National Cyclone Risk Mitigation Project II

(A World Bank Assisted Project)

Environment and Social Management Framework

Executive Summary

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

(Final Version: February 18, 2015)

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

E.1 Project Background

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 world 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 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 average loss associated with each disaster event, coupled with a greater concentration of exposed assets.

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. To give effect to the strategic interventions, the Ministry of Home Affairs decided to put-in place the "**National Cyclone Risk Mitigation Project**" (NCRMP). 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 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 with World Bank assistance.

E.2 The Project

The Project (NCRMP) intends 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 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 project purpose is 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).

E.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.

E.4 Project Coverage

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.

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. 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). It includes Additional Financing of US$136 million approved in 2013 after Cyclone Phailin. The second phase of the project (**NCRMP II – this project**) 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.

E.5 Project Components and Financing

The NCRMP II will have the following four components:

- Component A: Early Warning Dissemination Systems (EWDS) - US$17.0 million
- Component B: Cyclone Risk Mitigation Infrastructure – US$333.3 million
- Component C: TA for Multi-Hazard Risk Management - US$29.5 million
- Component D: Project Management & Implementation Support - US$23.5 million

The total estimated project financing will be to the tune of USD 403.3, of which IDA financing will be USD 320 million. The Project is the second in a series, which started with an on-going Adaptable Program Loan. The lending instrument will be Investment Project Financing and the implementation period will be five years.

E.6 Need for Environmental and Social Management

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. Also, 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. 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.

E.7 ESMF – Objectives and Contents

This Environment and Social Management Framework was originally prepared for the World Bank funded **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 and will be used in the six participating states proposed to be covered under **NCRMP II.** 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 four states proposed to be covered under NCRMP II.

The ESMF 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. 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.

E.7 Key Baseline Features of Participating States

The NCRMP is structured in phases, based on the risk levels of the states and their implementation readiness. Phase I, under implementation since 2010, includes the states of Odisha and Andhra Pradesh, and in Phase II the states of Gujarat, Maharashtra, Kerala, West Bengal, Karnataka, and Goa are being included. A short description of key existing features for the six participating states is provided below:

Gujarat. The State has the largest share (1,600km, 23%) of the total Indian coastline. Its coast has a high diversity of terrain, shelf depths and hydrology, with some extremely flat and low lying sections. The highest tidal ranges in the Indian

coast are witnessed in the Gulf of Khambat (up to 8m). 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). The state has a large number of key ports and coastal settlements and it serves as gateway for importing petroleum, gas and other bulk goods to North India. About 90,000 houses, spread over 1,300 settlements, are vulnerable to severe damages.

Maharashtra. Located in the north of India along the west coast, the state is the second largest in terms of population (114.2 million) and the third largest in terms of area (307,713 km^2). The State 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 state is prone to a host of hazards, being 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 with wind speeds rarely exceed 155km/h. Heavy urbanization has also increased vulnerability to hazards, in particular urban flooding.

Kerala. The state has a geographical area of 38,863 km^2. It lies between the Arabian Sea on the west and the Western Ghats on the east. Kerala's coast runs 580km in length, while the state itself varies between 35km –120km in width. Kerala receives an average annual rainfall of 3,100mm 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 it prone to severe landslides, flooding and coastal erosion.

The density of coastal urban population is 4,228 persons per km^2, nearly twice the average urban density in the state. Continuous occurrence of high intensity rainfall for a few days is the primary factor contributing to extreme floods in the State. Between the year 1891 to 2007, 31 Cyclonic Storms/Severe Cyclonic Storms have affected the Kerala coast. 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.

West Bengal (WB). 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 storm surge generated by the wind pressure submerges the coastal belt. Another peculiar characteristic of this coast are the high number of rivers and rivulets crisscrossing islands that have elevations of 4 to 5m above sea level. This makes these islands and the populations inhabiting them highly vulnerable.

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. The state has a population of more than 90 million and it is amongst the highest density states in the country. WB has suffered from cyclones, floods, droughts and earthquakes. On May 25th 2009, a severe cyclone, "AILA" lashed the WB coast causing destruction not only in the coastal blocks but also far inland.

Karnataka. The state has a total area of 191,791 km^2, 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 km^2, 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. 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.

