Disaster Management Plan of NESCO
UTILITY
(SDMP)
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Abbreviations

DMP         Disaster Management Plan
NDMA        National Disaster Management Authority
DDMA        District Disaster Management Authority
SDMP        NESCO Disaster Management Plan
SDMC        NESCO Disaster Management Cell
DMC         Disaster Management and Control Centre
MD          Managing Director
CHAPTER – 1 (Introduction & Objective)
Chapter 1: Introduction

Disaster is defined as an event, which brings sudden misfortune & disruption to normal life including that of the power supply. Disasters can be either natural or man-made and can strike suddenly any time anywhere.

The state of Odisha is spread from 17.49N latitude to 22.34N latitude and from 81.27E longitude to 87.29E longitude. The state is divided into 30 revenue districts which are further subdivided into 314 blocks. It has an area of 155,707 km² and extends for 800 kilometers from north to south and 500 kilometers from east to west. Its coastline is 480 kilometer long alongside the Bay of Bengal.

On the basis of homogeneity, continuity and physiographical characteristics, Odisha has been divided into five major regions:

1) Coastal plains in the east
2) Middle mountainous and highlands region
3) Central plateaus
4) Western rolling uplands, and
5) Major flood plains

With these geographical features, the state is prone to natural calamities such as Cyclone & Flood. As per available data, the geographical area of the State and its effective periods due to cyclone & flood is detailed below;

a) Cyclone:

2) Odisha falls in the region of tropical cyclone. With a coast line of 480 km in the country, it is highly vulnerable to associated hazards such as floods, storm surges etc.

3) Most of the cyclones affecting the State are generated in the Bay of Bengal & Indian Ocean. They move North-West and hit the coast of Balasore, Bhadrak, Jajpur, Jagatsinghpur, Kendrapada, Puri, Khorda & Ganjam.
4) Two cyclonic storm seasons are experienced in Odisha: May to June (advancing southwest monsoon) and September to November (retreating monsoon).

**b) Flood:**

- The climatology of Odisha is influenced by the Bay of Bengal in the East and hill & mountain range of Eastern Ghats from north-west (Mayurbhanj) to south-west (Malkangiri) along its Western border. A long coastline makes the coastal districts occasionally experience very high rainfall. These occasional heavy torrential rains and storm surges are responsible for most of the floods in the State.

- All major rivers in the State pass through a wide stretch of the very flat terrain before reaching the sea. These flat lowlands of lower river basins are prone to flooding.

Odisha has experienced many natural disasters such as floods & cyclones during history of its civilization. Electricity is the lifeline of economy as well as of society. Any disruption in the supply of electricity causes not only loss to the economy, but also creates hardship to human beings. Hence, it is very important to evolve a comprehensive disaster management plan to minimize loss and to restore the supply of electricity in the affected areas in the shortest possible time in the event of damage occurs due to the disaster.

**1.1 About NESCO UTILITY**

The unbundling of Odisha State Electricity Board (OSEB) through Orissa Reform Act 1995 separated entities for the functions of generation, transmission & distribution of power. Further during the process of privatization of the distribution sector, NESCO became one of the 4 distribution licensees in the state to undertake retail supply and distribution of electricity in the North East parts consisting 5 districts having 47000 sq km area. The company was incorporated as a public limited company under the company act 1956 and privatized w.e.f. 01.04.1999 with divestment of 51% shares to erstwhile BSES Ltd.( now Reliance Infrastructure Ltd). From 04.03.2015 it is known as NESCO UTILITY and its management is under CMD GRIDCO -Cum- Administrator, NESCO, WESCO & SOUTHCO UTILITY after revocation of license by OERC.
The main functions of NESCO are:

1. Distribution of power to consumers at the rates as approved by OERC in the Tariff Order from time to time and complying to the Regulations.
2. Providing Power Supply at specified voltage and frequency.
3. Operation & Maintenance of 33/11 KV Sub-stations, 33 KV & 11 kV lines, Distribution transformers & LT lines, equipments.
5. Ensuring safety of human and animal life and public property from electrical accidents.
6. Planning of activities towards demand and supply of power.

NESCO has its Corporate Office at Balasore and providing Power supply in the following districts of Odisha:


1.1.1 NESCO Geographical Areas of Operation

[Map of NESCO Geographical Areas of Operation]
33KV Electrical Network of NESCO
1.1.2 NESCO Operational Hierarchy (Organization Structure)

1.1.2.1 Organizational Structure at Corporate Level
1.1.2.2 Organization Structure at Field Level

[Diagram of organizational structure]

- Corporate Office
  - DGM/SE Distribution Circle
    - EE, Distribution Division
      - SDO, Distribution Sub-division
    - EE, MRT, Division
  - JE, Distribution Section
  - AO
  - COO
As evident from above, the administrative set up of NESCO is spread in entire area of coverage and divided into Circles, Divisions, Sub-divisions & Sections under the Corporate Office headed by the Managing Director. The broad function of each entity is described below;

a) Section Office

A Section office is the primary link between the consumer and company so far as in the matter of power supply is concerned. It is the lowest office in hierarchy, where consumer relationship is established. It is headed by an Executive of the rank of an Assistant Engineer (AE) or a Junior Engineer (JE).

