

Post Construction

The PIU and the implementing agencies shall conduct post implementation consultations with the local community and stakeholders to ensure the operations and maintenance of the infrastructure assets created and the role of the local community in maintenance.

List of likely Consultations

The table below provides an overview of the likely consultations to be carried out by the responsible agencies to ensure information disclosure and active involvement of the local community / stakeholders:

Activity	Stakeholders to be involved	Agency Responsible	Techniques	Results
Project Prioritization				
Details of basic information about the project	Community, NGOs, local government	PIU, concerned govt agency	Distribution of brochure	o Awareness amongst the stakeholders
Project Planning				
Dissemination of project information	Community, NGOs, local government	PIU, concerned govt agency	Meetings with concerned	o Increased awareness amongst the

Activity	Stakeholders to be involved	Agency Responsible	Techniques	Results
			stakeholders	stakeholders about the project. o Identification of vulnerable PAPs, identification of grievances, incorporation of suggestions provided by stakeholders in project planning
Consultation with PAPs	Community PAPs	PIU, concerned govt agency	Focus meeting with PAPs and group meeting	o Sensitize PAPs on likely issues. o Disseminate information on likely social issues o Details / List of PAPs
Summary of affected persons	PAPs	PIU, concerned govt agency	Individual consultation with PAPs, Household survey	o Assessment of socio economic profile of PAPs o Understand the extent of impact o Understand the vulnerability and extend of support to be provided
Dissemination of information on process of land transfer, entitlement provision and grievance mechanism	PAPs	PIU, concerned govt agency	Public meeting, distribution of notices to non title holders, brochures to PAPs	o Awareness of process of land transfer o Providing details on grievance mechanism o Early signal to non titleholders for providing possession of assets.

Activity	Stakeholders to be involved	Agency Responsible	Techniques	Results
Finalization of entitlement	PAPs	PIU, concerned govt agency	Individual discussion / meeting with PAPs	o Ensure that eligible PAPs are included as per the eligibility to provide them necessary assistance.
Implementation				
Advance notice to encroachers, non title holders, farmers with standing crops	PAPs	PIU, concerned govt agency	Public meeting	o Clearance of land before start of project implementation
Relocation of common property resources	Community	PIU, concerned govt agency	Public meeting	o Ensure that common property resources are relocated as per community needs.
Redressal of grievances	Community	PIU, concerned govt agency	Public meeting, meeting with PAPs	o Grievance redressal during implementation of project
Disbursal of entitlements	PAPs	PIU, concerned govt agency	Meeting with PAPs	o Support extended to eligible PAPs
Temporary impact during construction	Community	Contractor, PIU	Public meeting	o Redressal of impact during implementation of project.
Health impacts of implementation of project	Community	PIU	Public meeting	o Sensitizing concerned stakeholders on health related issues

Activity	Stakeholders to be involved	Agency Responsible	Techniques	Results
Physical possession of land	PAPs, community	PIU	Meeting with PAPs and community	o Identification of boundary of residual plots. o Clearance of plot before start of the project
Monitoring & Evaluation	PAPs, community	PIU	Public meeting with PAPs and community	o Provide information on progress of the project o Grievance from stakeholders if any during project implementation o Take inputs from stakeholders in effective implementation of project.

Information Disclosure

The mechanism of information dissemination should be simple and be accessible to all. The means that may be explored include briefing material and organization of community consultation sessions. The briefing material (to be prepared in local language) can be in the form of a) brochures (including project information, land acquisition and details of entitlements including compensation and assistance to be given to the PAPs) that can be kept in the local Government office; b) posters to be displayed at prominent locations and c) leaflets that can be distributed throughout the length of the project corridors. Consultation meetings should also be organized at regular intervals by the PIU to acquaint the PAPs of the following:

- Timeline and progress of the project;
- Information on compensation and entitlements;
- Information on land acquisition and market valuations of property;
- Time line for acquisition.

Also, opinion and consensus of the community needs to be sought for common and cultural property relocation.

The ESMF and subsequent implementation plans as well as studies for investments will be disclosed on the government websites and other public places accessible to the local people and NGOs in English and local language.

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 NCRMP (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 RPs provides a link between the impacts identified and proposed mitigation measures to realize the objectives of involuntary resettlement. The RPs 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.