E.8 National Policy and Regulatory Framework

Environment: The scope of key relevant environment regulations and their relevance for NCRMP II, is presented in the table below:

Act	Relevance
Environment (Protection) Act, No. 29 of 1996	**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.
Water and Air (Prevention and Control of Pollution) Act, 1974 & 1981	**Relevant.** The construction activities involved to attain the project objective may create localised deterioration in air and water quality, if executed without proper diligence.
Forest (Conservation) Act No. 69 of 1980 and amended in 1988	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.
The Wildlife (Protection) Act I972, Amendment 1991	**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.
Biological Diversity Act 2002 and Rules 2004	**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.
The Ancient Monuments, Archaeological sites and Remains Act, 2010	**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.

Act	Relevance
Coastal Regulation Zone (CRZ) Regulations, 1991 (amended upto 2011)	Relevant. Many of sub-projects are situated in CRZ areas and will require obtaining permission before start of construction.

The policy and regulatory analysis suggests that the proposed sub-projects does not fall under any of the project categories listed in Schedule-I of the Environmental Impact Assessment Notification and hence does not require environmental clearance of the Ministry of Environment and Forests, GOI. The project activities however would require certain permissions, clearances and authorizations from competent authorities during the design, planning and implementation of the sub-projects. These are given below:

- CRZ Clearance/NOC from state authorities (For sub-projects which requires such clearance, such as embankment works if their location and size requires)
- Transfer of Forest land
- Tree Cutting Permission
- Hot mix plants, Wet Mix Macadam plants, Crushers, Batching Plants
- Storage, handling and transport of hazardous materials
- Location/ layout of workers camp, equipment and storage yards
- Liquid and solid waste Discharges from Labour Camp
- Permission for sand mining from river bed

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:

1. Payment of Wages Act, 1936
2. Equal Remuneration Act, 1979
3. Child Labour (Prohibition and Regulation) Act, 1986
4. Minimum Wages Act, 1948
5. The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996
6. Workmen's Compensation Act 1923
7. Contract Labour (Regulation and Abolition) Act, 1970
8. Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 and Rules, 1996
9. The Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 and Rules, 1996
10. Hazardous Wastes (Management and Handling) Rules, 1989

Social: 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.

E.9 World Bank Policies

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

Policy	Applicability to this project
OP/BP 4.01 **Environmental Assessment**	**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. 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**	**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**	**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.
OP/BP 4.36 **Forestry**	**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**	**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**	**Not Applicable.** OP 7.50 will not be triggered for this project as there are no interventions planned/ proposed over or around an international waterway that could cause a potential conflict. There are also no activities that may affect the use or pollute such a waterway.
OP/BP 4.37 **Safety of Dams**	**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**	**Not Applicable.** OP 7.60 is not being triggered as the project is not proposed in any disputed area.
OP 4.12 **Involuntary Resettlement**	**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**	**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.

E.10 Likely Environmental and Social Impacts/Issues

The concomitant sub-projects under NCRMP II are expected to benefit the coastal communities by reducing the vulnerability from cyclone risks and will yield many positive and beneficial impacts. The project is expected to contribute to the following positive impacts.

- Improved public safety during times of cyclones
- Less suffering during times of cyclones and adverse climatic conditions
- Better infrastructure and transportation facilities
- Improved access to services
- Productive use of time
- Improvements in income patterns
- Health and Environmental improvements
- Improvements in quality of life and human dignity
- Opportunities for social interaction
- Improved community participation and sense of ownership

Potential Environmental Impacts/Issues

The proposed investments under Component B of the project to create risk mitigation infrastructure include building of multi-purpose emergency shelters, upgrading of

roads to provide connectivity to cyclone shelters, underground electric cabling, 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.

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 impacts Since works would be largely carried out in the coastal realms of states that are marked by various degrees of vulnerability and some 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.

Potential adverse impacts on account of activities/works proposed under Component B 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; (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 disposal of debris and other construction wastes.

In view of the potential impacts on the environment, 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.

Potential Social Impacts/Issues

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 link roads/bridges and culverts	• Acquisition of small amount / linear strips of private lands • Use of public lands • Resettlement of families	• Connectivity to main roads or shelters • Evacuation route during the times of a disaster

Sub-project/ Activity	Likely Social Impacts	Positive Impacts
	• 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 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 population are dependent for fuel wood/grazing	• 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
Underground Cabling	• Damages to properties • Disturbances to local users	• Uninterrupted electricity supply during periods of calamities

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 six project 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; (c) the major economic occupations of these populations are fishing, salt making and agriculture and that these occupations are more than subsistence economic pursuits. OP 4.10, therefore has not been triggered for this project.

E.11 Environmental and Social Management – Approach, Process and Management Measures

In order to ensure effective environmental management in a scenario where multiple sub-projects are proposed along different locations in the coastal areas of six participating states and their specific locations are not known at the time of over-all project design, an approach for preparation, application and implementation of an Environment and Social Management Framework (ESMF) has been adopted for the project. The overall environment management approach for NCRMP II includes the following key steps:

Identification of sub-project sites: 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.

