

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC885

Project Name	National Cyclone Risk Mitigation Project-II (P144726)
Region	SOUTH ASIA
Country	India
Sector(s)	Flood protection (50%), Rural and Inter-Urban Roads and Highways (40%), Telecommunications (10%)
Theme(s)	Natural disaster management (50%), Climate change (20%), Rural services and infrastructure (20%), Vulnerability assessment and monitoring (10%)
Lending Instrument	Adaptable Program Loan
Project ID	P144726
Borrower(s)	Department of Economic Affairs
Implementing Agency	National Disaster Management Authority, Department of Relief and Rehabilitation, Department of Disaster Management, Kerala Department of Revenue, Gujarat State Disaster Management Authority, Government of Gujarat
Environmental Category	A-Full Assessment
Date PID Prepared/ Updated	25-Feb-2014
Date PID Approved/ Disclosed	26-Feb-2014
Estimated Date of Appraisal Completion	30-May-2014
Estimated Date of Board Approval	29-Jul-2014
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

India is one of the most densely populated countries in the world with over one billion people and is prone to a range of natural disasters such as cyclones, floods, earthquakes, landslides, etc.

Approximately 5,700 km of the total 7,500 km of coastline is exposed to severe cyclones, and an estimated 40% of the total population lives within 100 km of the coast. On average between one third to one half of tropical cyclones affecting South Asia hit the Indian coastline, which is by nature particularly susceptible to storm surge due to effects including shallow coastal shelf and tidal characteristics. Low-lying terrain, high population density and limited community awareness makes the population in these coastal States/Union Territories ('UTs') extremely vulnerable. In spite of

existing cyclone warning systems, the Orissa super-cyclone of 1999 killed over 10,000 people and further millions suffered severe physical and financial losses. Coastal regions typically possess rich human and natural resources and are important economic, social, and developmental drivers of the region. Coastal populations and economic assets are prone to multiple hazards such as high frequency and intensity of cyclones, storm surges, and coastal floods. There is therefore a need to undertake risk and mitigation measures to address the risk of cyclones in the coastal zones of the country.

The four proposed states are exposed to varying degrees of natural hazards. The profile for each of the states is given below:

Gujarat

The western 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).

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. Winds of the 182-200 km/h sub-class reach further inland to affect much of Jamnagar, part of Rajkot, Junagadh and Kachchh districts. About 90,000 houses mostly in coastal low lying areas spread over 1,300 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 community settlements are prone to storm surges of various intensities along the Gujarat coast.

Maharashtra

Maharashtra, located 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 six 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.

Kerala

The southern state of 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 four 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.

Between 1891 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.

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 the state 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 West Bengal 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 West Bengal coast causing destruction not only in the coastal blocks but also far inland. Coastal communities in the state 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.

Sectoral and Institutional Context

The Govt. of India initiated the National Cyclone Risk Mitigation Project (NCRMP) in 2010 with World Bank assistance with a view to address the cyclone risks in the country. The project identified 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 cyclone risks:

- a. Category I: High vulnerability coastal States/UTs i.e. Andhra Pradesh, Gujarat, Odisha, Tamil Nadu and West Bengal.
- b. Category II: Low vulnerability coastal States/UTs i.e. Goa, Karnataka, Kerala, Maharashtra, Andaman & Nicobar Islands, Daman & Diu, Lakshadweep and Pondicherry.

The project is a strong example of integrating disaster risk management with climate change adaptation in building the resilience of communities in dealing with natural hazards and the impacts of climate change.

The project was designed as a horizontal Adaptable Program Loan (APL) in three phases. Phase I is an ongoing project in the states of Odisha and Andhra Pradesh (AP). The remaining coastal states will be covered under Phases II and III. As per the defined triggers, each of the new phases will be appraised to confirm the implementation readiness and learn from the earlier phases. This allows continuous adjustment of project design, early risk identification if any, and implementation of corrective measures. The programmatic approach will help in the creation and upscaling of the monitoring and evaluation capacities of the NDMA and other state nodal agencies and will relate to the readiness of various coastal states vis-à-vis identification and detailing of the specific investment proposals. All three phases will have the same development objectives.

