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Report No: PAD1408

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF USD \$250 MILLION  
(SDR 177.8 MILLION, ESTIMATE)

TO

INDIA

FOR A

ANDHRA PRADESH DISASTER RECOVERY PROJECT

June 4, 2015

Social, Urban, Rural and Resilience (SURR) Global Practice  
India Country Management Unit  
South Asia Region

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CURRENCY EQUIVALENTS  
(Exchange Rate Effective May 22, 2015)  
Currency Unit = Indian Rupees (INR)  
INR 62.86 = US\$1

FISCAL YEAR  
April 01 – March 31

### ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
AP	Andhra Pradesh
APDRP	Andhra Pradesh Disaster Recovery Project
APFD	Andhra Pradesh Forest Department
APRDMD	Andhra Pradesh Revenue (Disaster Management) Department
APSDMA	Andhra Pradesh State Disaster Management Authority
ASCI	Administrative Staff College of India
BCR	Benefit Cost Ratio
BP	Bank Policy
BSEAP	Board for Secondary Education Andhra Pradesh
CAG	Comptroller and Auditor General
CBA	Cost Benefit Analysis
CBDRM	Community Based Disaster Risk Management
CDRRP	Coastal Disaster Risk Reduction Project
CPS	Country Partnership Strategy
CQS	Consultant's Qualification
DA	Designated Account
DDMA	District Disaster Management Authority
DC	Direct Contracting
DGS&D	Directorate General of Supplies & Disposals
DEA	Department of Economic Affairs
DPR	Detailed Project Report
DRD	Department of Rural Development
DRM	Disaster Risk Management
DSS	Decision Support System
EA	Environmental Assessment
EDC	Eco Development Committee
ESIA	Environment and Social Impact Assessment
EMP	Environmental Management Plan
EPDCL	Andhra Pradesh Eastern Power Distribution Company Ltd
ESIA	Environment and Social Impact Assessment
ESMF	Environmental and Social Management Framework
GM	General Manager
GoI	Government of India
GoAP	Government of Andhra Pradesh

GRM	Grievance Redress Mechanisms
GRS	Grievance Redress Service
GVMC	Greater Visakhapatnam Municipal Corporation
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
ICB	International Competitive Bidding
IDA	International Development Association
IFR	Interim (Unaudited) Financial Report
IMD	India Meteorological Department
IPDP	Indigenous Peoples' Development Plan
IPMF	Indigenous Peoples Management Framework
IRC	Indian Roads Congress
ISP	Implementation Support Plan
IUCN	International Union for Conservation of Nature
LD	Line Department
JRDNA	Joint Rapid Damage and Needs Assessment
MA&UDD	Municipal Administration and Urban Development Department
MDRs	Major District Roads
M&E	Monitoring & Evaluation
MEPMA	Mission for Eliminate Poverty in Municipal Areas
MoRD	Ministry of Rural Development
MoRTH	Ministry of Road Transport and Highways
MPCS-MMC	Multi-purpose Cyclone Shelter – Maintenance and Management Committee
NCB	National Competitive Bidding
NCRMP	National Cyclone Risk Mitigation Project
NDMA	National Disaster Management Authority
NGO	Non-Governmental Organization
NIFM	National Institute of Financial Management
OP	Operational Policy
PAP	Project Affected Person
PDO	Project Development Objective
PIE	Project Implementation Entity
PIU	Project Implementation Unit
PMU	Project Management Unit
PP	Procurement Plan
PRA	Participatory Rural Appraisal
PRAMS	Procurement Risk Assessment System
PRD	Panchayati Raj Department
PPR	Periodic Performance Review
QCBS	Quality and Cost Based Selection
RAP	Resettlement Action Plans
R&BD	Road and Building Department
R&R	Resettlement and Rehabilitation
RPF	Resettlement Policy Framework
SC	Scheduled Cast
SSC	State Steering Committee

SDMA	State Disaster Management Authority
SDR	Special Drawing Rights
SDRF	State Disaster Response Force
SEPA	Procurement Plan Management System
SIL	Specific Investment Loan
SORT	Systematic Operational Risk-Rating Tool (SORT).
SPIU	State Project Implementation Unit
SRM	Supervision, Reporting & Monitoring
ST	Scheduled Tribe
ToR	Terms of Reference
TPQA	Third Party Quality Audit
VSS	Vana Suraksha Samiti
VUDA	Visakhapatnam Urban Development Authority
VoSL	Value of Statistical Life

Regional Vice President:	Annette Dixon
Country Director:	Onno Ruhl
Senior Global Practice Director:	Ede Jorge Iijasz-Vasquez
Practice Manager:	Bernice K. Van Bronkhorst
Task Team Leader:	Deepak Singh
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**INDIA**  
**ANDHRA PRADESH DISASTER RECOVERY PROJECT**

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**PAD DATA SHEET***India**Andhra Pradesh Disaster Recovery Project (P154847)***PROJECT APPRAISAL DOCUMENT***SOUTH ASIA**0000009081*

Report No.: PAD1408

Basic Information			
Project ID P154847	EA Category A - Full Assessment	Team Leader(s) Deepak Singh Vasudha Sarda Thawakar/ Neha Vyas	
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ X ] - Natural or man-made disaster		
	Financial Intermediaries [   ]		
	Series of Projects [   ]		
Project Implementation Start Date 17-Jun-2015	Project Implementation End Date 30-Sep-2020		
Expected Effectiveness Date 30-Jul-2015	Expected Closing Date 30-Sep-2020		
Joint IFC No			
Practice Manager/Manager Bernice K. Van Bronkhorst	Senior Global Practice Director Ede Jorge Ijjasz-Vasquez	Country Director Onno Ruhl	Regional Vice President Annette Dixon
Borrower: India			
Responsible Agency: Revenue (Disaster Management) Department, Government of Andhra Pradesh			
Contact: Mr. J C Sharma	Title:	Principal Secretary, Andhra Pradesh Revenue (Disaster Management) Department	
Telephone No.: 040-23459015	Email:	<a href="mailto:prlsecy_rev@ap.gov.in">prlsecy_rev@ap.gov.in</a>	
Safeguards Deferral (from Decision Review Decision Note)			
Will the review of Safeguards be deferred? [   ] Yes [ X ] No			

Project Financing Data(in USD Million)							
<input type="checkbox"/> Loan	<input type="checkbox"/> IDA Grant	<input type="checkbox"/> Guarantee					
<input checked="" type="checkbox"/> Credit	<input type="checkbox"/> Grant	<input type="checkbox"/> Other					
Total Project Cost:	370.00			Total Bank Financing:	250.00		
Financing Gap:	0.00						
Financing Source				Amount			
BORROWER/RECIPIENT				120.00			
International Development Association (IDA)				250.00			
Total				370.00			
Expected Disbursements (in USD Million)							
Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Annual	0.00	20.00	30.00	50.00	75.00	70.00	5.00
Cumulative	0.00	20.00	50.00	100.00	175.00	245.00	250.00
Institutional Data							
Practice Area (Lead)							
Social, Urban, Rural and Resilience Global Practice							
Contributing Practice Areas							
Agriculture, Energy & Extractives, Environment & Natural Resources, Transport & ICT							
Cross Cutting Topics							
<input checked="" type="checkbox"/> Climate Change							
<input type="checkbox"/> Fragile, Conflict & Violence							
<input checked="" type="checkbox"/> Gender							
<input type="checkbox"/> Jobs							
<input type="checkbox"/> Public Private Partnership							
Sectors / Climate Change							
Sector (Maximum 5 and total % must equal 100)							
Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %			
Agriculture, fishing, and forestry	General agriculture, fishing and forestry sector	10	50				
Energy and mining	General energy sector	30	50				
Water, sanitation and flood protection	General water, sanitation and flood protection	30	30				



	sector			
Transportation	General transportation sector	30	30	
Total		100		
<input type="checkbox"/> I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.				
<b>Themes</b>				
Theme (Maximum 5 and total % must equal 100)				
Major theme	Theme	%		
Social protection and risk management	Natural disaster management	50		
Rural development	Rural services and infrastructure	30		
Environment and natural resources management	Climate change	20		
Total		100		
<b>Proposed Development Objective(s)</b>				
The Project Development Objectives (PDO) are to restore, improve, and enhance resilience of public services, environmental facilities, and livelihoods in Targeted Communities, and to enhance the capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.				
<b>Components</b>				
<b>Component Name</b>		<b>Cost (USD Millions)</b>		
Resilient electrical network		120.00		
Restoration of connectivity and shelter infrastructure		105.00		
Restoration and protection of the beach front		65.00		
Restoration of environmental services and facilities and livelihood support		20.00		
Capacity building and technical support for disaster risk management		35.00		
Project implementation support		25.00		
Contingency emergency response		0.00		
<b>Systematic Operations Risk- Rating Tool (SORT)</b>				
<b>Risk Category</b>		<b>Rating</b>		
1. Political and Governance		Moderate		
2. Macroeconomic		Low		
3. Sector Strategies and Policies		Moderate		
4. Technical Design of Project or Program		Moderate		
5. Institutional Capacity for Implementation and Sustainability		Moderate		
6. Fiduciary		Substantial		

7. Environment and Social	Substantial		
8. Stakeholders	Moderate		
9. Other			
<b>OVERALL</b>	Substantial		
<b>Compliance</b>			
<b>Policy</b>			
Does the project depart from the CAS in content or in other significant respects?	Yes [ ]	No [ X ]	
Does the project require any waivers of Bank policies?	Yes [ ]	No [ X ]	
Have these been approved by Bank management?	Yes [ ]	No [ ]	
Is approval for any policy waiver sought from the Board?	Yes [ ]	No [ X ]	
Does the project meet the Regional criteria for readiness for implementation?	Yes [ X ]	No [ ]	
<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>	
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	
<b>Legal Covenants</b>			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Ineligible Expenditures	Yes	N/A	Project duration
<b>Description of Covenant</b>			
The PIE to pay any land acquisition, and any compensation, resettlement and rehabilitation payments out of its own resources.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Implementing Units -I	Yes	Within (3) months after the Effective	Project duration

		Date and prior to the commencement of activities under each respective Component	
<b>Description of Covenant</b>			
The PIE to establish, or cause to be established, and thereafter maintain or cause to be maintained, 6 PIUs within EPDCL, PRD, R&BD, GVMC, VUDA, and APFD with adequate resources, to carry out day to day Project activities including cost estimates, procurement and bids related documentation and reports, contracts, government clearances and permits, financial management under their respective Components, ensuring enforcement/compliance with safeguard documents, etc.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Implementation Units-II	Yes	N/A	Project duration
<b>Description of Covenant</b>			
The PIE to maintain (a) a SSC for policy guidance and general oversight; and (b) a PMU within the APRDMD for coordinating the day-to-day financial management and reporting under the Project, carrying out the activities under component 5, monitoring and evaluating the PIUs implementation of other Components, and ensuring compliance with safeguard documents and the handling of Project grievances.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Implementation Units-III	Yes	Within 3 months after the Effective Date	Project duration
<b>Description of Covenant</b>			
The PIE to hire a senior finance officer or chartered accountant with skills, qualifications, experience and terms of reference agreed with the Association.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Restoration of Environmental Services and Facilities and Livelihood Support	Yes	Prior to the Participating Agencies' carrying out of any procurement activities under Component 4	Project duration
<b>Description of Covenant</b>			
The PIE to (i) determine if assistance of one or more Participating Agencies is necessary in the implementation of Component 4; (ii) identify, through APFD, such Participating Agency (ies) in a manner agreed with the Association; and (iii) enter into a written agreement with such Participating Agency (ies) under terms and conditions agreed with the Association to comply with all the fiduciary and safeguard standards, procedures and requirements.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Third Party Quality Consulting Firm(s)	Yes	Within 6 months after the Effective Date	Project duration
<b>Description of Covenant</b>			
The PIE to select and hire the services of (a) third party quality consulting firm(s) to carry out quarterly quality monitoring and reporting to the PMU on contract performance and compliance with and/or			

implementation of the statutory/regulatory requirements, safeguards documents and Operations Manual.

<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Operations Manual	Yes	Within 1 month after the Effective Date and in any event prior to commencement of activities under the Project	Project duration

**Description of Covenant**

The PIE to prepare and adopt and Operations Manual as agreed with the Association, and thereafter, implement the Project in accordance with such manual.

<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Safeguard Documents	Yes	N/A	Project duration

**Description of Covenant**

The PIE to carry out, and cause each of the Line Departments and Agencies to carry out, the Project in accordance with the ESMF, and the EMP(s), RAP(s), and/or IPDP(s) (the Safeguard Documents).

<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Resilient Electrical Network	Yes	Within 2 months after the Effective Date and prior to the commencement of any activities by EPDCL under Component 1	Project duration

**Description of Covenant**

The PIE to enter into a written agreement with EPDCL under terms and conditions agreed with the Association to comply with all the fiduciary and safeguard standards, procedures and requirements.

<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Screening of Activities - Social & Environmental Documents	Yes	Prior to bidding for any contract	Project duration

**Description of Covenant**

The PIE to (a) screen (through the PMU/PIUs) any proposed activities as per the ESMF and, whenever required, prepare the necessary EMP(s), RAP(s) and/or IPDP(s); and (b) publicly disclose those safeguards documents, including an executive summary in local language(s) at the relevant project's sites.

<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Government Permits- Compensation/Relocation Assistance	Yes	N/A	Project duration

**Description of Covenant**

The PIE to ensure that prior to commencing any civil works: (a) all governmental permits and clearances have been obtained and pre-constructions conditions imposed have been met; and (b) all resettlement compensation and relocation assistance has been paid/provided.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Contractors' Safeguard Obligations	Yes	N/A	Project duration
<b>Description of Covenant</b>			
The PIE to include compliance with the Safeguard Documents as part of the contractors' obligations pursuant to the bidding documents.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Safeguard Reporting & Monitoring	Yes	N/A	Quarterly
<b>Description of Covenant</b>			
The PIE to: (i) maintain monitoring and evaluation protocols and record keeping procedures to supervise and assess compliance with Safeguard Documents; and (ii) report on quarterly basis on compliance with Safeguard Documents.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Complaints Mechanism	Yes	N/A	Project duration
<b>Description of Covenant</b>			
The PIE to establish and/or strengthen, maintain and operate a grievance redress mechanism at all levels.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
CER Component	No	N/A	If triggered
<b>Description of Covenant</b>			
The PIE jointly with India to: (a) determine the occurrence of an eligible crisis or emergency; (b) prepare a component-specific operations manual; (c) identify, strengthen and maintain a coordination authority capable of carrying out the activities and responsibilities set forth in the operations manual; and (d) prepare and disclose any required safeguard document.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Management Information System	Yes	Within 6 months after the Effective Date	Project duration
<b>Description of Covenant</b>			
The PIE to maintain a management information system in form and substance satisfactory to the Association, which system shall be updated/expanded in a manner and substance agreed with the Association.			
<b>Name:</b>	<b>Recurrent</b>	<b>Due Date</b>	<b>Frequency</b>
Procurement documentation and record keeping system	Yes	N/A	Project duration
<b>Description of Covenant</b>			

The PIE to maintain a fully operational procurement documentation and record keeping system, in a manner and substance agreed with the Association, including a freely and publicly accessible database with an interface (link) with APRDMD's and the Line Departments and Agencies' websites.

### Conditions

Source of Fund:	Name:	Type:
Credit	Emergency Contingency Component	Disbursement

### Description of Condition

To access the funds allocated from time to time to Category 2, India and the PIE must have determined/declared an eligible crisis or emergency, identified response activities and expenditures, prepared and disclosed any required safeguard documents, identified and/or staffed a coordination authority responsible for implementation, and prepared a component-specific operations manual.

### Team Composition

#### Bank Staff

Name	Role	Title	Unit
Deepak Singh	Team Leader (ADM Responsible)	Senior Disaster Risk Management Specialist	GSURR
Neha Pravash Kumar Mishra	Environmental Specialist and Co-TTL	Senior Environmental Specialist	GENDR
Saurabh Suresh Dani	Team Member	Senior Disaster Risk Management Specialist	GSURR
Vasudha Thawakar	Urban Specialist and Co-TTL	Urban Specialist	GSURR
Tripti Chopra	Financial Management Specialist	Financial Management Specialist	GGODR
Venkata Rao Bayana	Social Safeguards Specialist	Consultant	GSURR
Jurminla Jurminla	Procurement Specialist	Procurement Specialist	GGODR
Deepak Malik	Operations Specialist	Disaster Risk Management Specialist	GSURR
Ignacio M. Urrutia Duarte	Operations Specialist	Disaster Risk Management	GSURR
James P. Newman	Operations Specialist	Disaster Risk Management	GCCDR
Hemang D Karelia	Operations Officer	Operations Officer	GCCDR
Martin M. Serrano	Counsel	Senior Counsel	LEGES
Giovanni Bo	Counsel	Counsel	LEGES
Elif Ayhan	Peer Reviewer	Senior Urban Specialist	GSURR
Augustin Maria	Peer Reviewer	Senior Urban Specialist	GSURR
Mikul Bhatia	Peer Reviewer	Senior	GEEDR

		Energy Specialist			
Vidya Mahesh	Team Member	Program Assistant	SACIN		
Extended Team					
Name	Title	Office Phone	Location		
Anindya Sarkar	Consultant-Architect		New Delhi, India		
Malini Nambiar	Consultant, Disaster Risk Management		New Delhi, India		
Peeyush Sekhsaria	Consultant, Disaster Risk Management		New Delhi, India		
Sergio De Cosmo	Consultant- Disaster Risk Management		Washington DC		
MA Dasarathi	Electrical Specialist		Bangalore, India		
Alok Narayan Pattanaik	Operations Specialist		New Delhi		
Rajeev Kumar Jha	Consultant- Disaster Risk Management		New Delhi, India		
Sujit Das	Consultant, Roads		New Delhi, India		
Satyanarayana Pallagani	Consultant, Urban		Hyderabad, India		
Bokepalli Kanaka Durga Raja	Consultant, Safeguard Management		Hyderabad, India		
Sushenjit Bandyopadhyay	Consultant		Washington, DC		
Locations					
Country	First Administrative Division	Location	Planned	Actual	Comments
India	Andhra Pradesh	State of Andhra Pradesh		X	
Consultants (Will be disclosed in the Monthly Operational Summary)					
Consultants Required?		Consultants will be required			





## **I. STRATEGIC CONTEXT**

### **A. Country Context**

1. India is highly vulnerable to a range of natural hazards, particularly earthquakes, flood, drought, cyclone and landslides. Close to 60% of India's land mass is prone to earthquakes<sup>1</sup> of varying magnitude; over 60% of the area is drought prone; and 12% is susceptible to floods and 15% to landslides. With a coastline of 7,516km, of which 5,700km is prone to cyclones of various degrees of intensity, approximately 40% of the total population living within 100km of the coastline can be potentially affected. As climate change, storm surges and the resultant sea level rise become more pronounced, hazard events are set to grow in frequency and intensity.