The duties of the official in charge of a Section office are as follows:

1. Commercial activities related to single phase new connection, energy billing,
2. Operation & Maintenance of 33 KV lines, 11 KV lines, 33/11 KV Sub-stations, Distribution transformers, cables and equipments to ensure reliable and quality power supply to the consumers.

3. Attending consumer complaints regarding power supply in terms of its quality, and other technical matters.

b) **Sub-Divisional Office**

A Sub-division consists of 3 to 5 Sections and headed by an Executive of the rank of Assistant Executive Engineer (AEE)/Assistant Engineer (AE). He oversees the functioning of Sections, so as to ensure reliable distribution of power in the jurisdictional area.

Duties of Sub-divisional Officers:

1. Commercial activities related to three phase new connection, energy billing, collection etc.
2. Monitoring of O & M works of 33 KV lines, 11 KV lines, 33/11 KV Sub-stations, Distribution transformers, cables and equipments to ensure reliable and quality power supply to the consumers.
3. Integration of men, material and special labour in execution of emergency works.

c) **Divisional Office**

A Division has 2 to 5 sub-divisions under its jurisdiction. It is headed by an officer of the rank of Executive Engineer (EE) and assisted by sub-ordinate officers.

Duties of Divisional officer:

1. Overseeing the functioning of the sub-divisions as per specified parameters and regulations.
2. Approving works both in the nature of maintenance and capital works as per power vested with him.
3. Approval of Augmentation works within the powers vested with him.
4. Arrangement of materials & manpower for execution of various works.
5. Monitoring of various works being undertaken in the jurisdictional area and
ensuring timely completion of the same.

d) **Circle Office**

Generally a Circle is having 3 Divisions under its jurisdiction. Circle is headed by an officer of the rank of Superintending Engineer (SE) (AGM/DGM (Elect.)) and generally responsible for the following:

1) Implementation of system improvement/ new works in the Divisions in the Circle.
2) Procurement of materials as per delegation of powers, arrangement of materials and contractors.
3) Coordination in planning and estimation of projects.

e) **Corporate Office**

The Corporate Office of NESCO utility is functioning at Januganj in Balasore District. It is headed by a Authorised Officer and assisted by C.O.O and then H.O.D of respective departments such as Technical, Finance, Commerce, HR, Legal, Material Management, vigilance, etc. Activities of planning, monitoring & reporting of various ongoing/proposed schemes and coordination with Local /District administration, OERC & Dept. of Energy, etc are executed from Corporate Office. Further, central procurement of materials & work order for execution of project are also handled from Corporate Office.

1.1.3 Summary of Statistics about NESCO UTILITY

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Area covered:</td>
<td>28000 Sq. km.</td>
</tr>
<tr>
<td>No. of Districts covered:</td>
<td>5</td>
</tr>
<tr>
<td>No. of Blocks covered:</td>
<td>68</td>
</tr>
<tr>
<td><strong>No. of NACs/ULBs covered:</strong></td>
<td>18</td>
</tr>
<tr>
<td><strong>No. of Gram Panchayats covered:</strong></td>
<td>1431</td>
</tr>
<tr>
<td><strong>No. of census villages covered:</strong></td>
<td>11298</td>
</tr>
</tbody>
</table>
No. of 33/11 KV Sub-stations: 144
No. of 33 KV Feeders as on 31.3.2015: including GRIDCO interface 72
No. of 11 KV Feeders as on 31.3.2015: 510
Power Transformers as on 31.3.2015: 314
Distribution Transformers as on 31.3.2015: 48227
Length of 33 KV Line as on 31.3.2015: 2263 Circuit km
Length of 11 KV Line as on 31.3.2015: 26440 Circuit km
Length of LT Line as on 31.3.2015: 45481 Circuit km
No. of employees as on 31.3.2015: 3731
Sanctioned: 5859
Working: 3050
Total no. of Consumers as on 31.03.2015: 13.02Lakh

Category of consumers As on 31.03.2015

LT Category:
   Domestic: 12.15 Lakh
   Commercial: 0.60 Lakhs.
   Irrigation Pump sets: 13087 nos.
   Industrial: 4906 nos.
   Others: 8102 nos.

LT Total: 13.01 Lakh

HT category:
   Industrial, Commercial, Lift Irrigation and Residential: 402 nos.

EHT category:
   Industrial, Commercial, Traction: 37 nos.