The terms of reference for conducting an SIA and the indicative outline of Resettlement Plans are provided as separate Annexures in Volume of the ESMF.

6.3.5 Grievance Redressal

The NDMA and the state agencies have also designed a Grievance Response Mechanism (GRM) to answer to queries, receive suggestions and address complaints and grievances about any irregularities in application of the guidelines adopted in this framework for inclusive project design, and assessment and mitigation of social and environmental impacts. An elaborate grievance redressal system is also prescribed in new LA and R&R Act 2013.

To support and supplement the following will be in place under the NCRMP:

- In the project, all efforts will be made so that the compensation package for PAF's is decided in consultation with the community so as to avoid any dispute.
- In case of a potential dispute the matter will be brought to the notice of local tehsildar/Sub Divisional Magistrate (SDM). He shall hear the case in presence of (a) the affected party, (b) the incharge of line department who is acquiring the land/

incharge of the sub-project activity and (c) sarpanch of the village where the sub-project is being implemented. He will try to reach an amicable solution to the issue.

- However, in case of non-satisfactory solution, the matter will be brought to the notice of the District Collector and he is the final authority to decide the case. The hearing will be attended by all members present for hearing with the SDM as well as the Social Management Specialist of the PIU. The Social Management Specialist will be responsible for maintaining a record of the proceedings and the final decisions.

6.3.6 Sub-project Approval

In the event that a subproject involves land acquisition against compensation or loss of livelihood or shelter, the implementing agency shall:

- Not approve the subproject until a satisfactory RP has been prepared and shared with the affected person and the local community; and
- Not allow works to start until the compensation and assistance has been made available in accordance with the framework.

6.4 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. **Investment in Disaster Mitigation Infrastructure:** Post-Cyclone Phailin in Odisha in 2013, close to 1 million people benefitted from the improved EWDS and the cyclone shelters across the coast. The relative small number of casualties builds a clear and compelling case for increased investment in disaster risk mitigation - both physical infrastructure (emergency cyclone shelters, access routes) and in improved EWDSs.

b. **DRM institutions** are frequently overstretched between regular operations and emergencies. This means a dedicated implementation/ management units should have clear roles, so that staff can continue to work on the on-going projects independent of emergencies. This would ensure continuity and is especially important in states with highly recurrent natural hazards.

c. Globally, there is evidence that some flood 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, enhancing capacities of water users groups, early warning communication systems, etc. A strong disaster response mechanism play a crucial role in not only saving lives and livelihoods but also for achieving sustainable recovery and long-term disaster risk reduction. The project would focus on providing technical assistance in sustainable risk mitigation and response.

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 centers, 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: Institutional Arrangements

7.1 An Over-view about National Disaster Management Authority

7.1.1 Organisation Structure

The National Disaster Management Authority has been constituted under the Disaster Management Act 2005, with the Prime Minister of India as its Chairman; a Vice Chairman with the status of Cabinet Minister, and eight members with the status of Ministers of State. With well-defined functional domains for each of its members and concern to carry out the mandated functions, NDMA has evolved into a lean and professional organization which is IT-enabled and knowledge based.

Conceptually, the organization is based on 'disaster-divisions-cum-Secretariat' system. Each member of the Authority heads disaster-specific divisions for specific disaster and functional domains. Each member has also been given the responsibility of specified states and UTs for close interaction and coordination. The NDMA Secretariat, headed by a Secretary, is responsible for providing secretarial support and continuity.

The Secretariat deals with mitigation, preparedness, plans, reconstruction, community awareness and financial and administrative aspects. NDMA also has the National Disaster Management Operations Centre, which will be equipped with a state-of-the-art resilient and redundant communication system. The Authority, NDMA also carries out the tasks of capacity development, training and knowledge management.

7.1.2 Functions and Responsibilities

NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure timely and effective response to disasters. Towards this, it has the following responsibilities:-

- Lay down policies on disaster management;
- Approve the National Plan;
- Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan;
- Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
- Lay down guidelines to be followed by the different Ministries or Departments of the Government of India for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects;
- Coordinate the enforcement and implementation of the policy and plans for disaster management;
- Recommend provision of funds for the purpose of mitigation;

- Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with threatening disaster situations or disasters as it may consider necessary;
- Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management and;
- Provide such support to other countries affected by major disasters as may be determined by the Central Government.