Environment screening, which helps 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 has been/is being carried out in parallel with the project identification/engineering feasibility studies for the sub-projects under consideration for inclusion in the project. Proposed investments have been/are being screened and sub-projects with no significant adverse environmental impact are being identified for implementation under Phase I. The environment screening process for the project has used a robust methodology supported by use of scientific tools such as GIS and remote sensing techniques, which has helped in avoiding environmentally sensitive sites. The results are being collated state-wise in the form of Screening Reports. The process and documentation structure for environment screening exercise was developed under NCRMP I (currently under implementation in Odisha and Andhra Pradesh) and was found to be quite effective in identifying issues early-on even in a scenario where a large number of sub-projects (400+ in each state) were being considered in a single state.

For sub-projects with a potential for significant adverse environment impacts (as identified from the screening results), an Environment Assessment (EA) and sub-project specific Environment Management Plan (EMP) will be prepared in accordance to Bank's OP 4.01. The EA will include an assessment of baseline conditions, analysis of alternative options, assessment of potential impacts, identification of mitigation measures and preparation of sub-project specific environmental management plans. However, it is expected that sub-projects with the potential for significant adverse environment impacts will be few in number. These are primarily expected to be limited to strengthening of saline embankments/bunds and underground electric cabling works.

Based on screening results, if a sub-project does not require an EA, the generic/standard activity-specific EMP, developed as part of the ESMF, will apply. These generic/standard activity-specific EMPs provide over-all guidance on avoidance, minimization and mitigation measures to be adopted during the planning/selection, design, implementation and operation stages of a sub-project.

EA and SA Studies: 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.

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.

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.

Preparation of Bidding Document/s and integration of environment, health and safety requirements: The considerations/ requirements will be mainstreamed as part of the over-all decision making and execution process. For environment, health and safety requirements to be followed by the Contractor during construction, the requirements in form of conditions/specifications will be integrated into the Bidding Documents and Bills of Quantities (as required/relevant) will be provided for. For this, Generic Environmental Management Plans have been prepared for the project components/activities proposed under the project. These standardised plans have been provided for use by line agencies as part of the ESMF. 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.

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.12 Resettlement Policy Framework

This/Resettlement Policy Framework for NCRMP II is drawn in accordance with the World Bank's Safeguard Policy on Involuntary resettlement (OP 4.12). The framework has been developed based on the recently LA and R&R enactment - The RFCTLARR, 2013. This framework will act as guide for mitigating the social impacts that would be triggered by the sub-projects under NCRMP II. The entitlement matrix applicable for the project is given below:

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 • 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

Type of Impact	Unit of Entitlement	Details of Entitlement
		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 Temporary disruption to access or passage, particularly in congested slums if the option of mobile units is not used;	Owner/ Affected Person	• Payment of damages if any to structures • Temporary access would be provided, where necessary.
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	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

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 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