2. The Government of India (GoI) has made great strides in moving from a reactive emergency response to being proactive and implementing disaster preparedness and risk reduction initiatives. India enacted the Disaster Management Act in 2005 and established the National Disaster Management Authority (NDMA) and State Disaster Management Authorities (SDMAs). NDMA has proactively formulated guidelines and procedures for dealing with specific natural disasters and is mandated to frame policies, plans and guidelines for Disaster Management.

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

### **B. Situations of Urgent Need of Assistance or Capacity Constraints**

4. On October 12, 2014, a very severe cyclonic storm 'Hudhud' made landfall on the coast of Andhra Pradesh, near the city of Visakhapatnam. At the time of landfall, the estimated maximum sustained surface wind speed associated with the cyclone was about 180-220 kmph and height of the waves up to 3 meters.<sup>2</sup> The tide gauge at Visakhapatnam reported maximum storm surge of 1.4 meters above the astronomical tide. By October 14, Hudhud drifted northwards toward Uttar Pradesh and weakened into a well-marked low-pressure area over east Uttar Pradesh and neighborhood.<sup>3</sup>

5. The Government of Andhra Pradesh (GoAP) was proactive in preparing for cyclone Hudhud. In addition to the updates from India Meteorological Department (IMD), the intensity and magnitude of the cyclone were continuously tracked at Andhra Pradesh State Disaster Management Authority (APSDMA) and a range of preparatory measures were launched to face the cyclone. Relief and rescue team were deployed in the coastal districts most likely to be impacted and regular warnings to vulnerable populations were issued through various channels.

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<sup>1</sup> IS 1893 -Part 1: 2002, Map of Seismic Zones of India.

<sup>2</sup> Data source: India Meteorological Department (IMD).

<sup>3</sup> Data source: India Meteorological Department (IMD). Bulletin No.: BOB03/2014/54.

This, supplemented by the evacuation of close to 250,000 persons, mostly living in vulnerable *kutcha* houses or low-lying areas, helped limit the death toll from the cyclone to 61.

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

### **Joint Rapid Damage and Needs Assessment**

7. The World Bank and the Asian Development Bank (ADB), upon receiving a request from the Department of Economic Affairs (DEA), GoI, carried out a Joint Rapid Damage and Needs Assessment (JRDNA) during December 11 to December 17, 2014. The assessment was supported by the Global Facility for Disaster Reduction and Recovery (GFDRR).

8. Cyclone Hudhud caused major damage in 26 cities and towns, in Visakhapatnam, Vizianagaram, Srikakulam, and East Godavari districts, and affected about 9.2 million persons including 3 million urban population. The JRDNA report estimated the cost of damage reconstruction to be about US\$ 2.16 billion, of which the livelihoods sector was the most severely hit with recovery needs estimated to be around US\$ 443 million, followed by housing sector (US\$ 439 million) and the roads sector (US\$ 375 million). Based on the findings of the JRDNA, the DEA, and the World Bank agreed on providing assistance for disaster recovery and future risk reduction to the state of AP.

### **C. Sectoral and Institutional Context**

9. Andhra Pradesh is one of the most natural hazard prone states in India because of its long coastline and geographical location. About 44% of the state is vulnerable to tropical storms and related hazards<sup>4</sup>. In addition to cyclones and related hazards, monsoon depressions bring heavy to very heavy rains causing floods in the inland rivers between June and September<sup>5</sup>. Many areas in the state adjacent to coastal districts are vulnerable to flash floods. Coastal erosion is an important problem, out of the total coastal length of about 974 km, about 440 km faces coastal erosion<sup>6</sup>. Andhra Pradesh is also exposed to earthquakes, though the State lies in moderately low risk zones (Zone I, II and III)<sup>7</sup>.

10. The state has a population of 49.4 million (population density – 308 persons/sq.km), of which 70.4% is rural while 29.6% is urban. Visakhapatnam is the most urbanized district of the state, with an urban population of 47.5% of the total. Out of total 13 districts in the state, nine are coastal districts and account for approximately 69% (34.2 million) of its total population.

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<sup>4</sup> Andhra Pradesh State Disaster Management Plan. Volume 1. Revenue (Disaster Management II) Department GoAP. August 2010. Available at <http://disastermanagement.ap.gov.in/website/APSDMP1.pdf>

<sup>5</sup> Andhra Pradesh National Institute of Disaster Management (NIDM)-National Disaster Reduction Portal. Available at <http://nidm.gov.in/PDF/DP/ANDHRA.PDF>.

<sup>6</sup> Assessment Of Coastal Erosion Along Indian Coast On 1:25, 000 Scale Using Satellite Data, Rajawata et al, The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-8, 2014 ISPRS Technical Commission VIII Symposium, 09 – 12 December 2014, Hyderabad, India

<sup>7</sup> According to seismic zoning of India, the country is divided into five seismic zones based on severity, with Zone I being the lowest risk zone and Zone 5 the highest risk zone.

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

### **Rationale for the Bank's Involvement and Recovery Strategy**

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

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

### **D. Higher Level Objectives to which the Project Contributes**

14. The proposed Project is aligned to the Association's Country Partnership Strategy (CPS) 2013-2017 (Report No. 76176-IN, discussed by the Board of Executive Directors on April 11, 2013) to enhance disaster risk management systems. The Project is solidly anchored within the "Strategic Engagement Area 3: Inclusion" of the India CPS, which states that the World Bank's investments in this area will: "(i) help build institutional capacity to prepare for and manage the impact of natural disasters, and (ii) help people protect themselves from natural disasters and recover quickly from them."

## **II. PROJECT DEVELOPMENT OBJECTIVES**

### **A. PDO**

15. The Project Development Objectives (PDO) are to restore, improve, and enhance resilience of public services, environmental facilities, and livelihoods in Targeted Communities, and to enhance the capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.

## **B. Project Beneficiaries**

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

## **C. PDO Level Results Indicators**

17. The achievement of the PDO will be monitored by the following indicators<sup>8</sup>:
- Number of electric consumer accounts covered by the underground cable network
  - Number of people with access to restored and improved rural roads and shelters
  - Number of people with access to restored and improved beach front
  - Number of people with access to restored and improved environmental services/facilities
  - Urban disaster risk vulnerability analysis completed

## **III. PROJECT DESCRIPTION**

### **A. Project Components**

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

#### **Component 1: Resilient electrical network - US\$120 million**

19. The objective of this component is to reduce the vulnerability of the city's electrical network by laying the power distribution system underground. Andhra Pradesh Eastern Power Distribution Company Ltd. (EPDCL) will be the implementing agency for the component. Approximately 700 km of 33kV, 11 kV and 415 volts network lines will be converted to underground cable network starting from consumers meter board and going to 11 and 33 kV feeders, from the beach road and going towards landside. EPDCL has already appointed a consultant to carry out necessary survey of all the existing 33KV, 11 KV and 415 volts network (up to the consumer point) and prepare a detailed project report. An additional consultant will be appointed to carry out Environment and Social Impact Assessment (ESIA). The component will also include provision for high-speed data/voice transmission cables in the city of Visakhapatnam

#### **Component 2: Restoration of connectivity and shelter infrastructure - US\$105 million**

20. This component will finance investments to permanently restore, upgrade, and increase resilience towards future disasters of roads and cyclone shelters. Scope of this component will include all four affected districts: Visakhapatnam, Vizianagaram, Srikakulam and East Godavari.

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<sup>8</sup> All numbers in the PDO Level Results Indicators include the disabled, elderly, female-headed households, widowed, women and men from low-income families and other marginalized social groups.

The Line Department for implementation for Rural Road (RR) and cyclone shelters will be Panchayati Raj Department (PRD); and for Major District Roads (MDRs) it will be Roads and Building Department (R&BD).

21. *Sub-component 2.1: Restoration of rural roads and cyclone shelters (US\$60 million):* To finance permanent restoration, reconstruction, strengthening and widening of about 800km of damaged Rural Roads including cross-drainage structures, following the Indian Roads Congress (IRC), Ministry of Rural Development (MoRD) and Prime Minister's Gram Sadak Yojana (PMGSY) standards. It will also include repair of old cyclone shelters with friendly design features for the elderly, women, and children.

22. *Sub-component 2.2: Restoration of major district roads (MDR) (US\$45 million):* To finance permanent restoration, reconstruction, strengthening and widening (mostly single-lane to double-lane) of about 250 km of damaged MDRs including cross-drainage structures, following the IRC and Ministry of Road Transport and Highways (MoRTH) standards. Widened MDRs will help the state to conduct its operations at the time of any such disaster in future.

### **Component 3: Restoration and protection of the beach front - US\$65 million**

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

24. *Sub-component 3.1: Shore protection works (US\$25 million):* To finance appropriate solutions for the protection of the shore. This intervention will be planned taking into account the impact it may have on the coastal environment (including any sensitive habitats) and will be based on the findings/outcome of the high level study commissioned by GVMC that includes specialists from multiple disciplines, include coastal/marine engineering.

25. *Sub-component 3.2: Beach front restoration (US\$40 million):* To finance enhancement of urban public spaces, including parks, and upgrading the beach front. This will include creation of pedestrian walkways, street furniture, street lighting, public toilets, parking arrangements and landscaping along the beach front. The component will also support rehabilitation of key damaged urban infrastructure including drainage and sewage treatment plants, selected historic buildings and landmarks; and coastal city roads. This will be jointly implemented by the GVMC and VUDA. While restoring and developing the beach front, design features that are environmental friendly (on account of natural/ecological features that includes nesting sites of olive ridley sea turtles) and suited to the needs of women, children, elderly and differently-abled will be given due consideration.

### **Component 4: Restoration of environmental services and facilities and livelihood support - US\$20 million**

26. This component will finance the reconstruction of the severely damaged Indira Gandhi Zoological Park (IGZP) at Visakhapatnam and eco-tourism park at Kambalakonda Wildlife Sanctuary. Support under this component also includes restoration/creation of shelterbelts/windbreaks; support to farm forestry/plantations through nursery support for poor/vulnerable coastal families and; regeneration of critical patches of mangroves along the

coast to build disaster resilience and restore/support livelihood opportunities in the affected areas. The Andhra Pradesh Forest Department with its partner agencies will be responsible for implementation and will spread across four districts.

27. *Sub-component 4.1: Restoration of environmental services and facilities (US\$8 million):* To restore damaged environmental services and facilities including: a) the Indira Gandhi Zoological Park and b) the Eco Tourism Park at Kambalakonda Wildlife Sanctuary. Apart from the environmental functions (ecological/conservation and environmental education/awareness related), both these areas/facilities witness substantial footfall of visitors/tourists from within and outside the state and serve as vital green/recreational spaces for the city's population. Both parks and facilities therein, have suffered from substantial damage from the cyclone.

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

29. *Sub-component 4.2: Livelihoods support (US\$12 million):* This sub-component will support livelihood restoration for coastal families, including vulnerable, poor and women headed households, by reviving/improving mangroves in critical patches and support nurseries that would supply saplings for farm forestry and for creation of shelter belts/wind breaks.

#### **Component 5: Capacity building and technical support for disaster risk management - US\$35 million**

30. This component will support investments to enhance the capabilities of GoAP entities and other stake holders in managing disaster risks, enhancing preparedness, and achieving resilient recovery.

31. *Sub-component 5.1: Capacity augmentation for disaster management (US\$25 million):* This component will include activities such as: (i) strengthening the state's disaster response systems and mechanisms, as well as the capacity of the APSDMA in performing its core functions by setting up the State Advisory Committee, State Resource Centre for Disaster Management, strengthening the emergency response and communication system of the state agencies such as fire department, the state disaster response force and other immediate key response agencies in responding adequately to disaster situations through better search and rescue equipment, wireless communication, enhanced training, etc.; (ii) curriculum development and updating on disaster risk reduction for schools and governmental training institutions; and (iii) establishing a Community-Based Disaster Risk Management (CBDRM) program that would entail periodic mock drills, awareness programs, etc. to help communities better utilize risk mitigation infrastructure as well as be better to respond to any disaster event.

32. *Sub-component 5.2: Technical support for risk reduction and response preparedness (US\$10 million):* The component will include activities such as: (i) preparing a detailed vulnerability analysis of the cities and model various risks for effective mitigation planning and disaster response preparedness in consultation with community representatives and by applying local knowledge; (ii) carry out an in-depth assessment of the GoAP's *Apathbandhu Insurance* scheme (Accident Insurance Scheme for Below Poverty Line families)<sup>9</sup>, agriculture risk insurance, social safety nets and other such risk transfer mechanisms and develop recommendations for establishing an integrated program for risk transfer with emphasis on vulnerable populations: widowed households, vulnerable female – headed households, poor households, SC (Scheduled Cast) and ST (Scheduled Tribe) households, and low – income households; (iii) update the design guidelines for infrastructure in several key departments by evolving better design standards that factor in the expected peak wind speeds and rainfalls, including material specifications for the infrastructure in coastal region.

#### **Component 6: Project implementation support - US\$25 million**

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

#### **Component 7: Contingency emergency response - US\$0 million**

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

### **B. Project Financing**

#### ***Lending Instrument***

35. The lending instrument will be Investment Project Financing (IPF), and the implementation period for the project is five years.

### **C. Project Cost and Financing**

**Table 1: Finances per Project Component**

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<sup>9</sup> Apathbandhu Scheme was launched to implement accident insurance scheme for the families living under Below Poverty Line in Andhra Pradesh to provide insurance coverage in case of accidental deaths. The Policy year starts on 2nd October of every year and ends by 1st October of subsequent year.

<b>Project Components</b>	<b>Total Cost (US\$ M)</b>	<b>IDA Financing (US\$ M)</b>	<b>Financing</b>
Component 1: Resilient electrical network	120.0	81.0	68%
Component 2: Restoration of connectivity and shelter infrastructure	105.0	71.0	
<i>Sub-component 2.1: Restoration of rural roads and cyclone shelters</i>	60.0	40.5	
<i>Sub-component 2.2: Restoration of major district roads (MDR)</i>	45.0	30.5	
Component 3: Restoration and protection of the beach front	65.0	44.0	
<i>Sub-component 3.1: Shore protection works</i>	25.0	17.0	
<i>Sub-component 3.2: Beach front restoration</i>	40.0	27.0	
Component 4: Restoration of environmental services and facilities and livelihood support	20.0	13.3	
<i>Sub-component 4.1: Restoration of environmental services/facilities</i>	8.0	5.3	
<i>Sub-component 4.2: Livelihoods support</i>	12.0	8.0	
Component 5: Capacity building and technical support for disaster risk management	35.0	23.7	
<i>Sub-component 5.1: Capacity augmentation for disaster risk management</i>	25.0	17.0	
<i>Sub-component 5.2: Technical support for risk reduction and response preparedness</i>	10.0	6.7	
Component 6: Project implementation support	25.0	17.0	
Component 7: Contingency emergency response	0	0	100%
<b>Total</b>	<b>370.0</b>	<b>250.0</b>	
<i>Total Project Costs</i>	<i>370.0</i>		
<i>Total Financing Required</i>	<i>250.0</i>		

Note: Total may not match due to rounding.

#### **D. Lessons Learnt and Reflected in the Project Design**

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

37. The Disaster Management Act of 2005 paved the way for the creation of the National Disaster Management Authority (NDMA) at the national level, and the State Disaster Management Authority (SDMA) at the state levels, the latter with a clear mandate for spearheading disaster management efforts in the states. The Project recognizes the need for strengthening the capacity of the APSDMA at the state and local level towards disaster risk mitigation and has allocated funds and activities towards the same. The Gujarat State Disaster



Management Authority and the Odisha State Disaster Management Authority are good examples and lessons are drawn from their evolution and development process.

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

39. Communities are the first responders and also the worst affected. Building capacity of the community (including women and young girls) in disaster response and preparedness has paid off rich dividends in Odisha during Cyclones Phailin and Hudhud. School curriculum is an effective and widespread medium of disseminating DRR knowledge just as training conducted by the various Governmental Department Training Institutes reaches out to the entire Government machinery. Learning generated by the 'CBDRM and DRM Curriculum for Schools and Government Training Institutions' component from the World Bank funded Coastal Disaster Risk Reduction Project (CDRRP) in Tamil Nadu, are part of the project design.

#### IV. IMPLEMENTATION

##### A. Institutional and Implementation Arrangements

40. The State level Project Steering Committee constituted at apex level for NCRMP will oversee and monitor the overall progress of project. The State Project Implementation Unit (SPIU) for NCRMP will act as the Project Management Unit for the project. The PMU will be supported by sector experts drawn from each of the Line Departments (LDs) implementing the project investments. The LDs shall be responsible for actual execution of the works and further maintain the infrastructure created. LDs will appoint nodal officers and will execute the project through respective field offices. The overall list of the various project components and respective implementing agencies is illustrated in Table 2. Further details are in Annex 3.

**Table 2: Project Components and Respective Implementing Agencies**

Components	Departments/Agency
<b>Component 1:</b> Resilient electrical network	<ul style="list-style-type: none"> <li>Andhra Pradesh Eastern Power Distribution Company Ltd. (EPDCL)</li> </ul>
<b>Component 2:</b> Restoration of connectivity and shelter infrastructure	<ul style="list-style-type: none"> <li>Panchayati Raj Department (PRD) for Rural Roads and repair of cyclone shelters (Sub-component 2.1)</li> <li>Road and Building Department (R&amp;BD) for Major District Roads (Sub-component 2.2)</li> </ul>
<b>Component 3:</b> Restoration and protection of the beach front	<ul style="list-style-type: none"> <li>Greater Visakhapatnam Municipal Corporation (GVMC) for Shore protection work (Sub-component 3.1)</li> <li>GVMC and Visakhapatnam Urban Development Authority (VUDA) for Beach front restoration (Sub-component 3.2) in their respective jurisdiction</li> </ul>
<b>Component 4:</b> Restoration of environmental	<ul style="list-style-type: none"> <li>Andhra Pradesh Forest Department (APFD), with the</li> </ul>

services and facilities and livelihood support	assistance of other partner agencies agreed with the Association
<b>Component 5:</b> Capacity building and technical support for disaster risk management	• PMU
<b>Component 6:</b> Project implementation support	• PMU and all implementing agencies

## B. Results Monitoring and Evaluation

41. Monitoring and Evaluation will be carried out by the PMU on the basis of the indicators and milestones developed in the Results Framework (Annex 1). Project 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: (i) Social and Environmental Monitoring, (ii) Regular Quality Supervision & Certification, (iii) Periodic Physical Progress Monitoring & Third Party Quality Audit, and (iv) Monitoring and Evaluation. In addition the geo-referenced Management Information System (MIS) developed for NCRMP-I will be adapted and expanded for this project.