7.2 Over-all Implementation Arrangements for NCRMP

The National Disaster Management Authority (NDMA) is the Nodal Agency at the National Level for the implementation of the National Cyclone Risk Mitigation Project (NCRMP) – I and II. The different agencies that are/would be involved in the implementation and management of the project are as follows:

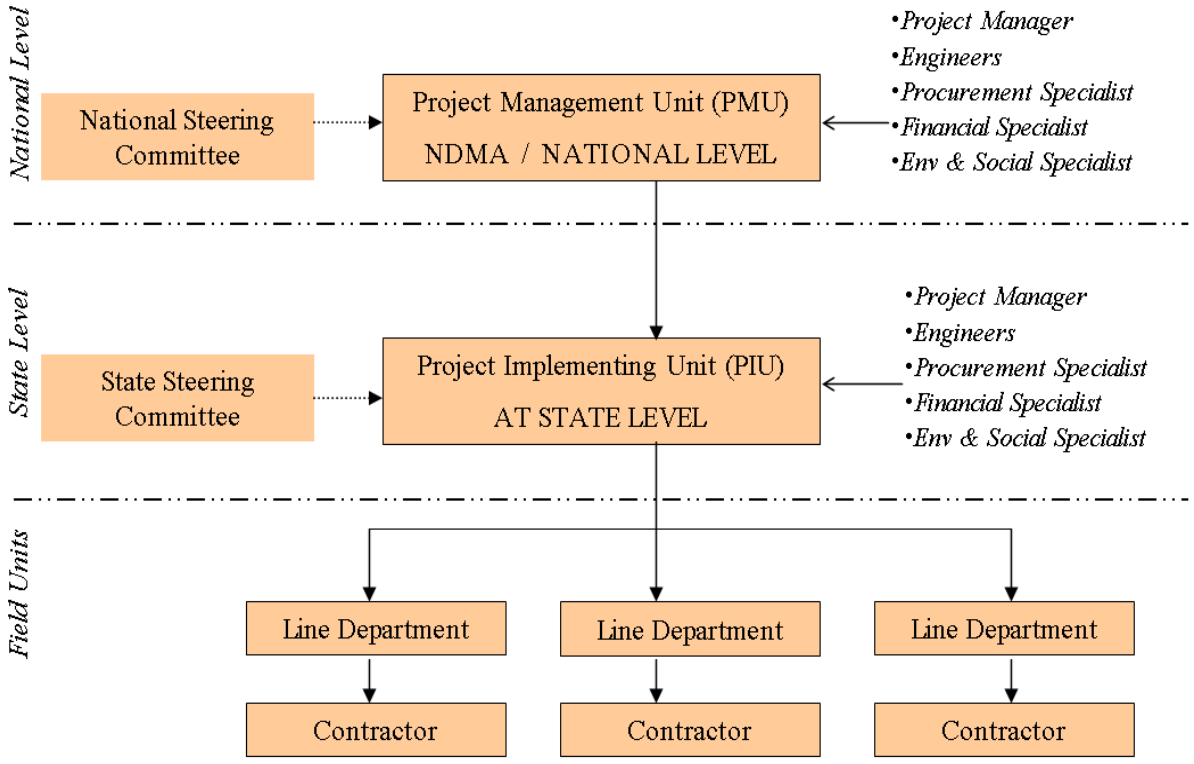
At the National Level

1. Project Steering Committee (PSC)
2. Project Management Unit (PMU) at National Disaster Management Authority
3. Project Implementation Unit at National Institute of Disaster Management (NIDM)