NCRMP - I

Phase I of the project is being implemented through the National Disaster Management Authority (NDMA) in co-ordination with the states of Andhra Pradesh and Odisha and the National Institute of Disaster Management (NIDM), New Delhi. Phase I is budgeted at US\$ 319 million with IDA Credit amounting to US\$255 million. The remaining amount of US\$ 64 million is being contributed by the states of Andhra Pradesh and Orissa.

Current Implementation Status for NCRMP I:

The project achieved significant progress in its three and a half years of implementation: Odisha has awarded all of its contracts while Andhra Pradesh has 16 contracts remaining to be awarded. The deadline for awarding of all contracts under the project has been set to April 30, 2014. As of February 2014, the Project stands at 95 percent of contracts awarded with a commitment amount of 90 percent of the total program. The construction of twenty eight shelters has already been completed as well as 150 kilometers of evacuation roads and 7 bridges. The technical studies under the project have also been contracted and are underway. Currently, disbursements stand at US\$52.3 million, 20.8 percent of the total project financing, and is poised for growth with work contracts having been awarded.

Cyclone Phailin: On October 12, 2013 Cyclone Phailin hit the states of Odisha and Andhra Pradesh with wind gusts up to 220 kilometer per hour, heavy rains measuring up to 25 centimeter and storm surge over 3 meters; the sea pushed in as much as 40 meters along parts of the coast. It was the strongest cyclone to hit the Indian coast in the past 14 years: a category 4 cyclone (similar to the Super Cyclone 05B of 1999 to hit Odisha which killed more than 10,000 people) destroying 275,000 homes and leaving 1.67 million homeless. The cyclone hit a densely populated area, with 4.5 million people within the hurricane force wind path and significant informal housing.

Reports however came of a death toll of 44, 0.5 percent that of the 1999 cyclone; the NCRMP I contributed to this enhanced resilience. The state governments, in collaboration with the National Disaster Management Authority (NDMA) evacuated close to 1,000,000 people from low-lying coastal areas in the states of Odisha and Andhra Pradesh - the target states of the NCRMP - the largest such operation in India's history. State authorities set up over 1,200 relief camps and stocked over 500 cyclone shelter with adequate food, water and supplies. Over 2,300 officers from the National Disaster Response Force and 600 personnel from the Indian Army fanned out to provide relief and assess the damage across 14,500 affected villages.

The Cyclone also caused implementation delays in NCRMP-I. However, implementation remains on pace although some targets might need to be revised and/or additional financing considered.

NCRMP - II

The trigger indicator for Phase II is the Implementation Readiness of participating states. This has meant that participating states should have their investment proposals ready and vetted by the NDMA.

In the Phase II it is proposed to include the states of Gujarat, Maharashtra, Kerala and West Bengal. NDMA has been providing guidance to these four proposed States and all four states have developed robust investment proposals. Model DPRs have been created and first year investments have been identified for all four states. These steps taken by the states of Gujarat, Maharashtra, Kerala and West Bengal satisfy the Implementation Readiness trigger for Phase II of the NCRMP.

Relationship to CAS

The project aims to assist the GoI and the vulnerable coastal states in mitigating cyclone related risks. This will be the second phase to the NCRMP – I, the first Bank funded project in India exclusively focusing on ex-ante disaster risk mitigation. NDMA is expected to strengthen the policy environment in the country and build its capacities to manage various disaster risk reduction programs, while helping the states in effective implementation through its monitoring.