## C. Sustainability

42. The sustainability of the proposed Project is assured through: i) selection of investments based on assessment of damages and needs, ii) institutionalizing the capacity for the necessary maintenance within the GoAP's government structure, independently of the Project, and iii) promoting community participation during planning, designing and implementation.

43. The GoAP has demonstrated strong commitment and ownership in improving the state's capacity to manage risks throughout the implementation of other Projects such as the NCRMP-I, their response to the recent cyclone, and their continuous investments to increase resilience.

44. Additional specific mechanisms under the Project to support sustainability are: i) involve the community (including women, elderly, landless, youth, differently abled, SCs/STs) in risk mitigation, management and utilizing critical infrastructure, ii) improved design standards for infrastructure, iii) augmenting APSDMA capacity as an operational institution, and iv) adaptation of investments for the minimum disruption of livelihood activities, and their enhancement when feasible for the vulnerable and marginalized groups in the project area.

## V. KEY RISKS AND MITIGATION MEASURES

### A. Risk Ratings Summary Table

**Table 3: Systematic Operations Risk-Rating Tool (SORT)**

Risk Category	Rating
1. Political and governance	M
2. Macroeconomic	L
3. Sector strategies and policies	M
4. Technical design of project or program	M
5. Institutional capacity for implementation and sustainability	M
6. Fiduciary	S
7. Environment and social	S

<b>Risk Category</b>	<b>Rating</b>
8. Stakeholders	M
9. Other	
<b>Overall</b>	<b>S</b>

Note: H= High; S= Substantial; M= Moderate and L=Low

## **B. Overall Risk Rating and Explanation of Key Risks**

45. The overall risk is rated as ‘Substantial’. The rating is driven by the multi-sectoral nature of the activities that will be implemented by departments with different levels of capacity and experience with externally funded projects. This impacts the fiduciary and safeguards risk ratings. Being a disaster recovery project entails that the design of most investments will only be completed during implementation, which could potentially cause implementation delays.

46. Mitigation measures are incorporated to provide additional resources and training to the implementing agencies’ staff including providing external resources specifically to manage and address: (i) social and environmental safeguard issues; (ii) ensure community participation in design and implementation; (iii) capacity augmentation towards planning, designing and managing constructions; and (iv) procurement and financial management.

## **VI. APPRAISAL SUMMARY**

### **A. Economic Analysis**

47. One of the major challenges of promoting disaster mitigation and prevention is to demonstrate that its potential benefits in terms of saved lives and property far exceeds its costs. Cost estimation of disaster risk reduction is relatively straightforward, while the estimation of their benefits is complicated by their probabilistic nature. In the end, the actual level of benefits will be realized depending on the degree of severity of the disaster event occurring over the life of the investment. Accordingly, specific analysis undertaken here includes the costs and benefits of measurable strengthening capacities as well as of mitigation investments. Given the data constraints, in many cases extrapolation is used from similar analysis done in India to arrive at the benefit estimates. Overall, as detailed in Annex 5, the project is economically feasible, yielding positive internal rates of returns of over 20 per cent.

### **B. Technical**

48. Component 1 supports the underground installation of the power distribution system of the city of Visakhapatnam, including laying of cables for high-speed data and voice transmission. This investment will decrease the vulnerability of the power and communication networks, which currently are above ground and thus are prone to high winds, rains, thunderstorms, storm surges, and flooding. Component 2 focuses on permanently restoring and upgrading damaged Rural Roads and Major District Roads (MDRs) and repairing damaged cyclone shelters. Roads will be designed to withstand flood forces as per the latest official Indian standards design and guidelines. Component 3 supports investments to protect the shore of the city of Visakhapatnam and to enhance public urban space along the beach front. This includes pedestrian walkways, street furniture, street and beach lighting, parks, and landscaping along the

beach front. Component 4 focuses on the reconstruction of the damaged zoological park at Visakhapatnam and the eco- tourism park at Kambalakonda Wildlife Sanctuary according to international standards. This component supports the restoration of the lost shelterbelts, windbreaks and mangroves along the coast as well as support nurseries for plantations and thereby also the livelihoods. In the design and rehabilitation or reconstruction of project-funded infrastructure, particular care will be put into improving resilience of infrastructure to future cyclones and storm surges.

49. Under Component 5, support will be provided to augment the GoAP's disaster preparedness and response capabilities. This will include capacity augmenting of APSDMA by setting up the State Advisory Committee and State Resource Centre for Disaster Management, and building expert technical capacity of the APSDMA in the areas of disaster risk management. Additionally it will build capacity amongst coastal communities and enhance DRM education in schools and Government departments. Component 6 will provide support to project implementation and Component 7 will ensure that in case of an eventual disaster the project is in a position to respond rapidly, efficiently and adequately.

### **C. Financial Management**

50. Risk Assessment: EPDCL, GVMC and VUDA (handling 50% of the project cost) will be implementing the externally funded project for the first time. Considering that other half of the funds are flowing to implementing agencies which are successfully implementing World Bank financed NCRMP I project or have implemented AP Community Forest management project, the overall financial management risk rating of the project is 'Moderate'. In line with increased size of the project and implementation through multiple agency which requires coordination by PMU, the existing finance staffing of PMU under APRDMD needs to be augmented. Financial management arrangements are described briefly below and in detail in Annex 3.

51. Funds Flow Arrangements: Wherever the implementing agency is state's line department, funds from APRDMD will flow to respective line departments following the state treasury route. For underground cabling component funds for the project will flow from the State's treasury through APRDMD to EPDCL's separate bank account. For restoration of beach front component funds from APRDMD through Municipal Administration and Urban Development Department (MA&UDD) will flow to GVMC & VUDA in their respective separate bank accounts. Budgeting: A separate budget code (with proper classification i.e. separate detailed head for each component and line department) under the capital expenditure head shall be created by GoAP for PMU under APRDMD to receive fund releases from the State treasury. Basis the estimated expenditure for financial year 2015-16 expenditure provision also needs to be created under this new budget code. Accounting for project expenditures will be maintained on cash basis of accounting and separate books of accounts will be maintained for the project. The line departments will use Accountant General accounting system. EPDCL, GVMC and VUDA will use their existing respective accounting software. These financial accounting software are considered adequate for recording financial transactions and for generating reports for financial disclosure requirements. Financial Reporting: PMU under the APRDMD will submit quarterly Interim (Unaudited) Financial Report (IFR) providing the financial progress against the project components, within 45 days from the end of each calendar quarter. Internal audit of the Bank

project will be done six monthly by a firm of Chartered Accountant to be agreed with the Bank and under ToR to be agreed with the Bank.

52. External Audit: For expenditure made under this project by line department, GVMC & VUDA, the annual external audit of the project financial statements for the credit will be carried out by CAG of India through the office of the Accountant General (Audit) of Andhra Pradesh. For expenditure made by EPDCL, the entity audit report clearly identifying the expenditure made under this project, will be considered as acceptable audit report. These audit reports will be due within 9 months of close of the financial year and in line with the disclosure policy will be made available in the public domain.

53. Disbursement Arrangements: In line with GoI's current practice no advance will be provided. GoAP will pre-finance all the project expenditure and disbursements from the credit will be made basis the actual expenditure reported in the quarterly IFRs, subject to audit certification at the end of each financial year. Expenditure categories eligible for financing under the credit agreement and as per the disbursement percentage will be financed out of the proceeds of the credit.

#### **D. Procurement**

54. Procurement for the Project shall be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by the World Bank Borrower" dated January 2011 and revised July 2014 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by the World Bank Borrowers" dated January 2011 revised July 2014 (Consultants Guidelines) and the provision stipulated in the Financing Agreement.

55. The PMU under APRDMD will be the nodal agency for implementation of this project and will use the existing SPMU for NCRMP I for overall coordination of the project. All implementing agencies and departments will establish Project Implementing Units with adequate resources and use e-procurement portal <http://www.eprocurement.gov.in> for procurement of goods, works and non-consulting services.

56. As a part of preparation process, procurement capacity assessment was carried out on all the IAs using PRAMS and accordingly, the risk mitigation measures were proposed. The overall risk is rated as "Substantial".

57. The proposed project shall use Procurement Plan (PP) monitoring and execution software (SEPA) to strengthen the management of PP. The Bank will arrange training on use of SEPA when the focal persons are identified.

58. The IAs shall use their own procedures for expenses incurred on project implementation support cost that recurrent in nature.

59. The Project has been triggered by emergency situation (OP 10.00) and therefore, provisions under paragraph 20 of OP 11.00 procurement under emergency situation shall apply. Further details are provided in Annex 3.

#### **E. Social (including Safeguards)**

60. The reconstruction and recovery efforts through the Project will provide both direct and indirect benefits to the State of Andhra Pradesh and its 49.4 million inhabitants and in specific to the populations of the four impacted districts: Srikakulam, Vizianagaram, Visakhapatnam and East Godavari (total approximate population of 13.3 million). Details are provided in Annex 3.

61. **Safeguard Risks and Application of Banks Safeguard Policies:** Among the seven proposed components under the project, the first five components involve safeguard aspects that need to be avoided and/or minimized through developing and placing appropriate safeguard provisions and systems in the project. The results from preliminary screening exercise conducted for sub-projects indicates that the reconstruction and strengthening of the affected roads/bridges may involve some involuntary resettlement impacts on land owners, lease holders, and squatters. So far, proposed sub-projects under road infrastructure improvement (Component 2) have been listed out and these are 214 in number. Out of this, only 12 sub projects would have social issues and these are proposed to be taken-up in the second year of the project cycle after the due diligence on the technical (engineering design) and safeguards side (ESAs and EMPs/RAPs) is completed. The sub-projects which have no social and environmental issues will be taken up under Phase I works, for which the detailed design preparation is underway. Other components, such as underground electrical cabling works and beach front development, would not involve land acquisition but may result in temporary disturbances to neighborhood population and may affect some squatters. Therefore, OP 4.12 has been triggered. OP 4.10 (Indigenous Peoples) has been triggered in view of the presence of scheduled tribe groups living in the project districts.

62. **Legal and Policy Framework and Institutional Capacities:** The recently legislated Right to Fair Compensation and Transparency in LA and Resettlement and Rehabilitation Act of India (RFCT-LARRA, 2013) is implemented by the State government. The SPIU already has social and environmental specialists and will ensure appointment/designation of counterpart officers with other implementing departments/agencies. The State Government has established State level Commissionerate, R&R office. The State government has specific legislations, policies, and schemes for protection and welfare of the scheduled tribes, women, children, and other vulnerable groups.

63. **Social Safeguards Documents Preparation and disclosure:** Stakeholder consultations both at project level and district levels were completed in the months of March and April 2015. The Government of Andhra Pradesh has prepared an ESMF in line with Bank's requirements. The ESMF includes RPF, IPMF and GESI Guidelines and implementation arrangements for implementing the social and environmental safeguards. The ESMF sets out principles and procedures for carrying out social screening, and preparing and implementing Resettlement Action Plans (RAP) based on safeguards categorization during screening. The sub-projects will be selected after detailed/appropriate level of assessment, including consultation with concerned

key stakeholders. The ESMF has been disclosed in the Bank's Infoshop and in Project Authority's website.

64. ***Gender Equality and Social Inclusion:*** Recognizing the vulnerabilities of women, children and elderly, the project strongly emphasizes attention to gender equity and social inclusion in the implementation process. The proposed livelihoods component will support restoration and strengthening of artisans, wherein substantial female participation would be ensured. The restoration of public buildings will have design features that will pay special attention to the needs and interests of vulnerable people including children, women, and aged, physically disabled, and other social groups. The proposed disaster risk reduction initiatives will similarly focus on equal participation of and benefits for women, children, and other vulnerable groups. The gender equity and social inclusion outcomes of the project shall be monitored with key performance indicators specified in the results matrix.

65. ***Indigenous Peoples Management Framework:*** OP 4.10 has been triggered in view of presence of tribal communities in Project areas and an IPMF has been prepared, consistent with Bank policy. The IPMF sets out procedures to: (i) record consultations carried out for the project, (ii) set out a framework for free, prior, and informed consultations with the primary stakeholders including the tribal people for implementing sub-projects, (iii) chart out specific strategies for ensuring that positive benefits are delivered to the tribal groups living in project areas with addressing their socio-economic needs in a culturally sensitive manner and through their participation, and (iv) measures to mitigate adverse impacts, if any, compliant with Bank safeguards policy.

66. ***Grievance Redress Mechanism (GRM):*** For project affected persons (PAPs), a GRM will be established at all levels with guidelines agreed with the Bank. The GRM will be a multi-tiered system that includes Village Panchayat / field-level project staff, district-level grievance committee, and the State Steering Committee (SSC). Further, the RFCTLA&RR 2013 has prescribed a multi-layered GRM for land acquisition.

## **F. Environment (including Safeguards)**

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

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

69. Potential adverse impacts on account of activities/works proposed under Components 1 to 4 of the project may include: (i) direct/indirect environmental and social impacts resulting from poor site selection and inappropriate engineering/designs (beach restoration and shore protection works are specifically critical); (ii) impact on sediment and wave movement, including the risk of erosion or accretion in surrounding areas (in case of hard shore protection works, which may be piloted based on recommendations from a comprehensive study currently being undertaken by a large team of ocean and coastal engineering experts to address the heavy erosion of the Visakhapatnam city beach); (iii) impact on the drainage pattern of the area, including impact on coastal flora and/or fauna due to changes in tidal water flow; (iii) felling of trees and clearance of vegetation for sub-project construction; (iv) impact on certain/specific endangered species like the olive ridley sea turtles, including on their nesting areas (from inappropriate design of shore protection work and beach development activities ); (v) safety and health concerns for general public, both urban (more vulnerable due to higher densities) and rural from construction activities; (vi) occupational health and safety concerns for workers involved in construction; (vii) inconvenience and temporary disruption to services and access to certain public places and facilities; (viii) impacts due to construction material (sand, water, earth, aggregate) sourcing and transportation and; (ix) concerns arising out of improper disposal of debris and other construction wastes.

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

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



and increase positive impacts on the other, will remain central to environmental management and safeguards for the project.

72. ***Management of Environmental Issues.*** In order to ensure effective environmental management in a scenario where multiple sub-projects/activities are proposed at different locations along the coast of Andhra Pradesh and their specific locations are not known (at this stage of project preparation), an approach involving preparation, application and implementation of an Environment and Social Management Framework (ESMF) is being adopted for the project.

73. Despite the emergency nature of the operation and very limited time available for project preparation, the client has prepared an ESMF in line with Bank's requirements. Following the review of the draft document and suggestions received from the Bank, the document has been revised/updated. The ESMF serves as a comprehensive and a systematic guide covering policies, procedures and provisions, which are being/will be integrated with the over-all project cycle to ensure that the environmental concerns/issues are systematically identified and integrated into the project/sub-project cycle. It will also support compliance with applicable laws and regulations of GoI and GoAP apart from meeting the requirements of the relevant Bank policies. More details are in Annex 3.

74. ***Consultation and Disclosure.*** As part of the on-going project preparation, extensive public consultations have been carried out by the SPIU (with support from concerned line agencies and district administration) during March-April 2015 to discuss with stakeholders over-all project objectives, scope and for obtaining feedback on sub-project selection process and for the ESMF while its preparation was on-going. Four district level consultations and one in Vishakhapatnam city have been completed so far. The ESMF has been disclosed in the Bank's Infoshop and in Project Authority's website. Other relevant project documents (including screening reports and EAs) will be disclosed on the state website and at other places accessible to the general public/interested individuals/groups in line with the requirements of Bank's Operational Policies.

## **G. World Bank Grievance Redress**

75. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit [www.worldbank.org/grs](http://www.worldbank.org/grs). For information on how to submit complaints to the World Bank Inspection Panel, please visit [www.inspectionpanel.org](http://www.inspectionpanel.org).