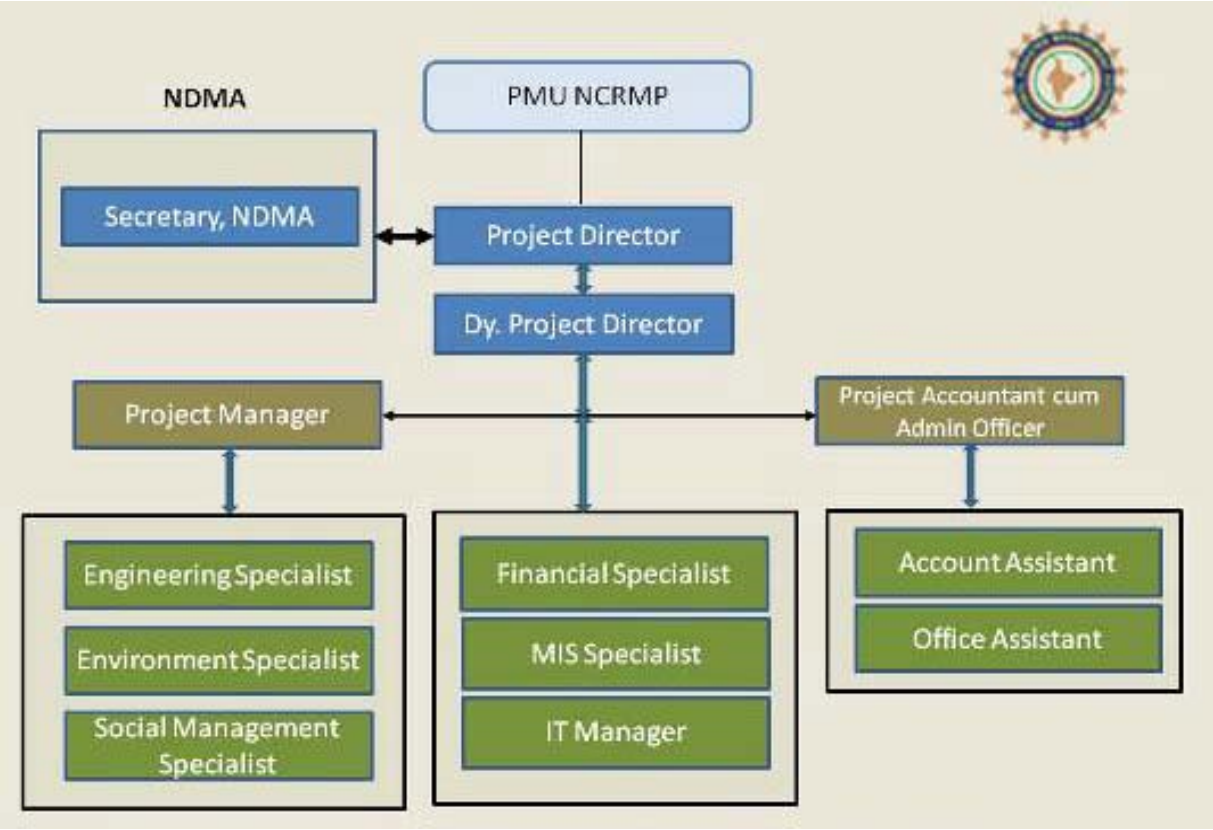
At the State Level

1. State Steering Committee (SSC)
2. State Project Implementation Unit (SPIU) or a State Nodal Agency
3. Line Department

The over-all implementation structure is depicted in the figure below.



The Project Management Unit (PMU), National Disaster Management Authority at the national level is the executing agency whereas the over-all project delivery of the NCRMP will be overseen by a National Steering Committee. The PMU has been established at the NDMA for active oversight on the different components across the states.