Grand Total: 13.02 Lakh

<table>
<thead>
<tr>
<th>Geographical Regions</th>
<th>East coastal plain, Balasore, Bhadrak, Jajpur &amp; hilly area like Mayurbhanj &amp; Keonjhar.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected States/UTs</td>
<td>West Bengal &amp; Jharkhand</td>
</tr>
<tr>
<td>Major Rivers</td>
<td>Subarnarekha, Budhabalanga, Baitarani &amp; Brahmani</td>
</tr>
<tr>
<td>Forests</td>
<td>Open, Dense forest &amp; Reserve forest.</td>
</tr>
<tr>
<td>Coast line</td>
<td>Balasore, Bhadrak</td>
</tr>
</tbody>
</table>
The vast power distribution infrastructure laid over the coast line as well as districts which are prone to the cyclone & flood etc. posing threat to the mass level supply disruption and inconvenience to the public in case of any disaster. A super cyclone in 1999 and recent very severe cyclone in Oct. 2013 (Phailin) and also frequent floods in almost every year in many parts of the NESCO warrants for preventive action against the disasters and its mitigation in case of occurrence.

1.2 Disaster Management Act 2005

Government of India in December, 2005 enacted Disaster Management Act, 2005 which envisages the creation of National Disaster Management Authority (NDMA) headed by Hon’ble Prime Minister, State Disaster Management Authorities (SDMAs) headed by Hon’ble Chief Ministers and District Disaster Management Authority (DDMAs) headed by District Collector & Deputy Commissioner to spearhead and adopt holistic and integrated approach to Disaster Management. The approach is for proactive prevention, mitigation and preparedness so as to minimize loss of life, livelihood and property instead of relief response to disasters.

The Act lays down institutional, legal, financial and co-ordination mechanism at National, State, District and local levels and these institutions will work in close harmony. The NDMA as Central level and SDMA at state level body for Disaster Management (DM) who have the responsibility for laying down policies, plans and guidelines and coordinating their enforcement and implementation for ensuring timely and effective response to deal with disaster situations.

As per section 40(1) of Disaster Management Act, 2005, every department of the State Government should prepare a disaster management plan in conformity with the guidelines laid down by the State government. The electricity distribution in the State is being looked after by four distribution companies viz NESCO, WESCO, SOUTHCO and CESU, individually can be referred as “DISCOM” and collectively as “DISCOM” are also require to prepare their respective DMP and SOP.

The provisions contained in section 39 and 40 of the DM Act which deal with preparation of departmental disaster management plans are given below for ready reference.
39. It shall be the responsibility of every department of the Government of a State to (a) take measures necessary for prevention of disasters, mitigation, preparedness and capacity-building in accordance with the guidelines laid down by the National Authority and the State Authority.

(b) integrate into its development plans and projects the measures for prevention of disaster and mitigation;

(c) allocate funds for prevention of disaster, mitigation, capacity-building and preparedness;

(d) respond effectively and promptly to any threatening disaster situation or disaster in accordance with the State Plan, and in accordance with the guidelines or direction of the National Executive Committee and the State Executive Committee.

(e) review the enactments administered by it, its policies, rules and regulations with a view to incorporate therein the provisions necessary for prevention of disasters, mitigation or preparedness;

(f) provide assistance, as required, by the National Executive Committee, the State Executive Committee and District Authorities, for-

(i) drawing up mitigation, preparedness and response plans, capacity building, data collection and identification and training of personnel in relation to disaster management;

(ii) assessing the damage from any disaster;

(iii) carrying out rehabilitation and reconstruction;

(g) make provision for resources in consultation with the State Authority for the implementation of the District Plan by its authorities at the district level;

(h) make available its resources to the National Executive Committee or the State Executive Committee or the District Authorities for the purpose of responding promptly and effectively to any disaster in the State, including measures for-

(i) providing emergency communication with a vulnerable or affected area;

(ii) transporting personnel and relief goods to and from the affected area;
(iii) providing evacuation, rescue, temporary shelter or other immediate relief;

(iv) carrying out evacuation of persons or live-stock from an area of any threatening disaster situation or disaster;

(v) Setting up temporary bridges, jetties and landing places;

(vi) Providing drinking water, essential provisions, healthcare and services in an affected area;

(i) Such other actions as may be necessary for disaster management.

40. (1) Every department of the State Government, in conformity with the guidelines laid down by the State Authority, shall-

(a) prepare a disaster management plan which shall lay down the following:-

(i) the types of disasters to which different parts of the State are vulnerable;

(ii) integration of strategies for the prevention of disaster or the mitigation of its effects or both with the development plans and programmes by the department;

(iii) the roles and responsibilities of the department of the State in the event of any threatening disaster situation or disaster and emergency support function it is required to perform;

(iv) present status of its preparedness to perform such roles or responsibilities or emergency support function under sub-clause(iii);

(v) The capacity-building and preparedness measures proposed to be put into effect in order to enable the Ministries or Department of the Government of India to discharge their responsibilities under section 37;

(b) annually review and update the plan referred to in clause (a), and

(c) furnish a copy of the plan referred to in clause (a) or clause (b), as the case may be, to the State Authority.

(2) Every department of the State Government, while preparing the plan under sub-section (1), shall make provisions for financing the activities specified therein.
(3) Every department of the State Government shall furnish an implementation status report to the State Executive Committee regarding the implementation of the disaster management plan referred to in sub-section (1).