The Project is consistent with the World Bank Group's Country Partnership Strategy (CPS) 2013-2017 which focuses on three main engagement areas: (i) integration, through infrastructure and strengthening of market mechanisms; (ii) transformation, through capacity building of urban and rural institutions and (iii) inclusion, through social programs and promotion of human development. The proposed Project contributes to all three areas but (i) and (iii) directly: integration is addressed by connecting communities through additional roads and bridges not only used for evacuation and resilience but also for market integration; inclusion is developed through building resilience infrastructure which support fragile segments of the population most at risk of being left behind. The original project also builds on area (ii) by enhancing capacity at both central and community levels to promote disaster risk management capacity and communication systems.

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The Project Development Objective of the National Cyclone Risk Mitigation Project (II) (NCRMP-II) is to reduce vulnerability of coastal communities in project states to cyclone and other hydro meteorological hazards.

Key Results (From PCN)

The key results expected are: (i) improved access to early warning, (ii) improved access to evacuation infrastructure, and (iii) increased capacity of communities to be better prepared and for government to respond to natural hazards.

The primary beneficiaries will be coastal communities including other households in the vicinity whose lives are impacted by hydro-meteorological and cyclone related hazards.

III. Preliminary Description

Concept Description

A. Concept

1. Description

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 and West Bengal. Multi-disaster resistant infrastructure including shelters, access/evacuation roads and early warning systems will save lives, and on the whole reduce vulnerability of coastal communities to a range of natural hazards. Capacity building of government institutions, civil society and vulnerable communities in Disaster Risk Management along with empowering communities to be able to maintain and utilize the risk reduction infrastructure would ensure long term sustainability.

By integrating activities from several departments, the project seeks to maximize complementarity of action. Improved road and bridge network will also increase access to health care, education and markets. In addition, several activities will leverage each other. For example, evacuation shelters will function as community halls, school classrooms, and vocational training centres assuring all round development of the community and will bring about a sense of ownership to ensure long term sustainability. Particular attention will be given to institutional strengthening on aspects of risk management whether it is government agencies, NGOs or the community with the larger objective of risk reduction/ mitigation. The project will comprise the following components:

Project Components under NCRMP - II.

The Project has five principal components: A) Early Warning Dissemination System (EWDS) and Capacity building for coastal communities; B) Cyclone Risk Mitigation Infrastructure; C) Technical Assistance for Strengthening Capacity towards disaster risk mitigation; D) Project Management and Implementation Support; and (E) Emergency Contingent Financing. The early warning and cyclone risk mitigation infrastructure components will be implemented in four states; Gujarat, Maharashtra, Kerala and West Bengal along with technical assistance for DRM capacity strengthening will be available, but centrally managed by NDMA / NIDM. A short description of objectives and activities in each of the components is given below:

Component A: EWDS and Capacity building for Coastal Communities – US\$ 15 million: The overall objective of this component is to reduce the vulnerability of coastal communities by addressing the existing gap in dissemination of warning to the communities. The component will support: A.1) Installation and operation of EWDS allowing the state and/or district/sub district level control centre to send communication directly to the villages using Global System for Mobile Communications (GSM)/Code Division Multiple Access (CDMA) based technology including

strengthening emergency operation centers to channelize the warning through different communication modes. The component also includes providing satellite phones to key officials to fail proof the EWDS and also pilot new radio based wireless communication technology in one block in each state; and A.2) Strengthening capacity: (i) in 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.

The experiences gained in its implementation in Phase I will be integrated, improved and carried forward for the states of Kerala, Maharashtra, Gujarat and West Bengal as well as ensure uniformity in the EWDS. NDMA is in the process of hiring a consultant to help design and support procurement and installation of EWDS equipment for phase I which will also be used for Phase II.