## Annex 1: Results Framework and Monitoring

**Country: India**

**Project Name: Andhra Pradesh Disaster Recovery Project (P154847)**

**Table 4: Results Framework**

Project Development Objectives							
PDO Statement							
The Project Development Objectives (PDO) are to restore, improve, and enhance resilience of public services, environmental facilities, and livelihoods in Targeted Communities, and to enhance the capacity of state entities to respond promptly and effectively to an eligible crisis or emergency.							
These results are at	Project Level						
Project Development Objective Indicators							
Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Number of electric consumer accounts covered by the underground cable network (Number)	0.00	0.00	0.00	110,000.00	215,000.00	300,000.00	300,000.00
Number of people with access to restored and improved rural roads and shelters (Number)	0.00	0.00	138,900.00	686,000.00	1,100,000.00	1,750,000.00	1,750,000.00
Of which female (Number - Sub-Type: Supplemental)	0.00	0.00	68,000.00	336,000.00	525,000.00	870,000.00	870,000.00
Number of people with access to restored and improved beach	0.00	0.00	0.00	0.00	0.00	1,730,000.00	1,730,000.00

front (Number)							
Number of people with access to restored and improved environmental services/facilities (Number)	0.00	0.00	0.00	0.00	0.00	1,730,000.00	1,730,000.00
Urban disaster risk vulnerability analysis completed (Yes/No)	No	No	No	No	Yes	Yes	Yes
<b>Intermediate Results Indicators</b>							
Indicator Name	Baseline	Cumulative Target Values					
		YR1	YR2	YR3	YR4	YR5	End Target
Direct project beneficiaries (Number) - (Core)	0.00	0.00	50,000.00	400,000.00	700,000.00	2,500,000.00	2,500,000.00
Female beneficiaries (Percentage - Sub-Type: Supplemental) - (Core)	0.00	0.00	24,500.00	196,000.00	343,000.00	1,225,000.00	1,225,000.00
Distribution lines constructed or rehabilitated under the project (Kilometers) - (Core)	0.00	0.00	0.00	250.00	500.00	700.00	700.00
Roads rehabilitated, Rural (Kilometers) - (Core)	0.00	0.00	50.00	250.00	500.00	800.00	800.00
Number of shelters rehabilitated (Number)	0.00	0.00	5.00	8.00	15.00	25.00	25.00
Roads rehabilitated, Non-rural (Kilometers) - (Core)	0.00	0.00	20.00	100.00	150.00	250.00	250.00
Kilometers of beach front restored	0.00	0.00	0.00	0.00	2.00	3.00	3.00

(Kilometers)							
Number of nurseries established/restored (Number)	0.00	0.00	20.00	30.00	50.00	60.00	60.00
Number of environmental services and facilities restored and improved (Number)	0.00	0.00	0.00	0.00	1.00	2.00	2.00
Communication and search and rescue equipment provided to the state disaster response force (Yes/No)	No	No	Yes	Yes	Yes	Yes	Yes
Design guidelines for buildings and public infrastructure updated (Yes/No)	No	No	No	No	No	Yes	Yes

**Table 5: Indicator Description**

<b>Project Development Objective Indicators</b>				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Number of electric consumer accounts covered by the underground cable network	Number of electric consumer accounts covered by the underground cable network financed under the project	Annual	Construction reports, MIS	EPDCL
Number of people with access to restored and improved rural roads and shelters	Number of people with access to restored rural roads and shelters, measured by the total capacity of restored shelters under the project, and access as 500m from restored road with friendly design features for women, children, the elderly and disabled	Annual	Construction reports, MIS	PRD, and R&BD
Of which female	Number of female beneficiaries out of the total number of beneficiaries in this indicator	Annual	Census, MIS	PRD, R&BD
Number of people with access to restored and improved beach front	Population of Visakhapatnam, once the beach front has been restored and open for public use with friendly design features for women, children, the elderly and disabled	Once, at project completion	Construction report, MIS	GVMC, VUDA
Number of people with access to restored and improved environmental services/facilities	People living in the city of Visakhapatnam will have access to the zoological garden and the ecotourism park once they have been restored by the project and are open to the public	Once, at project completion	Construction report, MIS	APFD
Urban disaster risk vulnerability analysis completed	The vulnerability analysis of the selected cities has been completed, presented to APSDMA, and shared with respective municipal corporations	Once, at completion	Consultant's reports	PMU

<b>Intermediate Results Indicators</b>				
Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Direct project beneficiaries	Direct beneficiaries are people or groups who directly derive benefits from an intervention (i.e., children who benefit from an immunization program; families that have a new piped water connection). Please note that this indicator requires supplemental information. Supplemental Value: Female beneficiaries (percentage). Based on the assessment and definition of direct project beneficiaries, specify what proportion of the direct project beneficiaries are female. This indicator is calculated as a percentage.	Annual	MIS	PMU
Female beneficiaries	Based on the assessment and definition of direct project beneficiaries, specify what percentage of the beneficiaries are female.	Annual	Census, MIS	PMU
Distribution lines constructed or rehabilitated under the project	This indicator measures the length of the distribution lines constructed or rehabilitated/upgraded under the project. The baseline value for this indicator is expected to be zero.	Annual	Construction reports, MIS	EPDCL
Roads rehabilitated, Rural	Kilometers of all rural roads reopened to motorized traffic, rehabilitated, or upgraded under the project. Rural roads are roads functionally classified in various countries below Trunk or Primary, Secondary or Link roads, or sometimes Tertiary roads. Such roads are often described as rural access, feeder, market, agricultural, irrigation, forestry or community roads. Typically, rural roads connect small urban centers/towns/settlements of less than 2,000 to 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers.	Annual	Construction reports, MIS	PRD

Number of shelters rehabilitated	Number of shelters rehabilitated under the project	Annual	Construction reports, MIS	PRD
Roads rehabilitated, Non-rural	Kilometers of all non-rural roads reopened to motorized traffic, rehabilitated, or upgraded under the project. Non-rural roads are roads functionally classified in various countries as Trunk or Primary, Secondary or Link roads, or sometimes Tertiary roads. Typically, non-rural roads connect urban centers/towns/settlements of more than 5,000 inhabitants to each other or to higher classes of road, market towns and urban centers. Urban roads are included in non-rural roads.	Annual	Construction reports, MIS	R&BD
Kilometers of beach front restored	Number of kilometers of beach front restored and improved under the project with amenities	Annual	Construction reports, MIS	GVMC, VUDA
Number of nurseries established/restored	Number of nurseries established/restored under the project	Annual	MIS	APFD
Number of environmental services and facilities restored and improved	Completion of the restoration and improvement of the Indira Gandhi Zoological Park and the Eco tourism Park at Kambalakonda Wildlife Sanctuary, and both open to the public	Once, after completion	Construction reports, MIS	APFD
Communication and search and rescue equipment provided to the state disaster response force (Yes/No)	Communication and search and rescue equipment delivered to the state disaster response force	Once, at project/ activity completion	PMU	PMU
Design guidelines for buildings and public infrastructure updated	Current design guidelines amended to include results of the evaluation financed under the project	Once, after project completion	Design guidelines	PMU

## **Annex 2: Detailed Project Description**

### **INDIA: Andhra Pradesh Disaster Recovery Project**

#### **Component 1: Resilient electrical network - US\$120 million, US\$81 million Bank financing**

1. This component will finance investments to improve the electrical and communication infrastructure in the city of Visakhapatnam. The port city, which is the largest in the State of Andhra Pradesh, was severely hit by the cyclone Hudhud. In particular, the power distribution system, which is over ground and thus it is prone to high winds, rains, thunderstorms, and storm surges and flooding, was heavily damaged. The objective of this component is to reduce the vulnerability of the city's electrical network by laying the power distribution system underground. The component will be implemented by Andhra Pradesh Eastern Power Distribution Company Ltd., (EPDCL).
2. The city is divided into four zones for the distribution network. Each zone has 33 KV /11KV substations. At present all the 33, 11 KV and LT distribution is by overhead lines. The 11 KV network feeds to various 11 KV/415 V transformers. From the outgoing side of the 415V overhead lines supply power to various consumers. These overhead lines will be converted to underground cable network.
3. In particular, three out of the four power distribution zones in the city will be converted to underground cable network. This will involve approximately 700 km of 33kV, 11 kV and 415 volts network lines and will cover a population of about 1.2 million and 300,000 connections. The implementation will be taken up from the consumers meter board and going to 11 and 33 kV feeders, starting from the beach road and going towards landside.
4. EPDCL has already appointed a consultant to carry out necessary survey of all the existing 33KV, 11 KV and 415 volts network (up to the consumer point) and prepare a detailed project report. An additional consultant will be appointed to carry out environment and social impact assessment (ESIA).
5. The investments will also finance the laying of underground cables that will be used for transmission of high-speed data and voice communication. The activity will be undertaken simultaneously with the laying of electrical cable.

#### **Component 2: Restoration of connectivity and shelter infrastructure - US\$105 million, US\$71 million Bank financing**

6. This component will finance investments to permanently restore, upgrade Roads and Cyclone Shelters, increasing resilience towards future disasters. Scope of this component will include all four affected districts Visakhapatnam, Vizianagaram, Srikakulam and East Godavari. The Line Department for implementation for Rural Roads and cyclone shelters will be Panchayati Raj Department (PRD); and for Major District Roads (MDRs) it will be Roads and Building Department (R&BD). The affected rural areas will be benefitted by the restored access



to the market thereby increasing the economic growth in these areas and more timely access to health and education, among other services. This component will also include repair of old cyclone shelters.

7. *Sub-component 2.1: Restoration of rural roads and cyclone shelters (US\$60 million):* To finance permanent restoration, reconstruction, strengthening and bituminous surfacing of about 800km of damaged Rural Roads including cross-drainage structures, following the Indian Roads Congress (IRC), Ministry of Rural Development (MoRD) and Prime Minister's Gram Sadak Yojana (PMGSY) standards which will involve widening of the road embankments. It will also include repair of damaged cyclone shelters.

8. *Sub-component 2.2: Restoration of major district roads (MDR) (US\$45million):* To finance permanent restoration, reconstruction, strengthening and widening (mostly single-lane to double-lane) of about 250 km of damaged MDRs including cross-drainage structures, following the IRC and Ministry of Road Transport and Highways (MoRTH) standards. Widened MDRs will help the state to conduct its operations at the time of any such disaster in future.

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

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

**Component 3: Restoration and protection of the beach front - US\$65 million, US\$44 million Bank financing**

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

12. *Sub-component 3.1: Shore protection works (US\$25 million):* To finance appropriate solutions for the protection of the shore. This intervention will be planned taking into account the impact it may have on the coastal environment and will be based on the outcome of the high level study commissioned by GVMC.

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

14. *Sub-component 3.2: Beach front restoration (US\$40 million):* To finance enhancement of urban public spaces and upgrading the beachfront. This will include pedestrian walkways, street furniture, parks, street and beach lighting, and landscaping along the beachfront. The component will also support rehabilitation of key damaged urban infrastructure including drainage and sewage treatment plants, selected historic buildings and landmarks; and coastal city roads. This subcomponent will be jointly implemented by the GVMC and VUDA.

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

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

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

**Component 4: Restoration of environmental services and facilities and livelihood support - US\$20 million, US\$13.3 million Bank financing**

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

19. *Sub-component 4.1: Restoration of environmental services and facilities (US\$8 million):* To restore damaged environmental services and facilities including: a) the Indira Gandhi Zoological Park and b) the Eco tourism park at Kambalakonda Wildlife Sanctuary.

20. Indira Gandhi Zoological Park at Visakhapatnam (US\$6 million): The objective of this is to restore and enhance the damaged infrastructure and facilities in the Zoological park and augment the facilities to international standards (including IUCN's ex-situ conservation guidelines in addition to The Indira Gandhi Zoological Park, spread over 625 acres is one of the two Zoological Parks in Andhra Pradesh and has been designated as the nodal center by the Central Zoo Authority (CZA) for ex-situ conservation of the Indian Wild Dog. It has also seen successful breeding of tigers, hog deer, black buck and other animals in its ex-situ conservation efforts. It also has an information center, which is used for creating awareness on environmental education and conservation of biodiversity of Eastern Ghats, including its wildlife, which now stands badly damaged. The Forest Department runs an Animal Rescue Centre located opposite the Zoological Park houses lions and tigers rescued from circuses.

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

22. Eco Tourism Park at Kambalakonda Wildlife Sanctuary (US\$2 million): The objective of this is to rebuild the damaged infrastructure at the Kamabalakonda eco-park and wildlife sanctuary and to make it disaster resilient. The Kambalakonda Wildlife Sanctuary, spread across 7,139 hectares was established in 2002 to protect the flora and fauna of the region. An Eco-

tourism park covering about 100 hectares was established at a later date with the Eco Development Committee (EDC) of villages located within the Wildlife Sanctuary running it and benefitting from it. The entire park area was affected either fully or partially by Hudhud. A number of trees in the Sanctuary and in the Park fell due to the high intensity winds. The damage and loss includes vegetation, eco-tourism cottages, trek routes, etc. The present proposal includes a butterfly park, arboretum for medicinal plants and plant diversity in eastern ghats, view cum fire lines, fire watch towers, water harvesting trenches, check dams, treks/paths, bio-park information center, amphitheater, water supply, tourist cottages, food court, visitor facilities, etc.

23. *Sub-component 4.2: Livelihoods support (US\$12 million):* To support livelihoods through reviving nurseries feeding to farm forestry and restoration of shelter belts along the coast and mangroves.

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

25. Plantations (US\$7 million): The objective of this activity is to restore lost shelter belts and Palmyra brakes and mangroves along the coast, as they absorb wind speeds, reduce damage and loss and augment livelihoods. Plantations will be taken up in the reserve forest area along the coast. The plantations will be mixed types; some pure Palmyra (*Borassus flabellifer*), some Palmyra with Casaurina, Cashew (*Anacardium occidentale*), Gangaravi (*Thespesia populnea*), Kanuga (*Millettia pinnata*), Ponna (*Calophyllum inophyllum*), Badam (*Terminalia catappa*), and other native species that have shown good resistance to cyclonic winds in the recent cyclones including Hudhud. Demonstration plantations with mixed species resilient to cyclonic conditions similar to Hudhud will be taken up. An area of 4,000 Ha will be covered under these shelter belt plantations in the four districts. This includes pure Palmyra brakes and mixed species shelter belts in the four districts. These plantations, shelterbelts and mangroves would support the livelihoods of the people along the coast. The plantations will be developed with the full engagement of Vana Samrakshana Samithis (VSS).

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

**Component 5: Capacity building and technical support for disaster risk management - US\$35 million, US\$23.7 million Bank financing**

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

28. Sub-component 5.1: *Capacity augmentation for disaster management* (US\$25 million): This component will include strengthening the state's disaster response systems and mechanisms, as well as the capacity of the APSDMA in performing its core functions. This will entail the following:

- a) *Setting up the State Advisory Committee, and State Resource Centre for Disaster Management* - A state resource management centre on Disaster Management will be set up within the state, to assist and develop key training module, training material, policy guideline and other related activities of Disaster Management. The resources Centre also conduct studies with a critical and multidisciplinary perspective which enrich policy and practice processes. Another role of resource Centre would to be prepares skilled professionals and builds capacities of state and non-state agencies and communities. The pre-existing infrastructure within the state can act as state resource Centre on Disaster Management.
- b) *Strengthening the Emergency response capabilities and communication system of the state agencies* such as fire department, the state disaster response force and other immediate key response agencies in responding adequately to disaster situations through better search and rescue equipment, wireless communication, enhanced training, etc.
- c) *Curriculum development on disaster risk reduction for schools and Governmental training institutions* - As part of a wider program, DRR is being introduced and mainstreamed in school education and in training programs for different levels of Government functionaries. This will involve a review of the current status of the Board for Secondary Education Andhra Pradesh (BSEAP) school curriculum and Government training institutions curriculum, identify the shortfalls and gaps, and then based on international best practice in DRR education, devise DRR curriculum for schools and training institutions.
- d) *Community based disaster risk management (CBDRM) program* targeted at the four cyclone affected districts which would entail mock drills, awareness programs and others which is designed to help communities better utilize risk mitigation infrastructure as well as be better to respond to any disaster event. The CBDRM program will be rolled out in two phases. The first phased approach will build partner NGO capacity, demonstrate the value and processes of CBDRM to local and state governments and understand the challenges faced in implementation in the coastal communities. The second phase will involve scaling-up of this program to other districts. The CBDRM program will be hosted by the Department of Rural Development (DRD). Appropriately experienced NGOs will be identified for carrying out the CBDRM program either per district or a group of

districts. The District Collectors office will be the responsible agency at the District level. State level Monitoring and Implementation will be with the RD Department which will coordinate with the Project Management Unit (PMU). The following different activities will be part of CBDRM program:

- i) Risk & Vulnerability Assessments - The exercise will review and upgrade similar initiatives undertaken in the recent past. The participation of the most vulnerable sections will be prioritized. Participatory Rural Appraisal (PRA) tools and methodology will be used to carry out the assessments covering hazards, vulnerabilities, capacities, assets and disaster risk. Using a multi-stakeholder dialogue and negotiation process Disaster Risk Management Plans (DRMP) will be created at village level. The DRMPs will list and map the most vulnerable communities, their locations, the risk exposure, the action to be taken, the responsible agencies/persons, their contact numbers. The efficacy of the DRMPs will be checked using mock drill exercises. The DRMP will be periodically reviewed and updated. A bound hardcopy of this exercise will be deposited with the Panchayat office and a soft copy will be deposited with the District administration.
- ii) Community Mobilization and Capacity Building - This will include awareness on disaster risk and preparedness at village level. Village Development Management Committee (VDMC) with representation from vulnerable groups, SHG groups, each hamlet that comprises the village panchayat, school teacher, and village panchayat president will be formed. Task forces, Early Warning & Evacuation and Search, Rescue and First Aid with multiple activities and skills are proposed. Mock drills will be conducted annually or bi-annually. They will be linked to particular date in order to create a regular event that will continue to be undertaken even after the CBDRM program comes to an end. A comprehensive Safe School Initiative will be undertaken in all schools in the area covered by the program can be seen as a school CBDRM program. Linking Communities to Early Warning System (EWS) and Multi-purpose Cyclone Shelter (MPCS). EWS and MPCS-MMCs are being set up as part of the ongoing NCRMP I. All CBDRM activities will be conducted at the locations of the EWS and MPCS where possible. This will create awareness of these infrastructures and also establish a physical focal point for DRM related activities in the villages. The partner NGOs through the EWS & Evacuation task forces will inform the communities of the exact locations and functions of the EWS, Cyclone shelters & Evacuation Routes. Nominated NGOs for CBDRM will be engaged for coordination of shelter and EWS level activities.
- iii) Capacity Strengthening for Emergency Response - Special attention will be given to hazards that are district specific. The potential to bring on board the volunteer base of the Andhra Pradesh Red Cross will be explored and links with the current program can also be built. The training needs for emergency response of the NSS, NCC and Civil Defense volunteer base will be assessed. With adequate training they could become part of a larger task force that can play an important role in Emergency situations.

29. *Sub-component 5.2: Technical support for risk reduction and response preparedness (US\$10 million):* The sub-component will include activities such as: (i) preparing a detailed vulnerability analysis of the cities and model various risks for effective mitigation planning and disaster response preparedness in consultation with community representatives and by applying local knowledge; (ii) carry out an in-depth assessment of the GoAP's *Apathbandhu* Insurance scheme (Accident Insurance Scheme for Below Poverty Line families) , Agriculture risk insurance, social safety nets and other such risk transfer mechanisms and develop recommendations for establishing an integrated program for risk transfer protecting the lives and livelihoods of the vulnerable populations , including widowed households, vulnerable female – headed households, poor households, SC and ST households, and low – income households; (iii) update the design guidelines for infrastructure in several key departments by evolving better design standards that factor in the expected peak wind speeds and rainfalls, including material specifications for the infrastructure in coastal region; etc.