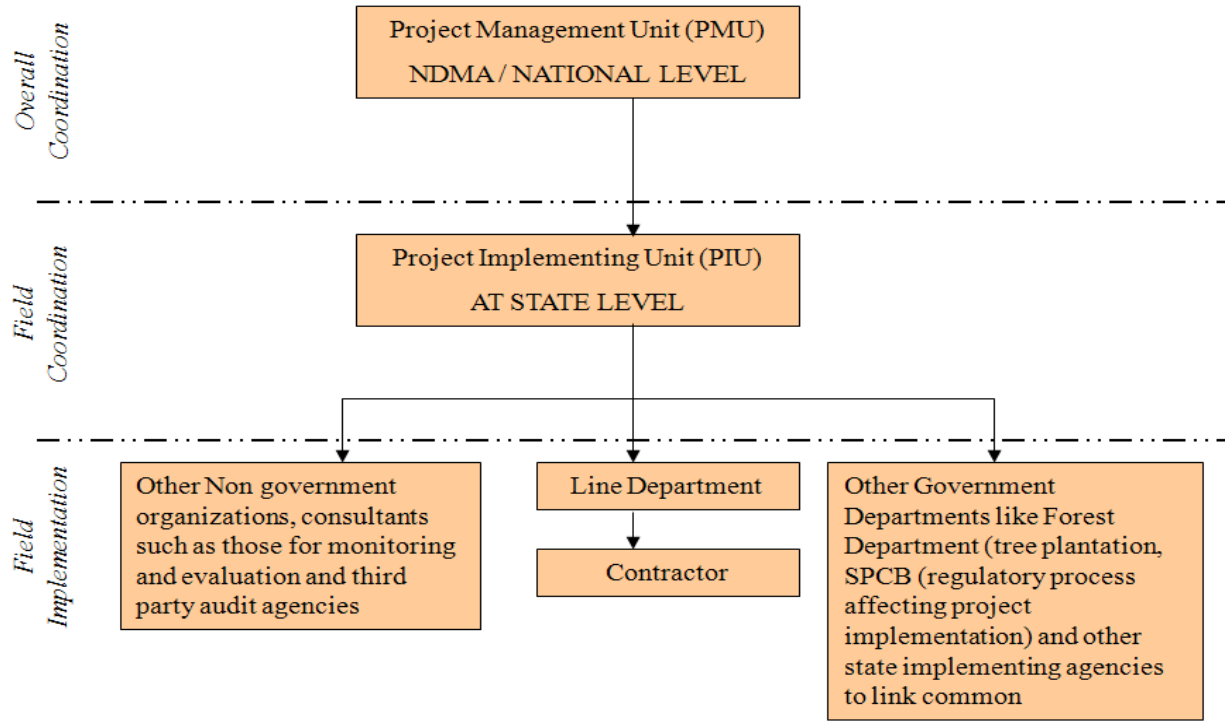
Each state in turn will have a Project Implementation Unit (PIU) for coordinating the day-to-day activities with the implementing agencies/line departments overseen by a State Steering Committee.

Both the PMU and the PIUs have/will have functional and management teams comprising of the Project Managers, Engineers, Procurement Specialists, Financial Specialists, Environment & Social Specialists and support staff. The PIU shall implement the sub-project activities through the relevant line departments.

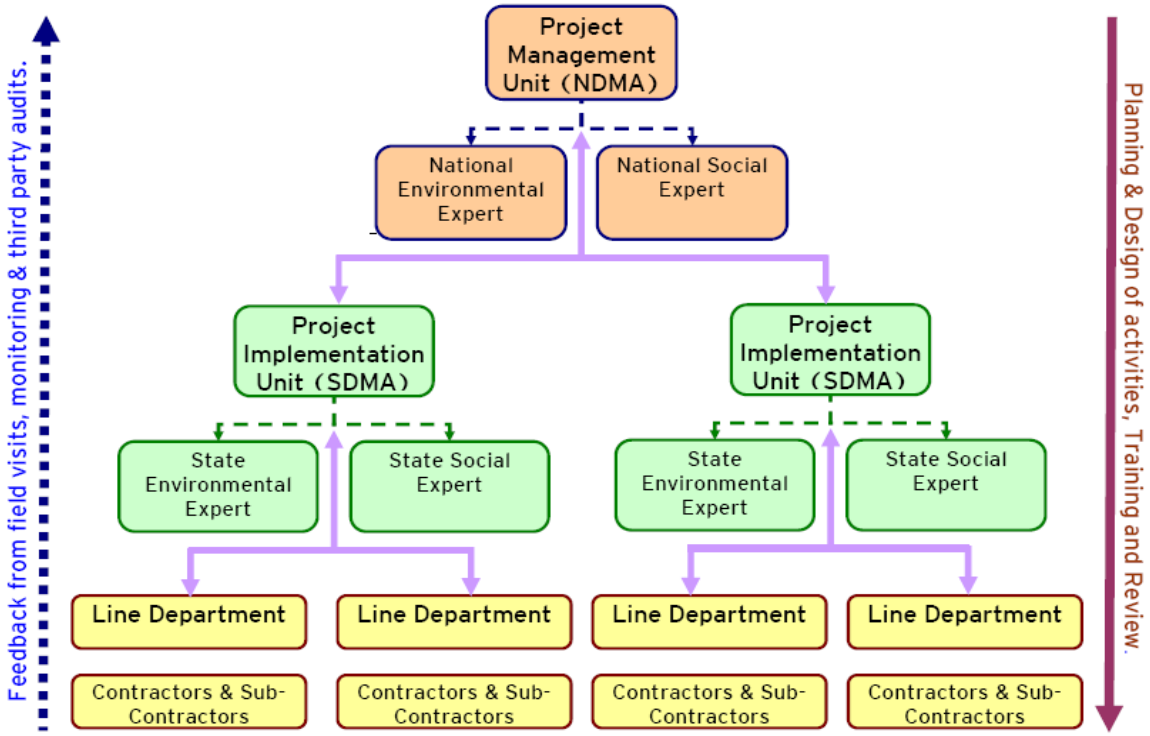
7.3 Implementation Arrangements for Environment and Social Management