1.3 Causes of Disaster in Power Sector

Like other sectors, disasters in power sector can occur due to following natural & man-made calamities;

1) Cyclones
2) Earthquakes
3) Floods
4) Storms/Hurricanes
5) Fire
6) Terrorist Attack/Sabotage

1.4 Need of Disaster Management Plan in Power Sector

The Disaster Management Act (DMA), 2005 which envisages adoption of holistic and integrated approach for management of disasters by proactive prevention, mitigation and preparedness so as to minimize loss of life, livelihood and property besides relief response to disasters. In the Chapter I, Section 2 (d) of the Act, it defines disasters as following:

"disaster" means a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area;

Disaster Management encompasses the activities that enable the various agencies to plan for, quickly respond to and to recover from unexpected events and situations. It is a tool to provide necessary guidelines for assistance to NESCO which is engaged in distribution of electrical power for ensuring safety of people, protection of environment, protection of installations and restoration of power supply.
1.5 Objectives of this Document

This document lays down the framework, puts forth guidelines and lists standard operating procedures (SOPs) to be followed by the North Eastern Electricity Supply Company of Odisha Limited (NESCO) in the event of a natural or man-made disaster.

The primary objective of this DMP is to ensure the safety of life and protection of property. Other major objectives of the DMP can be summarized as follow:

- To improve state of preparedness to meet any contingency
- To identify major resources, manpower, material and equipments needed to make the plan operational.
- To make optimum use of combined resources.
- To set up effective command and control structure for handling disasters.
- To reduce response time in organizing the assistance.
- To identify the training needs for personnel engaged in handling disaster and its implementation.
- To promote self-help and recovery,
- To reduce the frequency of occurrence of such disasters.
- To minimize any adverse impact on environment.
- And, to facilitate quick business recovery.

The strategic objectives of this plan are to ensure that:

(1) NESCO has the capability and resources to be prepared for and to respond to any disaster or calamity,

(2) NESCO can exceed expectations of service and quality as desired by the designated authorities in the event of a disaster being declared in areas served by SOUTHCO, and

(3) NESCO is in complete and total compliance with the provisions of National Disaster Management Act, 2005.

This document follows precisely the applicable portions of the structure and guidelines laid down by the National Disaster Management Authority (NDMA) in the draft
framework for a District Disaster Management Plan (DDMP). It also considers salient and applicable aspects from the suggested guidelines and outline for Preparation of the Departmental Disaster management Plans at the State Level (Reference: Section 23 (7) & Section 39 of the Disaster Management Act, 2005) by Odisha State Disaster Management Authority (OSDMA) as well as best practices currently followed by electricity distribution companies elsewhere in the country.

1.6 Activation Plan

In the event of forecasting/declaration of a disaster by the state/district administration, the disaster management plan will be activated on the receipt of disaster warning/on the occurrence of the disaster. The occurrence of disaster may be reported by the concern monitoring authority to the State Government /OSDMA/District Administration by the fastest means. The State Government/OSDMA will activate emergency response. Instructions will be flown in the following form:

1) Exact quantum of resources (in terms of manpower, equipments and essential items from key departments/stakeholders) that is required.
2) The type of assistance to be provided
3) The time limit within which assistance is needed
4) Details of other Task/Response Forces through which coordination should take place

The control rooms at the corporate office level as well as division control rooms shall be activated with full strength. NESCO shall subsequently widely publish in the print & electronic media for sensitizing the general public/consumers regarding the impending disaster, probable consequences, preventive action plan by SOUTHCO & alternate arrangements etc. This plan will be in effect and all the directives, rules and Standard Operating Procedures (SOPs) it refers to shall be followed.

Once the situation is totally controlled and normalcy is restored, the State Government/OSDMA will declare End of Emergency Response and issues instructions to withdraw the staff deployed in emergency duties.

The plan also describes the various Mitigation, Preparedness and Training activities that may be performed during normal times for effective response at time of disaster.
1.7 Plan Review and Update

The Disaster Management Plan would be regularly reviewed and updated to reflect learning from past disasters, current policies, assets and procedures. Details on how to review and update the plan are provided in Chapter 10.

1.7.1 Limitations

- Funds as Discoms are having huge regulatory losses, the Disaster responses are largely dependent on State Govt funding
- Resources (Men & Materials) arrangement in huge quantum in a short time.
- Shortage of skilled manpower
- Shortage of automated machines
CHAPTER – 2
(Hazard, Vulnerability, Capacity and Risk Assessment)
Chapter 2: Hazard, Vulnerability, Capacity and Risk Assessment

2.1 Disaster Categories referring to Power Distribution

The term ‘disaster’ may be categorized as below from the point of vulnerability scale to the power distribution infrastructure under SOUTHCO.