**Component 6: Project implementation support - US\$25 million, US\$17 million Bank financing**

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

**Component 7: Contingency emergency response - US\$0 million**

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

32. Disbursements would be made against a positive list of critical goods or the procurement of works, and consultant services required to support the immediate response and recovery needs. All expenditures under this component, should it be triggered, will be in accordance with paragraph 11 of OP 10.00 and will be appraised, reviewed and found to be agreed with the Bank before any disbursement is made. In accordance with paragraphs 11 and 12 of OP 10.00, this component would provide immediate, quick-disbursing support to finance goods (positive list agreed with the Government), works, and services needed for response, mitigation, and recovery and reconstruction activities. Operating costs eligible for financing would include the incremental expenses incurred for early recovery efforts arising as a result of the impact of major natural disasters.

### Annex 3: Implementation Arrangements

#### INDIA: Andhra Pradesh Disaster Recovery Project

##### A. Project Administration Mechanisms

1. The State level Project Steering Committee (SSC) constituted at apex level for NCRMP will oversee and monitor the overall progress of project. The State Project Implementation Unit (SPIU) for NCRMP will act as the Project Management Unit for the project. The PMU will be supported by sector experts drawn from each of the Line Departments (LDs) implementing the project investments. The LDs shall be responsible for actual execution of the works and further maintain the infrastructure created. LDs will appoint nodal officers and will execute the project through respective field offices. The overall list of the various project components and respective implementing agencies is illustrated in the Table 6.

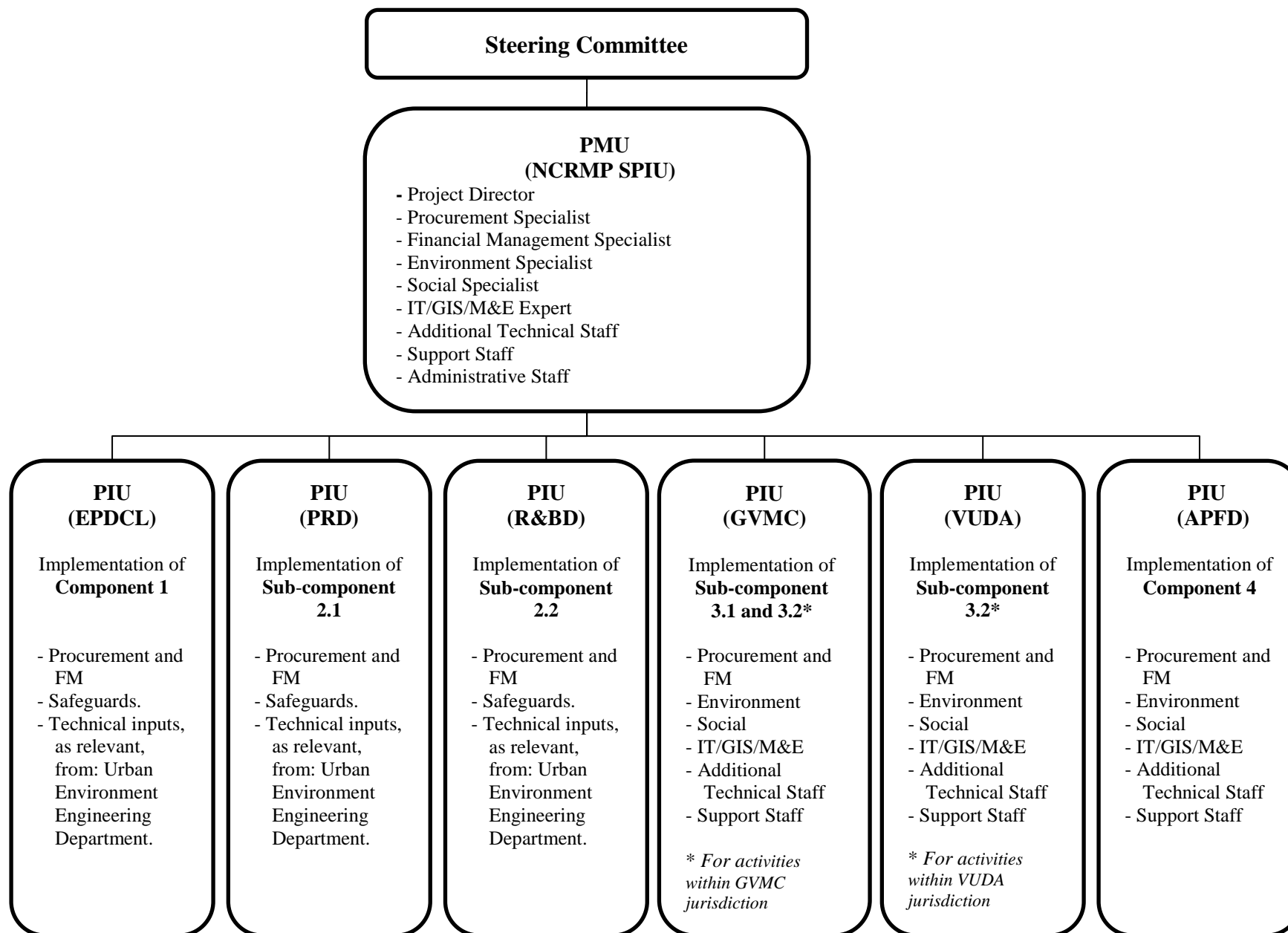
**Table 6: Project Components and Respective Implementing Agencies**

Components	Departments/Agency
<b>Component 1:</b> Resilient electrical network	<ul style="list-style-type: none"><li>Andhra Pradesh Eastern Power Distribution Company Ltd. (EPDCL)</li></ul>
<b>Component 2:</b> Restoration of connectivity and shelter infrastructure	<ul style="list-style-type: none"><li>Panchayati Raj Department (PRD) for Rural Roads and repair of cyclone shelters (Sub-component 2.1)</li><li>Road and Building Department (R&amp;BD) for Major District Roads (Sub-component 2.2)</li></ul>
<b>Component 3:</b> Restoration and protection of the beach front	<ul style="list-style-type: none"><li>Greater Visakhapatnam Municipal Corporation (GVMC) for Shore protection work (Sub-component 3.1)</li><li>GVMC and Visakhapatnam Urban Development Authority (VUDA) for Beach front restoration (Sub-component 3.2) in their respective jurisdiction</li></ul>
<b>Component 4:</b> Restoration of environmental services and facilities and livelihood support	<ul style="list-style-type: none"><li>Andhra Pradesh Forest Department (APFD), with the assistance of other partner agencies agreed with the Association</li></ul>
<b>Component 5:</b> Capacity building and technical support for disaster risk management	<ul style="list-style-type: none"><li>PMU</li></ul>
<b>Component 6:</b> Project implementation support	<ul style="list-style-type: none"><li>PMU and all implementing agencies</li></ul>

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



**Figure 1: Project Implementation Structure**



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

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

4. The PMU will be responsible for:

- a. Overall project management and reporting;
- b. Coordination with PIUs and line departments in approval of designs, assisting the PIUs in preparation of: Detailed Project Reports (DPRs), bidding documents, tendering schedules, etc.;
- c. Implementation of Component 5;
- d. Appointment of technical assistance consultants and others safeguards management support to the implementing agencies;
- e. Quality Assurance through third party audits;
- f. Maintaining MIS and Quarterly reporting;
- g. Progress reporting, financial management, monitoring and reporting;
- h. Ensuring compliance with agreed implementation procedures and other Bank requirements, etc.;
- i. Grievance redress.

5. The PIUs will be responsible for:

- a. Preparation of DPRs including technical designs, surveys and investigations, etc.;
- b. Tendering, bid evaluation, contract award, contract management, etc.;
- c. Financial Management and safeguards compliance;
- d. Progress and expense reporting to the PMU;
- e. Coordination with line departments for design, implementation, and hand-over arrangements;
- f. Grievance redress.

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

### ***Components 1***

7. Component 1 will be implemented by the EPDCL. A dedicated PIU will be housed within this Agency. EPDCL will also be responsible for quality assurance through third party audits.

### ***Component 2***

8. Component 2 will be implemented by the Panchayati Raj Department (PRD) for Sub-component 2.1, and by the Roads and Buildings Department (R&BD) for Sub-component 2.2, and two separate Project Implementation Units (PIUs) will be established. Each PIU will be coordinated by the respective Department Chief Engineer's Office. Surveys, investigations and

designs will be carried out by the respective Departments with inputs from the field staff under the Superintending Engineer of the respective District. Independent consultant(s) will be appointed by R&BD and PRD to support the day to day preparation and implantation activities of these tasks. PRD will also appoint external consultants for major bridges, if any. All procurement actions will be undertaken by the respective Departments; the management and construction supervision of works contracts will be carried out by the field staff of the respective Departments and Districts. Third party consultant appointed by the PIUs will carry out quality monitoring and audit of the works contracts.

### ***Components 3***

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

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

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

12. The PIUs will consist of:

- Consultant Firm: A Consultant Firm will be appointed by GVMC to support GVMC and VUDA with all the day to day preparation and implementation activities. The Consultant Firm will be responsible for preparation/review of Detailed Project Reports including technical designs, surveys, investigations etc.; tendering, bid evaluation, contract management; financial management and safeguard compliance and progress and expense reporting. It can also be supplemented by short term experts as required. The contract will be a tripartite agreement between the firm, GVMC and VUDA. Persons with clearly defined roles will be assigned and will report to both GVMC and VUDA separately.
- Designated Officials of GVMC and VUDA: Both GVMC and VUDA will provide a dedicated team of government officials towards the project. They shall be responsible for day to day implementation and coordination, also for quality control. Respective Project Managers shall be assigned by both agencies – of level of Superintending Engineer in GVMC and Superintending Engineer in VUDA. Other officials to be designated to the project are noted in detail in the implementation structure below.

#### **Component 4**

13. Components 4 will be implemented by the Andhra Pradesh Forest Department (APFD). The APFD will have a PIU at Visakhapatnam to implement this component. One or more Participating Agencies could assist APFD in the implementation of the Component 4. The Civil works will be executed through an arrangement with other Participating Agencies that will be assessed as needed. The plantations will be developed using the existing VSS (*Vana Samrakshana Samithies* – Village Forest Protection Committees) structure. All small civil works will be executed through the respective Eco Development Committees (EDC) and VSS.

### **B. Financial Management**

14. **Summary Assessment:** The guiding principles for the design of the financial management arrangements for this project are twofold: (i) build upon the successful implementation of the NCRMP I project with the same implementing agency, APRDMD, and (ii) use the country fiduciary systems, to the extent feasible and considered satisfactory for meeting the essential fiduciary requirements.

15. **Implementation Arrangements:** The State Project Implementation Unit (SPIU) for NCRMP I, under the nodal APRDMD will act as the Project Management Unit for the project. There are six end implementing agency identified: i) Andhra Pradesh Eastern Power Distribution Company Ltd (EPDCL) for resilient electrical network (32% of project cost), ii) Panchayati Raj Department (PRD) for Rural Roads and repair of old cyclone shelters, Road and Building Department (R&BD) for Major District Roads (28% of project cost), iii) The Greater Vishakhapatnam Municipal Corporation (GVMC) and Vishakhapatnam Urban Development Authority (VUDA) for restoration and protection of the beach front (18% of project cost) and iv) Andhra Pradesh Forest Department (APFD) for restoration of environmental services and facilities and livelihood support (5% of project cost).

16. **Risk Assessment:** EPDCL, GVMC and VUDA<sup>10</sup> (handling 50% of the project cost) will be implementing the externally funded project for the first time. Considering that other half of the funds are flowing to implementing agencies which are successfully implementing World Bank financed NCRMP I project or have implemented AP Community Forest management project, the overall financial management risk rating of the project is ‘Moderate’. The parameters of the financial management arrangements are described below:

17. **Funds Flow:** Wherever the implementing agency is state’s line department, funds from APRDMD will flow to respective line departments following the state treasury route. For resilient electrical network component funds for the project will flow from the State’s treasury through APRDMD to EPDCL’s separate bank account. For restoration and protection of the beach front component funds from APRDMD through Municipal Administration and Urban Development Department (MA&UDD) will flow to GVMC & VUDA in their respective separate bank accounts.

18. **Budgeting:** A separate budget code (with proper classification i.e. separate detailed head for **each** component and line department) under the capital expenditure head shall be created by

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<sup>10</sup> A separate FM assessments has been carried out for each of these implementing agencies.

GoAP for PMU under APRDMD to receive fund releases from the State treasury. Basis the estimated expenditure for financial year 2015-16 expenditure provision needs to be created under this new budget code.

19. **Staffing:** In line with increased size of the project (US\$ 370 million as against US\$ 167 million under NCRMP I) and implementation through multiple agency which will necessitate efforts on coordination by PMU, the existing finance staffing of PMU under APRDMD needs to be augmented. Presently, it has a finance controller, who is a retired finance officer and one accounts officer, who is of a rank of divisional accounts officer. The finance function under the PMU will require sanctioning and hiring of at least a senior officer from the state finance department or a chartered accountant with at least 8-10 years of experience. The finance function at line department's division offices will be handled by the respective Divisional Accounts officer. At EPDCL, GVMC & VUDA, dedicated finance manager has to be identified from the existing staff or new staff to be hired. At all levels, there should be adequate experienced subordinate staff.

20. **Accounting:** Accounting for project expenditures will be maintained on cash basis of accounting and separate books of accounts will be maintained for the project. The line departments will use Accountant General accounting system. EPDCL (SAP version 6), GVMC (software developed by Centre for Good Governance) and VUDA (TALLY) will use their existing respective accounting software. These financial accounting software are considered adequate for recording financial transactions and for generating reports for financial disclosure requirements.

21. **Financial Reporting:** PMU under APRDMD will submit quarterly IFR providing the financial progress against the project components, within 45 days from the end of each calendar quarter. IFRs will be prepared on the basis of actual expenditure information received from the line departments (pay and accounts officer classified abstract), EPDCL, GVMC, VUDA and actual expenditure incurred at the PMU and reconciled with the Accountant General (in case of line departments) and reconciled with separate bank accounts (in cases other than line department). The form and content of the IFRs are under preparation and will be agreed with GoAP during negotiations.

22. **Internal audit and internal control:** In case of line departments, reconciliation of accounts with Accountant's General and in case of separate Bank accounts; reconciliation of bank book with the bank statement will be an essential control mechanism in the project. The internal audit of the Bank project will be done six monthly by a firm of Chartered Accountant to be agreed with the Bank and under ToR to be agreed with the Bank.

23. **External Audit:** Presently, line departments' expenditure is audited by Accountant General (Audit) of Andhra Pradesh, EPDCL by private auditors appointed by CAG, GVMC by Local Fund Auditor and VUDA by a firm of Chartered Accountant. For expenditure made under this project by line department, GVMC & VUDA the annual external audit of the project financial statements for the credit will be carried out by CAG of India through the office of the Accountant General (Audit) of Andhra Pradesh<sup>11</sup>. For expenditure made by EPDCL, the entity

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<sup>11</sup> Has to be agreed with the State CAG

audit report clearly identifying the expenditure made under this project, will be considered as acceptable audit report. These audit reports will be due within 9 months of close of the financial year and in line with the disclosure policy will be made available in the public domain. The following audit reports will be monitored in PRIMA.

**Table 7: Implementing Agency and Audit Reports**

Implementing Agency	Audit	Auditors
APRDMD (PMU), Govt. of Andhra Pradesh	Project Financial Statement	CAG of India through the Accountant General AP
EPDCL	Project Entity Report	Private auditors appointed by CAG

24. **Disbursement Arrangements:** GoAP will pre-finance all the project expenditure through its own funds (through the budget line) and disbursements from the credit will be made basis the actual expenditure reported in the quarterly IFRs, subject to audit certification at the end of each financial year. Expenditure categories eligible for financing under the financing agreement and as per the disbursement percentage will be financed out of the proceeds of the credit. The actual expenditure will be reimbursed to the project and no advances will be provided. The project will submit withdrawal application to CAAA in DEA for onward submission to the World Bank for reimbursement.

25. **Retroactive Financing:** Retroactive financing up to a limit of US\$ 50 million of the credit will be available to the project to cover eligible project expenditures as agreed with the Bank, provided (a) the payments are made not more than 12 months before the expected date of signing of the legal agreements; (b) the activities financed by retroactive financing are related to the PDO and are included in the Project description; (c) the payments are for items procured in accordance with the applicable Bank procurement procedures. Retroactive financing of all expenditure would be based on a separate, stand-alone IFR.

26. **Supervision Plan:** The Bank will follow risk based approach in supervising the FM activities of the credit. In the first year intensive implementation support would be done on a quarterly basis to ensure implementation as per the agreed arrangements and continuing adequacy. Once the system is established, then more desk reviews with half-yearly missions should be sufficient. In the first year, three to four weeks of FM involvement is expected. The number of site visits will be aligned with the overall supervision plan of the project. The audited PFS and IFRs will be reviewed and discussed with project for mitigation of any issues raised by the auditors.

## **C. Procurement**

27. Procurement of goods, works and services under the proposed project will be carried out in accordance with the World Bank's "Guidelines: Procurement of Goods, Works and Non-Consulting Services under IBRD Loans and IDA Credits & Grants by the World Bank Borrower" dated January 2011 revised July 2014 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits & Grants by the

World Bank Borrowers” dated January 2011 revised July 2014 (Consultants Guidelines) and the provision stipulated in the Financing Agreement.

28. The proposed project has been triggered by emergency situation (OP 10.00) and therefore, provisions under paragraph 20 of OP 11.00 procurement under emergency situation shall apply.

29. Procurement of goods works and non-consulting services shall be conducted through e-procurement portal <http://www.eprocurement.gov.in> using Bank’s standard bidding documents. Procurement of Consulting Services may be switch over to e-procurement platform when the model RFP for e-procurement becomes ready. General Procurement Notice (GPN) was published on March 13, 2015 in UNDB and Specific Procurement Notice (SPN) shall be published against corresponding contract packages when it becomes ready.

## **Methods of Procurement**

### *Selection of Consultants*

30. Most of the consultancy services are required to be hired immediately for rehabilitation and reconstruction. Single-Source Selection of consulting firms and individuals may be used only if it presents a clear advantage over competition for the required consulting services in accordance to paragraph 3.8.

31. Selection of Consulting Firms through Consultants’ Qualification (CQS) may be appropriate for assignments estimated to cost up to US\$ 300,000 or equivalent in accordance with paragraph 3.7 of the Consulting Guidelines. Advertisement for expression of interest may be forgone or limited to State level for assignments estimated to cost less than US\$ 200,000. For assignments that are estimated to cost less than US\$ 100,000, advertisement is not mandatory as long as a shortlist of at least three qualified firms is established. For selection of Consultants, Quality and Cost Based Selection (QCBS) method is a preferred method and shortlist of consultants for services estimated to cost less and US\$ 800,000 equivalent per contract may be composed entirely of national consultants (paragraph 3.7). In addition, the following selection methods may be adopted depending upon size and complexity of assignments and as agreed in the Procurement Plan.