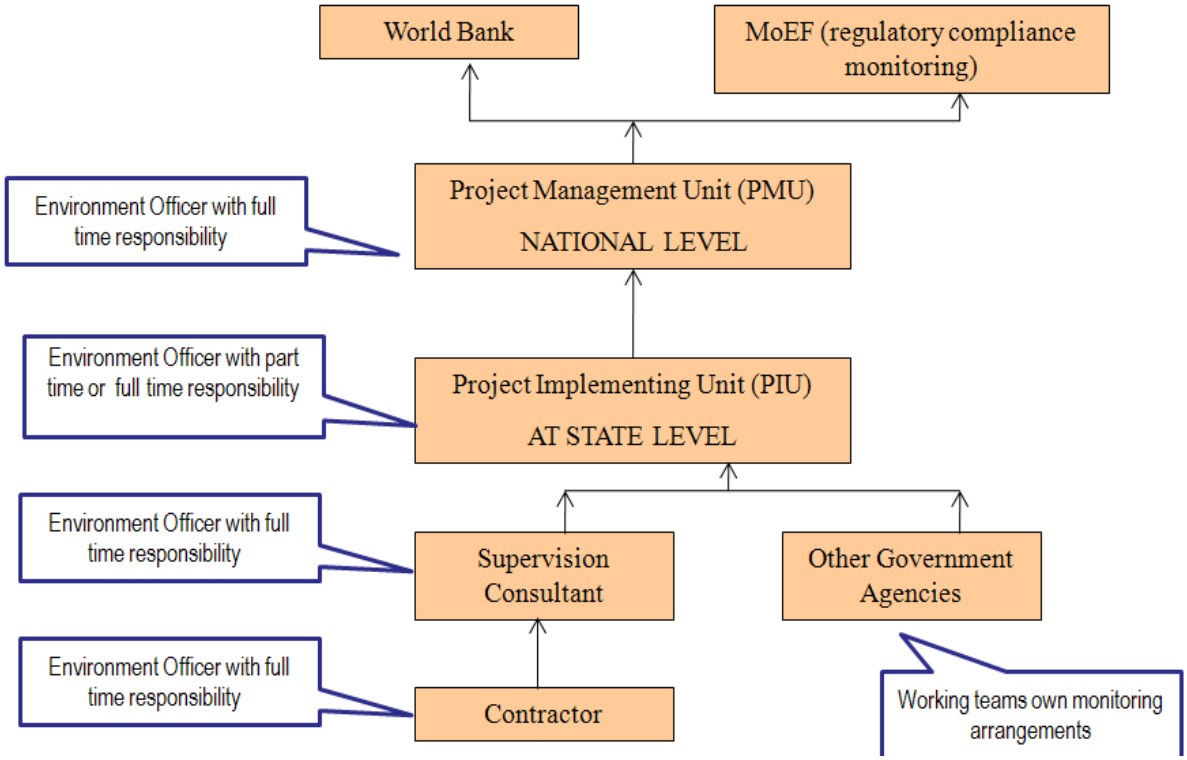
1. Project Management Unit (PMU)

Towards the application and implementation of the ESMF, two officers have been appointed as Environmental & Social Specialists as part of the PMU/national 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 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 Environmental and Social Experts at the national level in NDMA. The Environment and Social Specialists at the national level will in turn provide technical assistance in planning and design of the activities, including reviews and trainings. The arrangements are depicted in the figure given below:





The role and responsibilities of the Environment and Social Specialists at the national level/PMU, NDMA 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 States 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 State PIUs 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 PMU/NDMA and the World Bank.