<table>
<thead>
<tr>
<th>Category 1</th>
<th>Category 2</th>
<th>Category 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water and Climate disasters</td>
<td>Geological disasters</td>
<td>Man-made disasters</td>
</tr>
<tr>
<td>Cyclones &amp; Storms</td>
<td>Earthquakes</td>
<td>Fire</td>
</tr>
<tr>
<td>Flood</td>
<td>Tsunami</td>
<td>Terrorist Attack</td>
</tr>
</tbody>
</table>

2.2 Analysis of Past Disasters and Future Disaster Possibilities in NESCO Operational Areas

2.2.1 Category 1: Water and Climate disasters.

a) Cyclone and High wind:

As may be seen from the Map below developed by BMTPC, from the point of view of wind and cyclone hazards, 60 Km area from the coastline is more vulnerable. In NESCO operating areas,

Further, with regards to deciding about the resiliency towards wind pressure in different parts of the State, following IS are relevant;

1) IS 802 Part 1 Section 1 1995 specifies 6 basic wind zones; Out of which coastal Odisha falls under Wind Zone – V where basic wind speed is 50 m/s

2) IS 5613 Part 1 Section 1, 1995 specifies 3 wind pressure zones in the country i.e. 100, 150 & 200 Kg/m² and coastal Odisha is specified under 200 Kg/m² wind pressure zone.
IS 5613 and BMTPC Map of Wind & Cyclone Hazard - India
b) Floods:

The constant and incessant nature of rainfall often causes floods. Sometimes the area falling in the downstream of rivers faces floods due to heavy rain or water release from Dams in upstream area. Generally, Balasore, Bhadrak & Jajpur and some parts of Keonjhar and Mayurbhanj of NESCO are experiencing floods.

*Odisha River Basins for Flood Assessment*
2.2.2 Category 2: Geological Disasters (Earthquakes)

As per the Revised Earthquake Hazard Mapping, most of the geographical area is under Low earthquake damage risk zone 1 and coastal belt is falling under zone 2.

*India Earthquake Zones*

![India Earthquake Zone Map]

2.3 Disaster History & Damage Assessment

(Rs. in Lakhs)

<table>
<thead>
<tr>
<th>Year</th>
<th>Disaster</th>
<th>Damage Type</th>
<th>Damage Magnitude</th>
<th>Damage Assessment in Lakhs</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>Flood</td>
<td>High</td>
<td>11 KV line -72 Km, DTR - 64Nos., LT line-73 Km</td>
<td>250.00</td>
<td>In the 5 affected districts - Balasore, Bhadrak, Keonjhar, Jajpur, Mayurbhanj</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Year</th>
<th>Disaster</th>
<th>Damage Type</th>
<th>Damage Magnitude</th>
<th>Damage Assessment in Lakhs</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>Flood</td>
<td>Medium</td>
<td>33 KV line-2 Km, 11 KV line-24 Km, 11/0.4 KV S/S-12nos, LT-115 Km</td>
<td>126.34</td>
<td>In the 5 affected districts</td>
</tr>
<tr>
<td>2011-12</td>
<td>Flood</td>
<td>Medium</td>
<td>11 KV- 3.68 Km, 11/0.4 KV S/S-152, LT- 1.3 Km,11KV line-3.68Km,33/11 KV PTR-9nos,33 KV VCB-9 nos</td>
<td>742</td>
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2.4 Hazard Risk assessment and vulnerability mapping
### 2.4.1 Risk mapping - Cyclone

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### 2.4.2 Risk mapping - Flood

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CHAPTER – 3
(Institutional Arrangements for Disaster Management)
Chapter 3: Institutional Arrangements for Disaster Management

3.1 Pre-Disaster Preparedness

For effective preparedness to face the disasters and to avoid last minute arrangements in panic conditions, the following aspects may be covered as an organizational practice:

- Well-documented emergency plans.
- Data on availability of resources and buffer stocks of restoration materials.
- Identification of key personnel: with their skills and experience on the disaster management.
- Allocation of budget for emergencies.
- "Delegation of Power" at various levels for disaster conditions.
- Mutual assistance agreements signed by all power utilities for sharing men and material resources on demand.
- Risk assessment and up-gradation of Disaster Management Plan to be carried at least once a year.
- Maintaining the information about the suppliers of the equipments/store items.
- Availability of emergency plan and training to every employee.

Accordingly, NESCO constitute a Disaster Management Cell (SDMC) with following provisions;

3.2 NESCO UTILITY Disaster Management Cell (SDMC)

The SDMC shall consist of the Chairperson and such number of other members, not exceeding seven, as may be prescribed by the District Authority, and unless the rules otherwise provide, it shall consist of the following, namely:-

1. A.O., Chairperson;
2. C.O.O.
3. Sr. GM (Comm.)/DGM/AGM (Technical),
4. GM Finance
5. GM/DM/AM (Operation)
6. GM (Project & EMS).
7. SE of the affected Circle(s)
8. EE of the affected Division(s)

3.2.1 **Powers of the Chairperson of SDMC**

1. The Chairperson of the SDMC, in addition to presiding over the meetings of the SDMC, shall exercise and discharge special powers related to emergency procurement etc. and functions to be taken up by the SDMC.
2. The Chairperson of the SDMC may, by general or special order, delegate such powers and functions, specified above to C.O.O to ensure smooth and effective operations with appropriate conditions and limitations, if any, deemed fit.
3. Following is the guidelines of operations:

3.2.2 **Meetings**

In the event of a disaster being declared by the district authority, a meeting of the SDMC shall be convened. In addition, the SDMC shall meet as and when necessary and at such time and place as the Chairperson may find fit. However, it is advisable that the SDMC meet at least once a year (post-monsoon) even if there have been no disasters in that year.