- Quality Based Selection (QBS).
- Selection under Fixed Budget (FBS).
- Least Cost Selection (LCS).
- Single Source Selection (SSS).
- Individual Consultant (IC).

### *Procurement of Works and Goods*

32. International Competitive Bidding (ICB): ICB is the preferred method for procurement of goods, works and non-consulting services. However, it is unlikely that there will be any ICB as almost all the packages fall below the ICB threshold value.

33. National Competitive Bidding (NCB): Any contract exceeding shopping threshold shall be procured using NCB method. The model bidding documents for NCB as agreed with the GoI Task Force (and as amended from time to time), shall be used for bidding. The following NCB provisions shall apply:

- i. Only the model bidding documents for NCB as agreed with the GoI Task Force (and as amended from time to time), shall be used for bidding;
- ii. Invitation to bid shall be advertised in at least one widely circulated national daily newspaper (or on a widely used website or electronic portal with free national and international access along with an abridged version of the said advertisement published in a widely circulated national daily inter-alia giving the website/electronic portal details from which the details of the invitation to bid can be downloaded), at least 30 days prior to the deadline for the submission of bids. For smaller packages (lesser than US\$ 1 million for Works and US\$ 500,000 for Goods), advertisement in state newspapers will be accepted with at least 15 days given for submission of bids;
- iii. No special preference will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises or enterprise from any given State;
- iv. Except with the prior concurrence of the Bank, there shall be no negotiation of price with the bidders, even with the lowest evaluated bidder;
- v. For prior review contracts, extension of bid validity shall not be allowed with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank (i) for the first request for extension if it is longer than four weeks; and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by Bank only in cases of Force Majeure and circumstance beyond the control of the Purchaser/Employer);
- vi. For prior review contracts, re-bidding shall not be carried out with reference to Contracts subject to Bank prior review without the prior concurrence of the Bank;
- vii. The system of rejecting bids outside a pre-determined margin or “bracket” of prices shall not be used in the project;
- viii. Rates contract entered into by Directorate General of Supplies and Disposal (DGS & D) will not be acceptable as a substitute for NCB procedures unless agreed with the Bank on case to case basis. Such contracts will be acceptable however, for any procurement under the Shopping procedure;
- ix. Two or three envelop system will not be used (except when suing e-procurement system assessed and agreed by the Bank).

34. Shopping: procurement of goods, works and non-consulting services may be carried out using shopping method (paragraph 3.5) for procurement of readily available off-the-shelf products of value less than US\$ 500,000, or simple civil works of value less than US\$ 1,000,000. Such method, if any, shall be agreed in the procurement plan. The implementing agency(ies) shall solicit at least three price quotations for the purchase of goods, materials, small works, or services (non-consulting), to formulate a cost comparison report.

35. Direct Contracting: Direct contracting for the procurement of civil works and goods (paragraph 3.7 of the procurement Guidelines) may be used to extend an existing contract or award a new contract. For such contracting to be justified, the Bank shall be satisfied that the



price is reasonable and that no advantage could be obtained by further competition. The direct contracting may be from the private sector, UN agencies/programs (for goods), or contractors or NGO that are already mobilized and working in the emergency areas.

36. Force Account: When contractors/suppliers are unlikely to bid at reasonable prices because of the location and risk associated with the project or a certain government agency has exclusive rights in certain type of works/supply, borrowers may use their own government departments' personnel and equipment or government owned construction unit may be the only practical method, provided that the borrower has sufficient managerial capacity and possesses the required technical and financial controls to report to the Bank on expenditure as per paragraph 3.9 of the Procurement Guidelines.

37. Framework Agreements: DGS&D rate contracts will be acceptable as framework agreement for procurement of Goods. State level rate contracts will be examined by the Bank and if agreed, may also be used as framework agreements. Implementing agencies also have option to set-up new framework agreements as per paragraph 3.6 of Guidelines.

38. Community Participation in Procurement: The participation of local communities such as Village Forest Protection Committees *Vana Samrakshana Samithies* (VSS); Eco-Development Committee (EDC) or any other communities as identified by Forest Department may be required to carry out plantation works; forest conservation works or any other works as deemed appropriate. The procurement arrangement for such participation shall in accordance with para 3.19 of the Procurement Guidelines. This arrangement shall be further elaborated in the OM.

39. Use of government Institutions and Enterprise: Government owned enterprise or institutions in India may be hired for its unique and exceptional nature if their participation is considered critical to the project implementation. In such cases, the conditions given in clauses 1.13 of Consultant Guidelines shall be satisfied and each case will be subject to prior review by the Bank.

40. Operational Cost: Any operational expenses (incremental cost) which would be financed by the project may be procured using the implementing agency's administrative procedures.

41. Other Conditions: Bank may consider further simplification of procedures if so requested by the implementing agencies and are within overall framework of Bank Guidelines.

#### *Implementation Arrangements*

42. The APRDMD shall be the nodal agency for the implementation of this project and shall house the Project Management Unit (PMU). The SSC at the state level will monitor and provide guidance for the smooth implementation of project. Each component of the project shall be implemented by different departments through their line department, i.e. Andhra Pradesh Eastern Power Distribution Company Ltd (EPDCL) for underground cabling; Panchayati Raj Department for Rural Roads and repair of old cyclone shelters; Road and Bridges Department for Major District Roads; The Greater Visakhapatnam Municipal Corporation (GVMC) for shore protection work and most of the beach front restoration activities; Visakhapatnam Urban Development Authority (VUDA) for selected activities under beach front restoration; and

Andhra Pradesh Forest Department (APFD) for restoration of environmental facilities and livelihoods support. All IAs shall establish Project Implementing Unit (PIU) with adequate resources for the smooth implementation of the project.

43. **Component 1: Resilient electrical network** – This component will be implemented by Andhra Pradesh Eastern Power Distribution Company Ltd. (EPDCL). A dedicated PIU shall be established and the underground cabling works shall be carried out in Visakhapatnam.

44. **Component 2: Restoration of connectivity and shelter infrastructure** – this components involves reconstruction/restoration of damages roads in four districts, i.e. Srikakulam, Vizianagaram, Visakhapatnam and East Godavari. The Roads & Building Department (R&BD) shall work on Major District Roads, while the Panchayat Raj Department (PRD) shall implement the Rural Roads and repair of cyclone shelters. The GoAP is currently implementing NCRMP I and NCRMP Additional Financing project funded by the World Bank and there are existing PIUs for PRD and R&BD departments.

45. **Component 3: Restoration and protection of the beach front** – all restoration works will be carried out within the Municipal areas and therefore, Municipal Administration and Urban Development Department is a nodal agency for implementation of this component. The nature of works involves protection and restoration works of Marine and Beachfront, parks and other public spaces along with Beach front including coastal roads, drainage and treatment plants. This component will be implemented by GVMC and VUDA.

46. **Component 4: Restoration of environmental services and facilities and livelihood support** – This component shall support the restoration of zoological garden, eco-tourism park, plant nurseries, shelter belt plantations, development of mangroves and shade plants including supporting recovery of livelihoods. Procurement would involve restoration and improvement of production capacity of horticulture crops, reconstruction and modernization of existing nurseries. The Forest Department will implement this component with the assistance of partner agencies agreed with the Association. The civil works will be implemented by Participating Agencies and will be assessed as needed. Village Forest Protection Committees *Vana Samrakshana Samithies* (VSS) will be entrusted to carry out plantation works; Eco-Development Committee (EDC) for forest conservation works. The procurement arrangement for such participation by the communities will be community participation as per para 3.19.

47. **Component 5: Capacity building and technical support for disaster risk management** - This component will be implemented by the PMU at state level with support from other agencies/departments. Procurement under this component would involve hiring of consultants for various technical studies and equipment procurement.

#### *Capacity Assessment of the Implementing Agencies*

48. As a part of project preparation process, capacity assessments of all the identified IAs were carried out using Procurement Risk Assessment System (PRAMS), face to face discussion and desk review of public procurement system in AP. The assessment reviewed the following: legal aspects on procurement practice; procurement cycle management; support and control system; staffing and general procurement environment, etc.

49. The assessment found that there are multiple agencies with different legal status implementing this project. For instance, EPCDL is a government PSU operating under commercial law. Likewise, GVMC and VUDA are semi-autonomous agencies financially independent from the government, while VSS and EDC are village forest protection committees. Other implementing agencies like R&BD, PRD, and Andhra Pradesh Forest Department are government agencies. The assessment found out that those autonomous agencies enjoy certain flexibility in operations, however, they are bound to follow government procedures particularly procurement. The government of AP has Purchase Manual and Code for Public Works. All agencies irrespective of their legal status follow these guidelines and public procurement is carried out using e-procurement platform available at [www.eprocurement.gov.in](http://www.eprocurement.gov.in). As per the government instruction, all procurement valued more than INR 100,000 (US\$ 1,700) has to be processed electronically. In general, all the identified agencies are well versed with the government procurement procedures.

50. There are multiple agencies executing different components of this project. Road and Building Department and Panchayati Raj Department are familiar with the Bank procedures; however, all other agencies will be implementing the externally funded project for the first time. In addition, it is noted that many agencies have not handled high value procurement in the near past. All procurement activities implemented by them are either State or Centrally funded project following their own procurement system. Therefore, switching over state government procedures to World Bank procurement procedures would be a challenge and constant support in terms of training, and handholding support will be required at the initial stage. Further, as the project is triggered by emergency situation, simplified procurement procedures as per OP 11.00 are applied for this project. The risk ratings of IA differ from moderate to high and therefore, overall risk for this project is rated as “**Substantial**”.

51. Many staff working in project procurement will be executing World Bank procurement procedures for the first time. Therefore, it is critical for the project staff to get familiarized with the Bank procurement procedures by attending trainings or workshops in ASCI or NIFM etc. The Bank conducted 2 day induction workshop in Visakhapatnam in April 2015. The Bank will also provide hand holding support as and when required.

**Table 8: Procurement Risk and Mitigation Measures**

<b>Risk Factor</b>	<b>Initial Risk</b>	<b>Mitigation Measure</b>	<b>Residual Risk</b>
Record keeping and documentation	Moderate	All IA will maintain all procurement records duly catalogued and indexed. GVMC has migrated to electronic system. Other agencies will be encouraged to adopt similar practices.	Low
Fiduciary Risk relating to main principles of the Bank Procurement Guidelines	High	Experienced procurement staff/consultant shall be positioned to guide IA. Attend training in ASCI and NIFM on Bank procurement procedures. Conduct training on Bank procurement procedures.	Substantial

<b>Risk Factor</b>	<b>Initial Risk</b>	<b>Mitigation Measure</b>	<b>Residual Risk</b>
		Regular supervision support and monitoring.	
Inefficiencies and delays in procurement process	High	Regular monitoring through procurement plan. Use of SEPA is recommended. Use of e-procurement platform.	Substantial
Insufficient competition in procurement	High	Use of e-procurement platform. Proper packaging shall be carried out wherever feasible.	Substantial
Contract Management	High	Disclosure of all contract awards in IA website as well as central portal website. Training on Contract management. Establish grievance mechanism in some IA needs to be enhanced.	Substantial
Probability of staff handling procurements being transferred	High	Continue dialogue with IA to retain trained staff.	Substantial
Procurement Risk	High	Disclosure of procurement plan. Disclosure of contract awards. Creating awareness of procurement risks. Regular reviews such as PPR, internal Audit, external audit etc. Promoting transparency through use of MIS.	Moderate
<b>Overall Risk</b>	<b>High</b>		<b>Substantial</b>

#### *Procurement Plan and use of SEPA*

52. The Procurement Plan for the project shall be prepared detailing the activities to be carried out reflecting the actual project implementation needs. For each contract to be financed under the project, different procurement methods, the estimated cost, prior review requirements and time frame will be agreed between the Borrower and the Bank. The Procurement Plan once finalized will be made available in the projects database and in the Bank's external website. The Procurement Plan shall be subsequently migrated to procurement plan monitoring system SEPA and will be updated annually reflecting the changes in prior review thresholds, if any.

#### *Frequency of Procurement Supervision and Review by the Bank*

53. Frequency of Supervision. The Bank normally carries out the implementation support mission on semi-annual basis. The frequency of the mission may be increased or decreased based on the procurement performance of the project.

54. Review by the Bank. The Bank will prior review the following contracts:

- Works: All contracts more than US\$ 10.0 million equivalent;
- Goods: All contracts more than US\$ 1.0 million equivalent;
- Non-Consulting Services: All contracts more than US\$ 1.0 million equivalent;
- Consultancy Services: All contracts more than US\$ 500,000 equivalent for firm; and
- Consultancy Services: All contracts more US\$ 200,000 equivalent for individuals.

55. The PMU shall prior review the first contract issued by each implementing agency, if the estimate of those contracts are below the prior review threshold value. The Bank will conduct prior review for only those contract whose estimate falls in prior review threshold value. In addition, the justifications for all contracts to be issued on LIB, single-source (>US\$ 30,000) or direct contracting (>US\$ 30,000) basis will be subject to Banks prior review. These thresholds are for the initial 18 months period and are based on the procurement performance of the project, these thresholds will be modified. In addition, the Bank will carry out an annual ex post procurement review of the procurement falling below the prior review threshold mentioned above.

56. All contracts below the specified prior review threshold value shall be subject to Post Procurement Review (PPR). For the avoidance of doubts, the Bank shall be entitled to conduct, at any time, independent procurement reviews of all the contracts financed under the Credit. The IA shall prepare a list of contract and submit it to the Bank for conducting PPR. The PPR will be conducted on annual basis.

#### *Use of e-procurement portal*

57. Procurement of goods works and non-consultancy services shall be conducted using the e-procurement portal [www.eprocurement.gov.in](http://www.eprocurement.gov.in). This portal had been assessed by the Bank and NCRMP I is already using this portal for conducting procurement. All IAs shall use this e-procurement portal for procurement of goods works and non-consulting services.

#### *Procurement Methods*

58. The table 9 below provides highlights of various procurement methods to be used for this project. These methods along with agreed threshold should be reflected in the procurement plan.

**Table 9: Procurement Methods**

Category	Method of Procurement	Threshold (US\$ Equivalent)
Goods and Non-consulting services (including IT contracts)	ICB	>3,000,000
	LIB	wherever agreed by Bank
	NCB	Up to 3,000,000 (with NCB conditions)
	Shopping	Up to 500,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
	Framework Agreements	As per para 3.6 of Guidelines
Works	ICB	>40,000,000
	NCB	Up to 40,000,000 (with NCB conditions)
	Shopping	Up to 1,000,000
	DC	As per para 3.7 of Guidelines
	Force Account	As per para 3.9 of Guidelines
	Community Participation	As per para 3.19 of Guidelines
Consultants' Services	CQS/LCS	Up to 300,000
	SSS	As per para 3.9-3.11 of Guidelines
	Individuals	As per Section V of Guidelines
	QCBS/QBS/FBS	for all other cases

	(i) International shortlist (ii) Shortlist may comprise national consultants only	>800,000 Up to 800,000
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#### **D. Environment and Social (including safeguards)**

##### **Social (including Safeguards)**

59. The reconstruction and recovery efforts through the Andhra Pradesh Disaster Recovery Project will provide both direct and indirect benefits to the State of Andhra Pradesh and its 49.4 million inhabitants and in specific to the populations of the coastal areas affected, specifically the four heavily impacted districts of Srikakulam, Vizianagaram, Visakhapatnam and East Godavari (total approximate population of 13.3 million residents). Restoration of roads, shelters, beach front, environmental services, and other public buildings will benefit poor, vulnerable, the women, the elderly, children, differently-abled, and socially marginalized populations; more than anybody else. The proposed livelihoods component will support restoration of mangroves, shelterbelts, and forestry farming for the benefit of poor and vulnerable coastal families, including widowed, female-headed and socially excluded households.

60. **Safeguard Risks and Application of Banks Safeguard Policies:** Among the seven proposed components under the project, five components viz.; i) constructing resilient electrical network; ii) restoration of road connectivity and shelter infrastructure; iii) restoration and protection of the beach front; iv) restoration of environmental facilities and livelihood support for especially poor coastal families, widows, unemployed youth (boys/girls) ; v) capacity building and Technical Assistance for Disaster Risk Management - would involve safeguard aspects that need to be avoided and/or minimized through developing and placing appropriate safeguard provisions and systems in the project. The preliminary screening results of sub projects conducted during the months of February and March 2015, indicates the below.

61. The results from preliminary screening exercise conducted for sub-projects during February and March 2015, indicates that the reconstruction and strengthening of the affected roads/bridges may involve some involuntary resettlement impacts on land owners, lease holders, and squatters. So far, proposed sub-projects under road infrastructure improvement (Component 2) have been listed out and these are 214 in number. Out of this, only 12 sub projects would have social issues and these are proposed to be taken-up in the second year of the project cycle after the due diligence on the technical (engineering design) and safeguards side (ESAs and EMPs/RAPs) is completed. The sub-projects which have no social and environmental issues will be taken up under Phase I works, for which the detailed design preparation is underway. Other components, such as underground electrical cabling works and beach front development, would not involve land acquisition but may result in temporary disturbances to neighborhood population and may affect some squatters. Therefore, OP 4.12 has been triggered.

62. Further OP 4.10 on Indigenous Peoples has been triggered because of presence of schedule tribe population in the project districts. As mentioned above, about 202 road sub-projects out of a total of 214 proposed works are not expected to require land or have adverse

social impacts. However, as required under the IPMF, the activities under each sub-project will be eligible for financing provided that the policy requirements that include assessment, plan preparation and consultations have been completed.