2. Project Implementation Unit

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. Third Party Auditors

Third party auditors will be appointed by the PIU to provide independent assurance on compliance with the EMSF across project sites. The third party auditors 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 audit 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.

Cyclone Shelters Equipment: Cyclone shelters may be provided with a number of shelter equipment like First Aid Box, Free Kitchen Utensils, Inflatable Tower Lights, Aluminum Ladder, Power Saw, Life Buoy, Life Jacket, Search Light, Stretcher, Siren, Flexi-Water Tank, Fire Extinguisher, Foldable Stretcher, Solar Lantern, Water Filter and Handheld Megaphone. The CSMMC members, DMT volunteers and villagers shall be trained on the use of equipment during disasters.

7.4 Institutional Capacity for Environment and Social Management

The project proposes to use the institutional arrangements (both at the central and state levels) and a safeguards framework similar to that followed for NCRMP I. This approach would help in strengthening aspects/elements that have worked in the first project and facilitate in refining/focusing on issues that require some improvement.

The National Disaster Management Authority (NDMA), on behalf of Ministry of Home Affairs (MHA), is managing the project and has the over-all responsibility for implementation. NDMA is currently providing guidance to the four proposed states under NCRMP II and all six states have developed the required investment proposals. Model DPRs are under preparation currently and first-year investments have been/are being identified in each of these six states.

As in NCRMP-I, the NDMA will provide technical and monitoring support and will coordinate the over-all program. Implementation of the ESMF (including sub-project specific EMPs and RAPs in cases) will be the responsibility of the State PIUs.

The NDMA, which will be the central co-ordinating agency for this project, is familiar with the Bank's safeguard requirements, through its involvement in NCRMP-I. On the environment and social management aspects, the Authority has gained basic familiarity with regard to the Bank's safeguard requirements through the on-going project. NDMA's existing PMU is headed by a Project Director and supported by technical experts and management staff. The current PMU set-up has one specialist each to handle environment and social aspects. Basic insights into typical issues/problems have been developed at most levels, reporting and other monitoring mechanisms have been developed/standardized.

At state level, the existing nodal agency for disaster management (e.g., State Disaster Management Authorities or Revenue/Relief Departments) would be responsible for managing the project. Within this department/agency, a State Project Implementation Units (SPIU) will be created to play the coordination/project management role. The proposed set-up is similar to the one that has been adopted for NCRMP-I states.

The state governments, particularly those of Gujarat, Maharashtra, Karnataka and Kerala are generally aware of environmental issues and management requirements of the Bank on account of their involvement in other Bank projects. However, West Bengal and Goa may require a closer monitoring and over-sight and for this required training and support is being provided both by NDMA 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. Some typical modules/subjects have been listed under the training and capacity building sub-section of this chapter based on the experience and requirements that emerged from NCRMP I implementation. Other specific modules, based on the field observations/issues during implementation, will be covered by NDMA and supported by Bank, as necessary.

7.5 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:

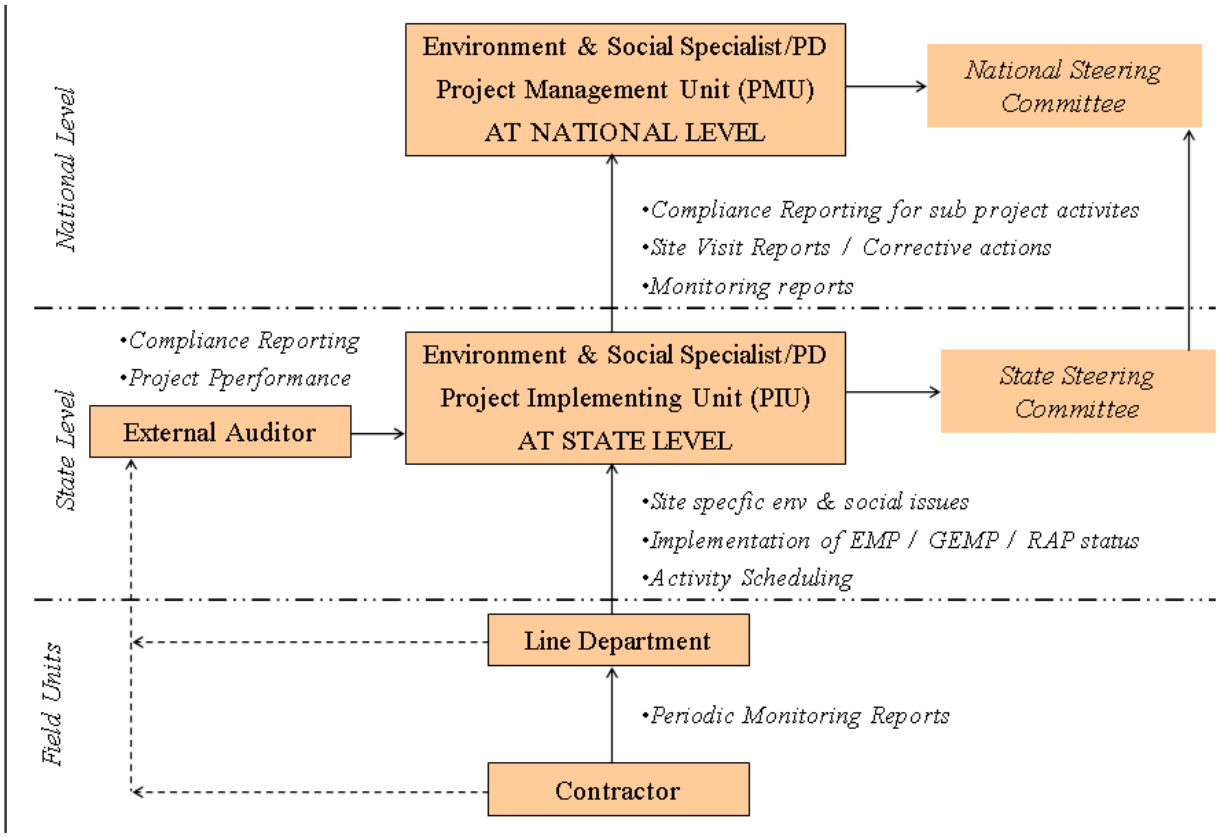
Periodic Physical Progress Monitoring - Physical progress monitoring will be carried out by the line or implementing agencies (IAs) on a monthly basis. The line agencies will carry out monthly surveys in their respective domains to record and report on the progress of works. They will also, in coordination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

The overall reporting mechanism for the project is depicted below in the figure



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.

7.6 Monitoring – Frequency and Responsibility

Each State's PIU cell with designated Environment and Social Specialists shall be responsible for overseeing compliance of the sub-projects to Bank safeguards, GoI 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 monitoring and reporting will be done by line departments/implementing agency to PIU, which in turn will be reporting to PMU.

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	PIU, Project Director and PMU, Environmental and Social Specialists
2	Environment and social site visit report	Quarterly	PIU, Environmental and Social Experts	PIU, Project Director and PMU, Environmental and Social Specialists
3	Regulatory clearances	Quarterly	PIU, Environmental and Social Experts	PIU, Project Director and PMU, Environment Specialist
4	Verification of land to be acquired and status of land acquisition	Monthly	PIU, Social Expert	PIU, Project Director and PIU, Social Expert
5	Distribution of entitlements and assistances	Monthly	PIU, Social Expert	PIU, Social Expert
6	Community consultations	Quarterly	PIU, Environmental and Social Experts	PIU, Project Director and PMU, Environmental and Social Specialists
7	Grievance redressal	Monthly/ Quarterly	PIU, Social Expert	PIU, Project Director and PMU, Environmental and Social Specialists

7.7 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 NCRMP at NDMA.

7.8 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). Since the borrower capacity at the Central Level (NDMA) with regard to environment and social management is still in the process of being strengthened, adequate implementation and support mechanisms would be required for the project. The capacities also vary from state to state – for example - West Bengal may require more support compared to other states.

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 NCRMP II

2) Cyclone Shelter Maintenance and Management Committee members

3) Volunteer Task Force of a Village

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

A database of experts/National and State training institutes may be created for this

purpose. 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 states.

7.9 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 budget 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.