3.2.3 **Responsibilities of SDMC personnel**

The following table lists the functions and responsibilities of each of the members of the SDMC during, and in preparing for, a “State of Disaster”

(Note: A partial list of teams that must be formed by the officials listed below to allow them to fulfill their responsibilities is given under).

3.2.4 **Composition, Responsibilities and list of Functions of NESCO Disaster Management Cell (SDMC) – at Corporate Office**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Designation for SDMC</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) A.O of Chairperson</td>
<td>1) Declare a “State of Disaster” within NESCO and ensure immediate activation of this plan.</td>
<td></td>
</tr>
</tbody>
</table>
2) Coordinate with State Govt./OSDMA and present detailed reports and updates to State Govt./OSDMA.

3) Request District, State or Central resources as necessary from appropriate authorities.

4) Declare “Closure of State of Disaster” within NESCO and ensure completion of activities related to closure, including certification and audit, closure of financial documents, implementation of any feedback reports from OSDMA, issues of compensation etc.

2) GM/DGM/AGM (Technical) 1) Establish a team for certification/audit of work undertaken, after the disaster is declared closed.

2) Implement procedures specifically for DM, including but not limited to

a) Authorization of emergency powers,
b) Rules related to leaves and overtime,
c) Procedures for transport and communication (including alternatives to telephones/mobile telephones, cranes, boats, trucks)
d) Procedures for purchase or leasing of equipment, etc.
e) Procedures for purchase, leasing, maintenance and inventory of equipment and vehicles only to be used in disasters
f) Procedures for capacity building and training specifically for disaster management [Note: Sample procedures for “emergency management” activities as provided in Chapter 11 may be followed for Disaster Management. Further procedures may be developed as required].
| 3) General Manager Member | 1) Activate and monitor NESCO Disaster Management Control Centre.  
This centre can be hosted from the NESCO Corporate Office but should handle inputs/requests must be collated, analyzed and priorities assigned for all requests.  
2) Coordinate with OPTCL/GRIDCO/SLDC etc.) on all issues.  

| 4) Sr. GM Commerce | 1) Convene the SDMC meetings at the request of the Chairperson and update the schedule of future meetings after consultation with Chairperson.  
2) Collect status updates on a regular basis from other members and report to the Chairperson and SDMC.  
3) Implement the protocols (or SOP) for communicating that a disaster has been declared to all NESCO employees in affected districts [for example: formulating the text of the SMS/Email message, list out instructions to be conveyed in a phone call etc.]  
4) Supervise the communication of any information necessary as decided by the SDMC to all stakeholders including priority consumers (hospitals, blood banks, police and fire) and media.  

| 5) GM (Project) Member | 1) Ensure security of installations and equipment, and safety of workers.  
2) Ensure officers and men neglecting duty are held accountable under the DM Act, 2005.  
3) Ensure officers and men are not succumbing to
undue political pressure, corruption and are not taking undue advantage of citizenry.

6) General Manager (Finance) Member

1) Implement budgets designed specifically for DM (for example related to expenditure in purchase/lease of equipment and that incurred for transport).

2) Implement procedures for quick and easy transfer of funds to personnel as specified by the GM (Tech.).

[Note: Both the above tasks must be completed prior to any disasters, and continuously revised. As an example, procedures are provided in the Chapter 11].

3) Review compensation and similar claims.

4) Ensure proper closure of accounts.

7) SE of affected District Member

1) Activate and monitor a NESCO Control Centre for citizens only at the Circle level.

2) Coordinate constantly (before, during and after) with early warning agencies and special groups (like weather department or civil defense groups) and advise the Chairperson, SDMC accordingly.

3) Make contingency plans for meetings of the SDMC during a disaster (for example, in case the standard meeting location is unavailable).

4) Any other activity that the MD assigns.

8) External Consultant in Disaster Management Member

1) Provide the SDMC with inputs and domain expertise and help to update the SDMP as described in Chapter 10.