**63. Legal and Policy Framework and Institutional Capacities:** The recently legislated Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act of India (RFCT-LARRA, 2013) is ratified by the State government. The Government of Andhra Pradesh has established strong capacities in designing and implementing R&R programs. The capacities were built over a period of long association of the Bank with the state, as several Bank assisted projects were implemented and presently are under implementation. LA is carried out through Special Collectors assigned the responsibility at the district and specific project areas. The SPIU, the implementing agency of NCRMP I is identified as the nodal agency for implementing APDRP. The SPIU already has social and environmental specialists and will ensure appointment/designation of counterpart officers with other implementing departments and agencies, PWD, VUDA, GVMC, Forest and Panchayat Raj Departments. With the experience gained through implementation of NCRMP I and through the implementation support of the APDRP, the key implementing agencies in the State, will be able to better address environmental and social issues more systematically in their regular operations. The State Government has established State level Commissionerate, R&R office and also have specific legislations, policies, and schemes for protection and welfare of the scheduled tribes, women, children, and other vulnerable groups.

**64. Social Safeguards Documents Preparation:** Stakeholder consultations both at project level and district levels were completed in the months of March and April 2015. The Government of Andhra Pradesh has prepared an ESMF in line with Bank's requirements despite availability of very limited time and the emergency nature of the operation. The ESMF serves as a comprehensive and a systematic guide covering policies, procedures and provisions, to ensure that the social and environmental concerns/issues are systematically identified and addressed. It will also support compliance with applicable laws and regulations of GoI and GoAP apart from meeting the requirements of the relevant Bank policies. The ESMF includes RPF, IPMF and GESI Guidelines and implementation arrangements for implementing the social and environmental safeguards. The ESMF set out principles and procedures for carrying out social screening, and preparing and implementing Resettlement Action Plans (RAP) based on safeguards categorization during screening. The sub-projects will be selected after detailed/appropriate level of assessment, including consultation with concerned key stakeholders. All sub projects following the provisions of the OP 4.10, will be screened for indigenous population and, as required, will prepare an Indigenous Peoples Development Plan (IPDP). Over-all social management approach for the project will include the following key steps and presented in more detail under environmental sections.

***Social screening:*** This helps in early identification of key social issues such as land acquisition, displacement, tribal/indigenous population, etc. at the sub-project level. The screening process forms the first step in the social management process for the project and has been 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 screened and sub-projects with no significant adverse social impact are being identified for implementation under Phase I.

***Appropriate SIA and RAP:*** For sub-projects with potential significant adverse social impacts (as identified from the screening results), a Social Impact Assessment (SIA) and *sub-project specific appropriate Resettlement Action Plan* (RAP) will be prepared in accordance to Bank's OP 4.12. Similarly an IPDP will be prepared if found required OP 4.10. The screening results indicate that sub-projects with the potential for significant adverse social impacts are few in number. These are primarily expected to be limited to roads and bridges works.

65. ***Indigenous Peoples Management Framework (IPMF):*** The IPMF will (i) record consultations carried out for the project, (ii) set out a framework for free, prior, and informed consultations with the primary stakeholders including the tribal people for implementing sub-projects, (iii) chart out specific strategies for ensuring that positive benefits are delivered to the tribal groups living in project areas with addressing their socio-economic needs in a culturally sensitive manner and through their participation, and (iv) measures to mitigate adverse impacts, if any, compliant with Bank safeguards policy.

66. ***Gender Equality and Social Inclusion:*** Women and girls generally tend to be disproportionally affected by natural disasters. Commonly recorded reasons for higher death tolls among women and girls include: a) cultural constraints on female mobility which hinder self-rescue, for example, women may not leave the home without male permission, they may be reluctant to seek shelter because shared communal facilities do not have separate, private spaces for women, b) lack of skills such as swimming or tree climbing, which are traditionally taught to males, c) less physical strength than males, induced partly by the effects of prolonged nutritional deficiencies caused by less access to food than men and boys.

67. Recognizing these vulnerabilities, the project strongly emphasizes attention to gender equity and social inclusion in the implementation process. The proposed livelihoods component will support restoration and strengthening of livelihood activities, wherein substantial female participation would be ensured. The restoration of public buildings will have design features that will pay special attention to the needs and interests of vulnerable people including children, women, and aged, physically disabled, and other social groups (e.g. separate toilets for women and men in public buildings, separate waiting areas for women, separate toilets for girls and boys, etc). The proposed disaster risk reduction initiatives will similarly focus on equal participation of and benefits for women, children, and other vulnerable groups. The gender equity and social inclusion outcomes of the project shall be monitored with key performance indicators specified in the results matrix.

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



headed households; and (iv) Joint ownership in the name of husband and wife will be offered in case of non- women headed households.

69. **Citizen Engagement Strategy:** The key elements of the citizen engagement strategy for this operation include the following: (i) suo motu disclosure of important project related information by the government on its website and at the appropriate local level under section 4 of the Right to Information Act and disclosure procedures agreed with the Bank, (ii) framework for consultation in the ESMF with the key stakeholders during planning, design and implementation of all sub-projects; (iii) ensuring free, prior, informed consultation with the Scheduled Tribe groups and their representatives for obtaining broad community support as a part of preparation of specific sub-projects relevant to that area; (iv) Grievance Redress Mechanisms (GRM) at PIU and SPIU levels to meet specific grievance redress requirements of this operation; (v) promoting community based risk reduction initiatives with the participation of and networking with relevant stakeholders including women, school children, youth, civil society organizations, and local bodies.

70. **Consultation, Disclosure:** The SPIU conducted district level stakeholder consultations in Visakhapatnam, Vizianagaram, Srikakulam and East Godavari in the month of April 2015 to discuss the Project objectives, concerns of the stakeholders and impacts of the project. This was followed up with community consultations at sub project level. The stakeholder consultations has provided useful suggestions and helped to inform the concerns of the project and its design. The consultation workshop has also discussed the safeguard aspects of the project, their addressal and management. The ESMF and other relevant project documents have been disclosed on SPIU website. All other relevant project documents such as RAPs and EMPs and IPDPs will also be disclosed on SPIU website as per provisions of the Banks disclosure guidelines.

71. **Grievance Redress Mechanism (GRM):** For PAPs, a GRM will be established at all levels with guidelines agreed with the Bank. The GRM will be a multi-tiered system that includes Village Panchayat / field-level project staff, district-level grievance committee, and the State Steering Committee (SSC). Further, the RFCTLA&RR 2013 has prescribed a multi-layered GRM for land acquisition.

### **Environment Management and Safeguards**

72. The proposed investments/works such as creation of resilient electrical network (Component 1); restoration of connectivity and shelter infrastructure (Component 2); restoration and protection of the beach front (Component 3); restoration of environmental services and facilities and livelihood support (Component 4) and some capacity building and technical support activities (Component 5) for disaster risk management, having a bearing on the environment management and safeguard aspects of the project. 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. Other activities under project would focus on implementation support and other such softer aspects. Any significant or irreversible adverse impact on environment is not envisaged from the implementation of such interventions.

73. **Potential Issues/Impacts.** 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.

74. Potential adverse impacts on account of activities/works proposed under Components 1 to 4 of the project may include: (i) direct/indirect environmental and social impacts resulting from poor site selection and inappropriate engineering/designs (beach restoration and shore protection works are specifically critical); (ii) impact on sediment and wave movement, including the risk of erosion or accretion in surrounding areas (in case of hard shore protection works, which may be piloted based on recommendations from a comprehensive study currently being undertaken by a large team of ocean and coastal engineering experts to address the heavy erosion of the Visakhapatnam city beach); (iii) impact on the drainage pattern of the area, including impact on coastal flora and/or fauna due to changes in tidal water flow; (iii) felling of trees and clearance of vegetation for sub-project construction; (iv) impact on certain/specific endangered species like the olive ridley sea turtles, including on their nesting areas (from inappropriate design of shore protection work and beach development activities); (v) safety and health concerns for general public, both urban (more vulnerable due to higher densities) and rural from construction activities; (vi) occupational health and safety concerns for workers involved in construction; (vii) inconvenience and temporary disruption to services and access to certain public places and facilities; (viii) impacts due to construction material (sand, water, earth, aggregate) sourcing and transportation and; (ix) concerns arising out of improper disposal of debris and other construction wastes.

75. **Over-all Environment Management Process.** In order to ensure effective environmental management in a scenario where multiple sub-projects/activities are proposed at different locations along the coast of Andhra Pradesh and their specific locations are not known (at this stage of project preparation), an approach involving preparation, application and implementation of an Environment and Social Management Framework (ESMF) has been adopted for the project. Despite the emergency nature of the operation and very limited time available for project preparation, the client has prepared an ESMF in line with Bank's requirements.

76. The ESMF serves as a comprehensive and a systematic guide covering policies, procedures and provisions, which are being/will be integrated with the over-all project cycle to ensure that the environmental concerns/issues are systematically identified and integrated into the project/sub-project cycle. It will also support compliance with applicable laws and regulations of GoI and GoAP apart from meeting the requirements of the relevant Bank policies. The ESMF is also drawing experience and lessons from NCRMP I, wherein it was applied and implemented in Andhra Pradesh along with Odisha for a similar operation (but ex-ante) that is currently well into implementation.

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

- (i) *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.
- (ii) The environment screening process for the project will use/is using a robust methodology supported by use of scientific tools such as GIS and remote sensing techniques, which has helped in avoiding environmentally sensitive sites/features to a large extent. The results will be collated component-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 Andhra Pradesh as well) and was found to be quite effective in identifying issues early-on even in a scenario where a large number of sub-projects were being considered across a long coastline.
- (iii) 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 beach/shore protection works and underground electric cabling works.
- (iv) 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.

- (v) For ensuring compliance to *specific Bank policies*, particularly for activities that trigger OP 4.04 on natural habitats or OP 4.09 on Pest Management or OP 4.11 on Physical Cultural Resources, sub-project specific comprehensive management plans will be prepared in line with principles and requirements set forth under the applicable policy by bringing-in appropriate level of expertise, as required.
- (vi) *Integration of Environmental Requirements in Bidding Documents.* 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.

78. The ESMF describes institutional arrangements, including roles and responsibilities of various players and monitoring requirements, required for effectively managing the environmental aspects of project planning and execution. These arrangements include Independent/Third Party Consultants to assess the application and implementation of the ESMF and its instruments such as generic or sub-project specific EMPs, as the case may be. Also, mid-term and end-term project assessment/evaluation will be undertaken by the PMU and the report will be shared with the Bank.

79. **Key Environmental Parameters Being Considered.** Some of the key environmental parameters/aspects that are being considered in the preparation of the ESMF include - sensitive natural habitats including National Parks, Sanctuaries, Wetlands, Reserved and Protected Forests; movement/nesting/breeding sites of endangered species (outside the protected areas); trees and vegetation; water logging, flooding and drainage issues; sediment movement; erosion and siltation; physiographic conditions; material sources and their requirement (earth, sand, stone, water) for construction; management and disposal of spoils and wastes; pre-dominant land use and; presence of cultural properties and sensitive receptors such as education and health facilities.

80. **Stakeholders.** The key stakeholders in the project are those are vulnerable to cyclone, storm surges, and floods in the coastal areas of the state. The primary beneficiaries will be the coastal communities in the four participating districts of Andhra Pradesh, benefitting from targeted risk mitigation and recovery interventions. The secondary stakeholders include officials from APRDMD, GoAP, local governments/village Panchayats; NGOs; and selected government departments such as Public Works, Panchayati Raj, Forest, VUDA, GVMC, and other administrative officials/staff in the four affected districts of the state associated with the planning, design and implementation of APDRP.

81. **Consultation.** 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. Guidance for this purpose is being provided 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.

82. In accordance with the applicable Bank policies, public consultations at the local level (in areas where specific investments will be made) are being/will be carried out. The consultation

process for the project includes a range of formal and informal on-site discussions, focus group discussions/meetings and targeted stakeholders such as local residents; roadside and beach-side communities; local bodies like village Panchayats; and selected government departments such as Public Works, Electric Utility Company, Marine Engineering and Other Experts and Forest Department. The public consultation is being designed in a way that: (i) affected people are included in the decision making process; (ii) public awareness and information sharing on project alternatives and benefits are promoted; and (iii) views on designs and solutions from the communities are solicited.

83. Inputs/feedback on the draft ESMF and views of stakeholders on the approach towards minimization/ mitigation of potential negative impacts on people and environmental resources have been sought. Expert opinion on specific issues related to over-all design/components of the project and applicability of environmental regulations is also being sought during meetings/workshops. Outputs from this process will be integrated into the project/sub-project design, where technically feasible.

84. As part of the on-going project preparation, extensive public consultations are being carried out by the SPIU (with support from concerned line agencies and district administration) to inform about over-all project objectives, scope and for obtaining feedback on sub-project selection process and on the draft ESMF. Four district level and one in Vishakhapatnam city consultation has been completed so far and more are being carried out as part of the on-going screening exercises. Public involvement and participation process will continue through the project implementation stage as well. The sub-project specific EA/s (environmental assessment) and SA/s (social assessment) and Resettlement Action Plan/s (RAP/s), where required, will be prepared in consultation with affected communities and the draft/s will be disclosed to solicit feedback.

85. **Staffing Arrangements for Environmental Management.** Staffing arrangements for environment management in the project are given below.

- At PMU, an Environmental Specialist has been deployed to handle all matters pertaining to environmental management in the project (for both NCRMP I and this project), including activities related to project planning and preparation, supervision, monitoring, evaluation, reporting and documentation. The role of this specialist also includes dealing with matters pertaining to training and capacity building; regulatory clearances; integration of ESMF into project design and contract documents; preparation of ToRs for studies (such as for EA, as and if required) and; co-ordination with the participating SDMAs on environmental activities in the project. The state level Environmental Officer shall also be responsible for data collation and documentation on environmental aspects of the sub-projects in the project. Additional expertise as may be needed for specific activities such as those under Component 3 and triggering requirements of OP 4.11 and 4.04, will be engaged by the PMU.
- The Line Department/agencies shall be responsible for actual execution of the works and maintenance of the infrastructure created. Each LD will appoint/designate nodal officer and will execute the project through respective field offices. Further, the LD will designate an officer/appoint expert for environment and social management/safeguard activities.

- At the sub-project level, the contractor would be responsible for planning, executing and coordinating the implementation of the ESMF provisions as laid out in the contract documents; overseen by the concerned line department staff.
- During implementation, an ‘Independent/Third Party Auditor’ would audit/review the implementation of the works in accordance environmental, health and safety management provisions set out in the respective contracts.

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

87. A detailed training plan and modules will be prepared incorporating the short (project specific) and longer term capacity building needs of the PMU, PIUs and Nodal Departments/Agencies involved in the project. The plan will consist of different training modules specific to the needs of various target groups. This will also cover sharing of implementation experience (good practices and lessons learnt) from NCRMP I, where similar works are currently under execution in Odisha and Andhra Pradesh.

88. **Monitoring Mechanism.** The ESMF provides monitoring and evaluation parameters for various sub-project/investment categories and describes the institutional arrangements that would be required to facilitate the ‘process’ and ‘progress’ monitoring. Monitoring reports will be prepared by the State’s Environment Officer once in every quarter covering all investment categories. These reports will be integrated into the Project’s primary quarter report, with a summary within the Project report, and the full EO monitoring report included in the annex. A comprehensive report will be prepared by PMU at mid-term and end-term and this will be shared with the Bank. The Bank’s monitoring strategy with regard to application and implementation of ESMF will include: (a) review of various outputs such as screening reports, stakeholder consultation documents, EAs, EMPs, DPRs and Bidding Documents; (b) review of status/quarterly reports and ToRs for various studies/activities; (c) regular participation in supervision missions (once in six months and interim missions, if and as required) and; (d) supporting training and capacity building activities.

89. **Disclosure.** The ESMF incorporating comments from the Bank’s review has been disclosed in the Bank’s Infoshop and in Project Authority’s website. Other relevant project documents (including screening reports and EAs) will be disclosed on the state website and at other places accessible to the general public/interested individuals/groups in line with the requirements of Bank’s Operational Policies.

## **E. Project Monitoring and Evaluation**

90. The multi-tier implementation arrangements under the Project include supervision and monitoring roles and responsibilities of each implementing unit. 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.

91. The geo-referenced Management Information System (MIS) developed for NCRMP I will be adapted and expanded for this project.

## **Annex 4: Implementation Support Plan**

### **INDIA: Andhra Pradesh Disaster Recovery Project**

#### **Strategy and Approach for Implementation Support**

1. The Implementation Support Plan (ISP) for Andhra Pradesh Disaster Recovery Project has been developed based on the specific nature of the components, the planned implementation schedule, lessons learned from similar projects in the sector, specific needs as identified by the Systematic Operational Risk-Rating Tool (SORT), as well as the fact that the project was prepared under emergency procedures. The plan will be regularly reviewed and revised as required.
2. The ISP includes frequent review of implementation performance and progress, and a multi-sectoral team. The Bank's team will monitor implementation through: (i) reporting of key performance indicators as defined in the Results Framework; (ii) independent verification of project activities through field visits and documentation review; (iii) proper fiduciary management of all activities carried out by the PMU and PIUs; (iv) reconciliation of payments with contracts; and (v) regular communication with PMU and PIUs.
3. Information from various sources will be used to assess and monitor implementation progress. In addition to the data generated through the Project's MIS and M&E systems (see Annex 3), the Bank will also review the findings and results of third party assessments and environmental and social audits. In addition, and as required, targeted support including short missions by subject matter experts will be carried out.
4. The Bank's procurement, financial management, and environmental and social safeguards specialists will also provide timely and effective support to the GoAP. In addition to carrying out an annual ex-post review of procurement that falls below the prior review thresholds, the procurement specialist will lead procurement focused missions depending on the needs and as agreed to by the GoAP. The financial management specialist will review all financial management reports and audits and take necessary follow-up actions as per the Bank procedures. These team members will also help identify capacity building needs to strengthen procurement and financial management capacity. Semiannual inputs from the environmental and social specialists will be required throughout the Project, and formal supervision missions and field visits will monitor the implementation of the ESMF in accordance with the Bank safeguard policies, and suggest any corrective measures as necessary.
5. The following ISP reflects the preliminary estimates of the skill, timing, and resource requirements over the implementation period of the Project. Keeping in mind the need to maintain flexibility over project activities from year to year, the ISP will be reviewed from time to time to ensure that it continues to meet the implementation support needs of the Project.
6. In addition, the team will work in taking advantage of opportunities for cross-learning, combining external expertise, and carrying out joint missions with the ongoing NCRMP I.



## Implementation Support Plan

7. The table 10 below indicates the level of inputs that will be needed from the Bank to provide implementation support for the proposed Project.