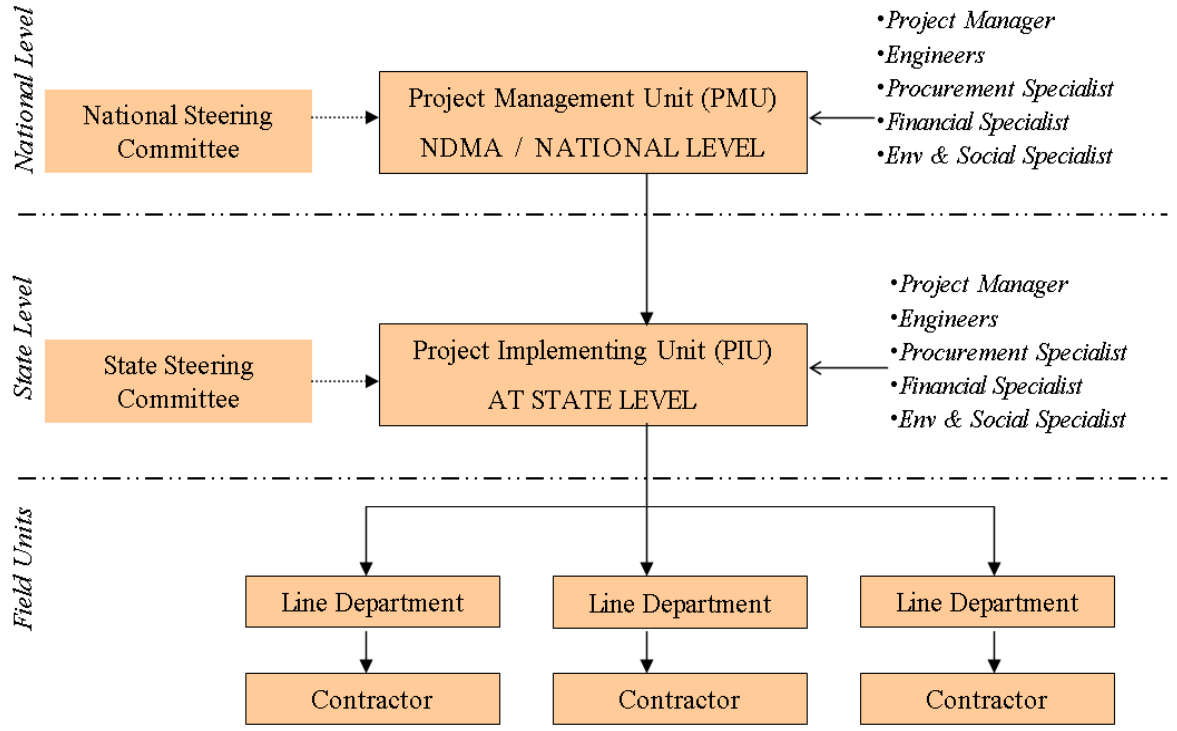
given; that the donor is the legitimate owner of the land; and that the donor is fully informed of the nature of the project, the implications of donating the property, and his entitlements as provided for in the land acquisition and resettlement policy being adopted by the project.

E.13 Grievance Redressal

In order to address grievances related to land acquisition and resettlement and rehabilitation, the following is in place. (I) For all land acquired through LA Act, the system established in RFCTLARR 2013 will be followed; (II) 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; (III) 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.

E.14 Institutional Arrangements

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



The following provisions include the arrangements made for the effective implementation of the ESMF:

Implementation of ESMF and Safeguards Supervision: This is basically the responsibility of NDMA/PMU at national level and SPIUs at state levels. While the compliance to ESMF will be ensured through review / appraisal of sub-project proposals and progress reports on implementation, all the sub-projects in implementation will be visited at regular intervals at least once two months by PMU to check if all safeguard requirements are met and to identify any issues that need

to be addressed. NDMA would submit quarterly progress reports to The World Bank on safeguards implementation.

Implementation of Sub-Project Environment and Social Screening/ RAPs/EMPs: The sub-project level safeguards preparation and implementation will be done by the respective project implementing agencies/line departments with the help of environmental and social specialists of the SPIU. In the event of sub-projects spread over a larger geo-graphic area, the line departments will designate suitable officers /engineers to implement the safeguards.

Community Oversight: Community Based Cyclone Shelter Management and Maintenance Committees (CSMMCs) will be formed under the Chairmanship of local Block Development Officer and a volunteer from the community as Secretary. The buildings will be handed over to the concerned CSMMC for management and maintenance. The CSMMC will take the charge of day-to-day management and maintenance of the building.

E.15 Monitoring and Evaluation

The ESMF requires detailed supervision, monitoring and evaluation of the impact of the project on the environment and social aspects. In order to carry out this, NDMA will have specific arrangements made at state and division/ district level. NDMA already has an Environmental Specialist and Social Specialist on board. The NDMA will guide the State and Field level implementing agencies on how to implement the provisions of this ESMF. Further the NDMA will incorporate the provisions of this ESMF as actionable points in the Project Operations Manual or other similar document for the project. These will be non-negotiable and will have to be followed by all the field units of the implementing agencies. The Environmental and Social Specialists will oversee the application of these provisions and guide the process and implementation of ESMF at field level, while at the same time building the capacity of the field units.

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

The concurrent internal environmental social monitoring will be done as part of the regular monitoring by the NDMA, SPIU and line departments. However, independent consultants (Third Party Auditors) appointed by SPIUs, will do the quarterly environmental and social monitoring of selected sub-projects for safeguards compliance.

E.16 Training and Capacity Building

Training and sensitization is required at periodic intervals to ensure that sub-project activities are carried out as per the requirements set forth in this ESMF. Training shall be organized by PMU and SPIUs for: (1) Implementation Agency Staff involved in NCRMP II; (2) Cyclone Shelter Maintenance and Management Committee members; (3) Volunteer Task Force of a Village.

E.17 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. All administrative costs for implementing the ESMF shall be budgeted for as part of the PIU and PMU costing.