2) Any other activity that the MD assigns.
3.2.5 **Responsibilities of Disaster Management & Control Centre personnel**

Functions and Responsibilities of the Control Center personnel

<table>
<thead>
<tr>
<th>Designation</th>
<th>Functions</th>
</tr>
</thead>
</table>
| 1) GM (Operation)                    | 1) In-charge of Control Center  
  2) Identify and draft personnel to work in the Control Center  
  3) Train personnel in handling disaster specific responsibilities.  
  4) Coordinate with other departments for operational needs and operate the Control Center in absence of GM (Operation) |
| 3) Asst. Manager (IT/MIS)            | 1) Maintain all IT and communication infrastructure at Control Center.  
  2) Assist the GM (Operation). |
| 4) Asst. Manager/Dy. Manager (Operation) | 1) Coordinate with all circles (including equipment suppliers and contractors).  
  2) Assist the GM (Operation) in all operational aspects. |
| 5) AGM/Manager (Finance)             | 1) Assist the GM (Operation) in all financial aspects like facilitating financial resources.  
  2) Execute any plans as notified by the GM (Finance). |
| 6) External Consultant on Disaster Management for Electric Utilities (appointed through standard procedures) | 1) Assist the GM (Operation)  
  2) Coordinate with the district/state administration on all operational issues behalf of the MD/SDMC/Control Center. |
### 3.2.6 Circle Level Disaster Management Cells (DMCs)

At each level of the NESCO operational hierarchy, a DMC may be formed along the lines of the SDMC. These will allow NESCO to handle emergencies that are not massive in scale and thus do not require direct intervention from the SDMC. The composition of a DMC at Circle Level is provided below for illustrative purposes:

<table>
<thead>
<tr>
<th>Designation</th>
<th>Appointed Officer</th>
<th>Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) SE(DGM/AGM(EL)</td>
<td>Designated</td>
<td>Nodal Officer of Circle level-DMC, reporting to GM(Operation)</td>
</tr>
<tr>
<td>2) DM (Office of SE Circle)</td>
<td>Designated</td>
<td>CEO &amp; Convener</td>
</tr>
</tbody>
</table>
| 3) EE (from any division) AGM/Manager/DM(EL) | Nominated by SE | 1) Identify and draft personnel for handling Circle-Level DMC  
   2) Train personnel for handling Circle-level DMC  
   3) Handle IT and communication infrastructure |
| 4) AEE (Office of SE Circle) | Nominated by SE | Responsibilities as required by SE during disasters |
| 5) AEE (from any division/sub-division) | Nominated by SE | Responsibilities as required by SE during disasters |
| 6) AFM (from any division) | Nominated by SE | Facilitate any and all financial transactions as required by SE |
CHAPTER – 4
(Prevention and Mitigation)
Chapter 4 - Prevention and Mitigation

4.1 Prevention Measures

Identifying and securing all the sites that might cause disaster-level loss of life and property. This may include measures like electric fences, security guards, biometrics etc. Vulnerabilities can be assessed based on the probability of attack and the extent of damage caused at a particular location.

4.1.1 Basic Mitigation Measures

The impact of certain natural disasters and man-made disasters can be reduced by a series of mitigation measures. The following are some of the activities that may be considered for mitigation.

4.1.1.1 Information and Communication Activities

a) Acquisition of required communication equipment

NESCO will acquire devices that may be used during a disaster to aid in the communication between personnel responding to a disaster. Beyond the current, commercial mobile network, used during routine emergencies, provision for wireless communication devices, not reliant on commercial mobile networks, should be made (for. E.g. Walkie-talkies, Terrestrial Trunked Radio -TETRA).

b) Communication from SDMC to NESCO personnel

As per the responsibilities assigned in Chapter 3, the standard messages for communication of disasters must be defined. These messages must convey the severity of the disaster and the expected response from the personnel. In addition, messages for declaring the closure of the emergency must also be defined.

An example of a standard text message is: “The MD NESCO declares a state of Disaster in <dist.> district as of <time>”
c) Communication from all NESCO personnel

A reporting mechanism via messages must be defined that will convey (1) the safety and (2) the availability of any and all personnel to their immediate supervisor. This will allow for the SDMC to make a quick assessment of manpower available within a short time of a disaster. As per Chapter 3, the GM (Operation) will establish and maintain a special disaster management & control centre where all personnel (regardless of rank) should be able to report problems and be offered directions and advice. The information to be reported must follow a standard well-defined format in order to be specific and accurate to allow prompt response.

4.2 Reduction in Risks Associated with Disasters

All NESCO field personnel should follow the steps outlined in the procedures explained in Chapter 11 to mitigate effects of potential disasters.

4.2.1 Protocol of Load shedding:

Load shedding schedule during cyclone in 33KV feeder wise will be implemented accordingly.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Name of feeder</th>
<th>Cyclone (60Km/hour &amp; above)</th>
<th>Cyclone (80KM/Hour &amp; above)</th>
<th>Flood Warning level</th>
<th>Flood Danger level</th>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
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<tr>
<td>5</td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Emami(Mitrapur)</td>
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<tr>
<td>7</td>
<td>Industrial</td>
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<td></td>
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<tr>
<td>8</td>
<td>Nilagiri</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>
4.2.2 Duties & Responsibilities of the Emergency Teams:

It is the responsibility of emergency team to keep in readiness of sufficient manpower, vehicle for smooth operation during disaster. Also they have to keep close contact with the field unit as well as with the officials for better monitoring the work.