Component B: Cyclone Risk Mitigation Infrastructure – US\$ 278 million: The objective of this component is to improve access to emergency shelter, evacuation and protection against cyclone and other hydro meteorological hazards such as wind storms, flooding and storm surge in high risk areas. Each of the states reviewed the existing system and gaps and developed risk mitigation infrastructure portfolio. For emergency shelters, identification mechanism included assessment of total requirement, available shelters including other government and private buildings and the gap. The portfolio includes a broad set of measures such as investments in multipurpose emergency shelters, up-grading of existing roads and providing bridges suitable for evacuation, drainage improvement measures and repair and up-grading of existing embankments, and creation of corpus funds for operation and maintenance of emergency shelters.

Component C: Technical Assistance for Risk and Vulnerability Modeling and Capacity Building in Disaster Risk Management – US\$ 10 million: The objective of this component is to help understand risk and vulnerabilities better, and prepare the key institutions for addressing them effectively across all coastal states and Union Territories. In Phase I, NDMA is undertaking a hazard and risk assessment of coastal India. The understanding of risk and vulnerabilities from Phase I will be carried forward through improved probabilistic risk modeling allowing for modeling of multi-hazard and cascading impacts of disasters along coastal India. In addition Phase II will also implement on a pilot basis key findings from the Capacity Building study (at national, state and local level) undertaken by NIDM in Phase I.

Component D: Project Management and Implementation Support- US\$ 17 million : This component provides support for project management by financing incremental operating costs for PMU, PIUs, nodal units in line departments and National Institute of Disaster Management (NIDM), office equipment, training and exposure visits and consulting services for specialist activities.

Component E: Contingent Emergency Financing - US\$ 0 million (all four states): In the event of a major natural disaster, the governments in question may request the Bank to re-allocate project funds to support response and reconstruction. This component would draw resources from the unallocated expenditure category and/or allow the governments of respective states to request the Bank to re-categorize and reallocate financing from other project components to partially cover emergency response and recovery costs. This component could also be used to channel additional funds should they become available as a result of the emergency.

Safeguards Note:

The project will maintain 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. NCRMP-I's Environmental and Social Management Framework (ESMF) will be adapted for the proposed project and appropriately disclosed.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04	x		
Forests OP/BP 4.36			x
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11	x		
Indigenous Peoples OP/BP 4.10			x
Involuntary Resettlement OP/BP 4.12	x		
Safety of Dams OP/BP 4.37		x	
Projects on International Waterways OP/BP 7.50		x	
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	320.00	Total Bank Financing:	250.00
Financing Gap:	0.00		
Financing Source			Amount
BORROWER/RECIPIENT			70.00
International Development Association (IDA)			250.00
Total			320.00

VI. Contact point

World Bank

Contact: Saurabh Suresh Dani
 Title: Senior Disaster Risk Management Specialist
 Tel: 473-8649
 Email: sdani@worldbank.org

Borrower/Client/Recipient

Name: Department of Economic Affairs
 Contact: Ms. Aparna Bhatia
 Title: Director
 Tel: 91-11-23092345

Email: aparnabhatia2002@gmail.com

Implementing Agencies

Name: National Disaster Management Authority

Contact: Mr. S.P. Vasudeva

Title: Project Director

Tel: (91-11) 2670-1860

Email: spvasudeva@yahoo.com

Name: Department of Relief and Rehabilitation

Contact: Mr. Milind Mhaiskar

Title: Secretary

Tel: 022-22025274

Email:

Name: Department of Disaster Management

Contact: Mr. Indivar Pandey

Title: Secretary

Tel: 033-22143678

Email:

Name: Kerala Department of Revenue

Contact: Mr. G Kamala Vardhana Rao

Title: Secretary

Tel: 0471-2322330

Email:

Name: Gujarat State Disaster Management Authority, Government of Gujarat

Contact: Dr. Ranjit Bannerji, IAS

Title: Chief Executive Officer

Tel: 079-23259502

Email:

VII. For more information contact:

The InfoShop

The World Bank

1818 H Street, NW

Washington, D.C. 20433

Telephone: (202) 458-4500

Fax: (202) 522-1500

Web: <http://www.worldbank.org/infosshop>