**Table 10: Implementation Support Plan**

Time Year	Focus	Primary Skills Needed	Number of Trips	Resource Estimate (US\$)	Partner Role	Comments
1	<ul style="list-style-type: none"> <li>• Project launch</li> <li>• FM systems functioning effectively</li> <li>• Procurement practices following Bank norms</li> <li>• ESMF is in place</li> </ul>	<ul style="list-style-type: none"> <li>• Team lead</li> <li>• FM, Procurement</li> <li>• Safeguards Specialist</li> <li>• Disaster Management Specialist</li> <li>• Communication Specialist</li> <li>• Road and Bridge Specialists</li> </ul>	<ul style="list-style-type: none"> <li>• Sept. 2015</li> <li>• March 2016</li> <li>• September 2016</li> </ul>	<ul style="list-style-type: none"> <li>• 45,000</li> <li>• 45,000</li> <li>• 45,000</li> </ul>	<ul style="list-style-type: none"> <li>• Staff up PMU/ PIU</li> <li>• Contract</li> </ul>	<ul style="list-style-type: none"> <li>• Project will likely become effective in June 2015.</li> <li>• Task team to support smooth start-up following effectiveness</li> </ul>
2	<ul style="list-style-type: none"> <li>• Monitor implementation of project activities</li> <li>• FM, Procurement, Safeguards</li> </ul>	<ul style="list-style-type: none"> <li>• Team lead</li> <li>• FM, Procurement</li> <li>• Safeguards Specialist</li> <li>• Disaster Management Specialist</li> <li>• Road and Bridge Specialist</li> <li>• Flood protection specialist</li> <li>• Livelihoods specialist</li> </ul>	<ul style="list-style-type: none"> <li>• March 2016</li> <li>• September 2016</li> </ul>	<ul style="list-style-type: none"> <li>• 45,000</li> <li>• 45,000</li> <li>• 45,000</li> </ul>	<ul style="list-style-type: none"> <li>• Provide implementation updates, compliance reports, and organize field visits</li> </ul>	<ul style="list-style-type: none"> <li>• Support PIUs as necessary</li> <li>• Ensure safeguards arrangements are built into implementation plans</li> <li>• Mid-Term Review</li> </ul>
3	<ul style="list-style-type: none"> <li>• Monitor implementation of project activities</li> <li>• Mid-Term Review</li> <li>• FM, Procurement, Safeguards</li> </ul>	<ul style="list-style-type: none"> <li>• Team lead</li> <li>• FM, Procurement</li> <li>• Safeguards Specialist</li> <li>• Disaster Management Specialist</li> <li>• Road and Bridge</li> </ul>	<ul style="list-style-type: none"> <li>• Oct. 2016</li> <li>• May 2017</li> </ul>	<ul style="list-style-type: none"> <li>• 45,000</li> <li>• 45,000</li> </ul>	<ul style="list-style-type: none"> <li>• Prepare comprehensive project progress report in advance of each mission</li> <li>• Mid-term</li> </ul>	<ul style="list-style-type: none"> <li>Support to monitor progress of activities, provide technical oversight, ideas for improvement, etc.</li> </ul>

Time Year	Focus	Primary Skills Needed	Number of Trips	Resource Estimate (US\$)	Partner Role	Comments
		Specialist • Flood protection specialist • Livelihoods specialist			review	
4	• Project withdrawal and closure • Scaling up of successful models	• Team lead • FM, Procurement • Safeguards Specialist • Disaster Management Specialist • Road and Bridge Specialist • Flood protection specialist • Livelihoods specialist	• Oct. 2017 • May 2018	• 45,000 • 45,000	• Prepare comprehensive project progress report in advance of each mission	• Support to monitor progress of activities, provide technical oversight, ideas for improvement, etc.
5	• Project withdrawal and closure • Scaling up of successful models	• Team lead • FM, Procurement • Safeguards Specialist • Disaster Management Specialist • Road and Bridge Specialist • Flood protection specialist • Livelihoods specialist	• Oct 2018 • Mar 2019	• 45,000 • 45,000	• Prepare comprehensive project progress report in advance of each mission	• ICR Mission

## **Annex 5: Economic Analysis**

### **INDIA: Andhra Pradesh Disaster Recovery Project**

1. Economic analysis was performed under the Andhra Pradesh Disaster Recovery Project to assess the rate of return of capital investments needed for the reconstruction and recovery from cyclone Hudhud in the state of Andhra Pradesh.
2. We look at the following project components for the purposes of the economic analysis:
  - i. Resilient electrical network consisting of 700 KM of underground cable;
  - ii. Restoration of 800 KM of rural roads;
  - iii. Restoration of 250 KM of major district roads;
  - iv. Restoration of 25 cyclone shelters.

#### **Resilient Electrical Network**

3. The utility infrastructure in coastal storm surge areas are generally more exposed than in inland areas. Cyclone Hidhud snapped power poles and lines, dislocated poles, and caused loss of transformers. Damages suffered were about US\$ 157.5 million in the three districts of Srikakulam, Vizianagaram, and Visakhapatnam. Establishing an underground electrical network will reduce future infrastructure and social costs imposed by thunderstorms, storm surges, and flooding. The annual expected restoration cost of electricity pole alone in cyclone prone areas is US\$ 1.69. With life of 60 years and a discount rate of 10%, this amounts to a present value of about US\$ 16.85. With 40 distribution poles per 1.60 KM, the cost amounts to US\$ 674 per 1.60 KM.<sup>12</sup>

4. Often, individual and small-scale entrepreneurs that need emergency power restoration are at the receiving ends of cyclone-induced power disruptions. Even a simple solar system with just two panels, a battery and a charge controller costs about US\$ 920.<sup>13</sup> Given the economic costs imposed, US\$ 120 million in investment cost for the component will soon be recovered through damage avoidance and/or reduction in repair costs as benefits. As the overall duration of a storm recovery is primarily a function of repair and replacement of transmission and distribution lines, societal benefits in terms of reduction in interruption and restoration time will be an additional benefit. In return for the proposed project cost, electricity customers can receive a number of potential benefits such as: (a) improved aesthetics (b) lower tree trimming cost (c) lower storm damage and restoration cost (d) fewer motor vehicle accidents (e) reduced live-wire contact (f) fewer outages during normal weather (g) fewer momentary interruptions (h) improved utility relations regarding tree trimming (i) fewer structures impacting sidewalks from the undergrounding of their overhead systems.

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<sup>12</sup> Brown, R. (2009). Cost-Benefit Analysis of the Deployment of Utility Infrastructure Upgrades and Storm Hardening Programs. Quanta Technology, NC, USA.

<sup>13</sup> <http://www.auroville.org/iournals&media/avtoday/archive/2012/AVToday-271-feb-2012.pdf>

## Restoration of Rural and Major District Roads

5. The economic benefits to rural roads stem from three spheres, commercial, education, and health. An economic analysis for the APDRP was not feasible due to time constraint, as it would require a rural household survey of the project areas. We rely on analysis conducted for similar rural roads projects undertaken under PMGSY Second Rural Roads Project.<sup>14</sup> We assume that the internal rate of return from the US\$ 47.5 million on reconstruction of the rural roads is likely to be 12.5 percent, as determined by the PMGSY Second Rural Roads Project.

6. Similarly, we rely on the economic analysis of the Andhra Pradesh Road Sector Project to arrive at the economic benefits of the major district roads components of US\$ 45 million to be 29.6 percent.<sup>15</sup>

7. These benefits for reconstructing rural and major district roads are underestimates as they do not take into account the connecting roads will allow for quicker evacuation to the shelters during cyclones including provision of immediate emergency and relief supplies.

## Cyclone Shelters

8. The main benefit of rehabilitating existing shelters is to save human lives at the time of cyclones. There will be two main benefit areas from the multipurpose cyclone shelters:

- Number of human lives saved by shelters.
- Other ancillary benefits from non-emergency use of the shelters rest of the year.

9. For the purposed of this analysis we only consider the main benefit of the project, saving human lives. Even though the shelters will have non-disaster related uses, we do not quantify these significant benefits. Thus, our estimates are conservative.

## Costs Calculations

10. For the purposes of the economic analysis, the total cost of multipurpose cyclone shelters in the project is taken to be 12.5 million dollars. We assume that the cost of rehabilitation of 25 cyclone shelters are of 0.5 million dollars each. The cost is to be disbursed in the amounts described in Table 11 over the five year period from 2016 to 2020. Following the end of the project the continued operating and maintenance costs of the project is considered to be between 1.0 percent of the overall costs.

**Table 11: Distribution of Project Costs**

	Project duration (Years)				
	2016	2017	2018	2019	2020
Costs (m\$)	2.5	2.5	2.5	2.5	2.5

## Counterfactual benefit calculations without the project

<sup>14</sup> [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/12/02/000356161\\_20101202003517/Rend ered/PDF/570810PAD0P1241e0only1910BOX353794B.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/12/02/000356161_20101202003517/Rend ered/PDF/570810PAD0P1241e0only1910BOX353794B.pdf)

<sup>15</sup> [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/09/25/000350881\\_20090925115244/Rend ered/PDF/482350PAD0P096101Official0use0only1.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/09/25/000350881_20090925115244/Rend ered/PDF/482350PAD0P096101Official0use0only1.pdf)

11. To understand the counterfactual of potential losses from the cyclones, we assume in the absence of the project no new shelters will be built. Thus, there will be no costs and benefits in the absence of the project.

### **Economic Analysis**

12. The main benefit component of this project is saving human lives. Following Bhattacharya, Alberini, and Cropper (2007) we use the average value of statistical life (VoSL) to be US\$ 47,000 per individual. The calculation of the VoSL is always contentious. We acknowledge that this value is rather low. This does not imply we value the lives any less. By choosing this value we show the economic viability of the project despite the conservative estimate of VoSL.

13. We calculate the project benefits based on the design capacity of the shelters. We acknowledge that under emergency conditions a shelter may provide refuge to many more than its design capacity. However, by using the design capacity of the shelters we underestimate the benefits.

14. The project benefits are based on the following assumption:

- The 25 new shelters will each have the design capacity of 1000 individuals.
- The shelters will be operated and maintained for the next 15 years after the end of the project. Even though the shelters may have a longer useful life, we only consider a total project life of 20 years.
- The discount rate is 12 percent.

15. Cyclone Hudhud in 2014 was considered to be a very severe cyclone with maximum sustained wind speed of 180-220 KM/H that could return once in every five years. Table 12 shows the definitions of severe, very severe, and super cyclones and their respective probabilities of occurrences in India.

**Table 12: Cyclone Types Wind Speed and Probability of Occurrences**

Cyclone types	Speed KM/h	probability per year
Super cyclone	> 220	10%
Very severe cyclone	119-220	20%
Severe cyclone	90-119	30%

Source: Dasgupta et al (2014)

16. Even though a cyclone like Hudhud is expected to hit India once in five years, it does not mean that cyclone will have the same impact in all of the project areas. In other words, the probability of occurrence of a cyclone that would necessitate the use of the shelters may be smaller. To take this factor into account, we consider cyclone scenarios of, one in 400 years, one in 200 years, one in 100 years, one in 50 years, and one in 20 years instead of the three types of cyclones and their respective probabilities described above.<sup>16</sup>

<sup>16</sup> According to the IPCC AR4, storm surges and related floods are likely to become more severe with increases in intense tropical cyclones in future (IPCC, 2007). Hence, from a practical perspective vulnerability of India to cyclones/ storm surges may increase even more as a result of climate change.

### Most conservative estimates

17. Based on the assumptions listed above we consider the hypothetical of a cyclone that would necessitate the utilization of all the shelters is one in 400 years. Under this scenario we only take the benefit of human lives saved and ignore additional benefits the year-round transport benefits from the roads and bridges.

18. We find the project to have the minimum internal rates of return (IRR) of 15.0 percent and net present value (NPV) of 13.1 million dollars, with the benefit costs ratio (BCR) of 1.2 in. Both the internal rates of return and net present value of costs and benefits of lives saved in case of a once in a 400 year cyclone show that the project is economically viable.

### Sensitivity Analysis

19. Sensitivity analysis was conducted by changing key parameters of the probability of cyclones as described above. Given that base case IRR, NPV and BCR are calculated with very conservative assumptions, more realistic assumptions regarding the probability of more frequent cyclones highlight the possibility that the actual benefits may be much more substantial than anticipated in the most conservative case.

20. Table 13 shows the results of the sensitivity analysis for each state as well as the project as a whole. The three parts of the table show the IRR, the NPV, and the BCR respectively. In each part the first column shows 0.25 percent probability of cyclone show the smallest returns. Correspondingly, 5 percent probability of cyclones shows the highest returns from the project.

**Table 13: Sensitivity Analysis for Probability of Cyclone**

	Probability of Cyclone				
	0.25%	0.50%	1.00%	2.00%	5.00%
IRR	15.0%	26.7%	41.4%	59.7%	89.7%
NPV	13.1	26.2	52.3	104.7	261.6
BCR	1.2	2.5	4.9	9.8	24.6

### Conclusion

21. Based on the qualitative analysis of the cyclone resilient electrical system, and the calculated internal rates of returns for the rural, and major district roads as well as the cyclone shelter, we conclude that the project is economically viable. Table 14 shows the overall internal rates of returns to be 20.1 percent.

**Table 14: Overall IRR for the Selected Components of the Project.**

	Cost Share	IRR
Sub-component 2.1a: Restoration of rural roads	45%	12.5%
Sub-component 2.1b: Restoration of cyclone shelters	12%	15.0%
Sub-component 2.2: Restoration of major district roads (MDR)	43%	29.6%
Overall	100%	20.1%

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## **Annex 6: Gender and Social Inclusion Action Plan**

### **INDIA: Andhra Pradesh Disaster Recovery Project**

#### **Social and Gender Context in Andhra Pradesh**

1. Andhra Pradesh has been at the forefront of poverty reduction schemes and participatory development initiatives in the country. It is, therefore, not a surprise to note that the State's combined poverty ratio was reported at 9.20% in 2011–2012, which was considerably lower than the all India average during the same time.<sup>17</sup> Andhra Pradesh is well known for its strong emphasis on community mobilization and women's social and economic empowerment through the mobilization of self-help groups, water users' groups, farmers' clubs, watershed committees, school education committees, and micro-finance institutions. The State has witnessed its share of social movements which resulted in radical systemic changes. For example, social movements that advocated for land entitlements and rights of socially marginalized communities (indigenous populations and Dalits).

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

3. A majority of the districts in the State are located along the coast. Many people living along the coasts are from poor economic backgrounds and face multi-layered vulnerabilities (including vulnerabilities resulting from natural hazards and climate change), gendered inequalities, and social exclusion.

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

#### **5. Gendered and Exclusionary Dimensions of Natural Disasters: Few Facts:<sup>18</sup>**

- Women and children are 14 times more likely than men to die during a disaster.

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<sup>17</sup>Economic Survey, 2014–2015, Government of Andhra Pradesh

<sup>18</sup>Gault, B., H. Hartmann, A. Jones-DeWeever, M. Werschkul and E. Williams, 'The Women of New Orleans and the Gulf Coast: Multiple Disadvantages and Key Assets for Recovery'

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

### **India's National Policy on Disaster Management and Gender**

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

- i) Including women members in the State Disaster Response Force (SDRF) to look after the needs of women and children;
- ii) Community-based disaster preparedness is indispensable in tackling disasters in a planned manner. The policy strongly encourages women and youth to actively participate in decision making committees and action groups for management of disasters;
- iii) The policy lays emphasis on plugging gaps in the social and economic infrastructure and enhancing viability of livelihoods. This includes care facilities for women, elderly and children; and
- iv) State Governments are mandated to put emphasis on the restoration of livelihoods of those affected by disasters and special attention should be given to the needs of female-headed households.

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

**Table 15: Proposed Gender and Social Inclusion Action Plan**

<b>Project Components</b>	<b>Suggested Action Areas</b>	<b>Policy Rationale</b>
Component 1 – Resilient electrical network	Ensure widowed, female – headed, poor households are covered through underground electrical cable networks that connect their households to the grid through subsidized (and	Andhra Pradesh is one of the three states in the Country selected for implementation of 'Power for All' program. The State Government is committed to supply 24X7 quality, reliable and affordable power to all

Project Components	Suggested Action Areas	Policy Rationale
	safe) connections.	<p>domestic, commercial and industrial consumers.</p> <p>As per the State Government's Vision 2029, it has committed to ensuring that each household is connected to five grids: water grid, road grid, power grid, natural gas grid, and fiber optic grid.</p> <p>The AP State Disaster Management Plan highlights power supply disruptions caused by recurring high winds, storm surges, flooding and earthquakes.</p>
Component 2–Restoration of connectivity and shelter infrastructure	Ensure friendly design features are developed for the disabled, elderly, women, children, adolescent girls, SCs, STs while restoring roads connectivity and shelter infrastructure.	<p>The Economic Survey 2014 – 2015, GoAP focuses on embarking on an 'Infrastructure Mission.' One of the aims of this Mission is to establish improved road and port connectivity in the State to strengthen economic growth and strive towards becoming a leading maritime hub.</p> <p>The AP State Disaster Management Plan focuses on creating new or restoring multi – hazard shelters that are easily accessible to vulnerable populations.</p> <p>A recent CAG report on the state of multi – hazard shelters in AP suggested that there is an urgent need to restore or maintain these shelters, as it was found that most of these were used for other purposes or in a dilapidated condition.</p>
Component 3–Restoration and protection of the beach front	<p>Ensure that friendly design features and safety measures are adopted for women, children, the disabled, elderly and adolescent girls while restoring and protecting beach front.</p> <p>Advocate for the employment of unemployed youth (boys/girls) in the restoration/protection/beautification of beach front.</p>	<p>The 'Social Empowerment Mission' launched by the Government of Andhra Pradesh in February 2015 focuses on, among other things, women's and other vulnerable groups' safety and improved access to civic amenities and standards of living.</p> <p>State employment policies such as the Mission for Elimination of Poverty in Municipal Areas (MEPMA) give opportunities to unemployed youth from slum areas to access jobs.</p>



Project Components	Suggested Action Areas	Policy Rationale
<p>Component 5: Capacity building and technical support and for disaster risk management</p>	<p>Support in the design and effective disbursement of accidental, and other, insurance products:</p> <p>Awareness campaigns designed to promote financial literacy and product acceptance among targeted vulnerable populations: widowed households, the elderly, female headed households, disabled, SCs, and STs.</p>	<p>The State Disaster Management Authority has, since 1998, been running an accidental insurance scheme for BPL families. It will be important to understand the extent to which such risk transfers impact the lives of vulnerable populations.</p>