4.3 Mitigation measures for Natural as well as Man-made Disasters

Routine maintenance and security activities go a long way in mitigating the effects of incidents that lead to a disaster. The effect of natural disasters such as floods can be mitigated by ensuring that critical facilities are located away from flood prone regions as well as at higher elevations.

NESCO might undertake a number of mitigation projects which address some of the vulnerabilities identified. A list of the above projects must be maintained by the SDMC. Refer to Annexure 3 for project specific details.
CHAPTER – 5
(Preparedness Measures)
Chapter 5 - Preparedness Measures

NESCO to undertake a number of preparedness measures to ensure that response and recovery during a disaster is effective and prompt.

5.1 Stakeholders

The stakeholders in NESCO disaster preparedness are:

1. NESCO
2. OPTCL, GRIDCO and other power suppliers
3. Civil administration (Dist. Admin., Police, Fire Dept., Municipal bodies etc.)
4. High priority customers (Hospitals, Waterworks, Telecommunication, Railways, Emergency Relief Centers etc.)
5. All customers

The contact list of priority stakeholders is provided in Annexure 1.

5.2 Establishment of Disaster Response Teams

As part of the preparedness measures, NESCO should form the following teams:

5.2.1 Early Warning team:

Under the member of the SDMC (GM) described in Chapter 3, this team will monitor incidents associated with weather, earthquakes or other incidents that might lead to a disaster. The team will provide inputs to the member of the SDMC in carrying out early warning responsibilities.

5.2.2 Control Centre Team:

Under the GM (Operations) described in Chapter 3, this team will manage the Disaster Management & Control Centre in time of disaster and assist in the coordination of Response.

5.2.3 Corporate Affairs and Communication Team:

Under the HEAD OF COMMERCE described in Chapter 3, this team will coordinate
with all other response teams for the collection of necessary updates. They will be sole point of communication for the Media and manage communication and messages to all stakeholders. This team will also prepare a list of priority stakeholders for each disaster and communicate the same to the Command and Control Centre team.

5.2.4 Vigilance Team:

Under the Chief Vigilance Officer described in Chapter 3, this team will assist in carrying out the responsibilities of CVO including but not limited to ensuring security of installations and equipment and safety of workers.

5.2.5 Damage and Loss Assessment Team:

Under the GM (Technical) described in Chapter 3, this team will perform certification/audit of work undertaken during a disaster.

5.3 Establishment of Disaster Response Assets

Under the GM (Technical) described in Chapter 3, NESCO shall maintain or have access to assets to be used during a disaster. These assets include, but are not limited to, computation, communication and transport equipment, equipment needed for the coordination/ maintenance/ replacement of assets destroyed in an emergency (e.g. distribution transformers, poles, and conductors etc.), equipment such as generators that may be required to provide temporary services to customers and other equipment as deemed necessary by GM (Technical). The storage of these assets shall be in locations where they are easily accessible as well as least likely to be damaged in a disaster situation. A list of the equipment and the location of the same shall be maintained by the GM (Technical) and be available to Divisional Officers. A sample of the format is provided in Annexure 1.

NESCO, under the GM (Technical), shall maintain a list of equipment vendors and resource personnel (experts) that may be called upon during a disaster to assist in response activities.
5.4 Establishment Procedures for Checking and Certification of Assets

To ensure that the assets acquired for disaster management are maintained in an acceptable state, the following procedures shall be established:

a) Procedures for checking and certification of logistics, equipment and stores necessary for disaster management shall be established.

b) Procedures for operational check-up of Warning Systems and the inspection of facilities and critical infrastructure shall be established.

5.5 Establishment of Coordination and Communication Protocols

During a disaster, NESCO as a support function will receive requests from many stakeholders as well as avail the services of other agencies. The protocols for communication and coordination for the following should be established and documented:

a) Between District Authorities and civil security agencies such as Police Dept., Fire Dept. and NESCO.

b) Between other civil agencies, such as Municipal bodies, Hospitals etc. and NESCO.

c) Between NESCO and other agencies such as Govt. of India, State Government, OSDMA, Public Sector Undertaking (PSUs) (e.g. OPTCL/GRIDCO), Other State Governments, National Disaster Response Force (NDRF), Odisha Disaster Rapid Action Force (ODRAF), Army, Navy and Air Force, Central Para Military Forces etc.

d) Between NESCO personnel and the Disaster Management & Control Centre

Protocols shall also be established for communication with customers regarding early warning, potential and actual outages, schedule for restoration of services, warning notices and instructions etc.
5.6 Establishment of Disaster Preparedness Exercises

NESCO under the guidance of the GM (Technical) described in Chapter 3, shall develop preparedness exercises to ensure that the various teams involved in Disaster Management are knowledgeable about their responsibilities at the time of a disaster, the protocols for communication and coordination, availability and the use of assets required and procedures to be followed during a disaster. The preparedness exercises must also ensure adequate capabilities among the disaster response personnel in following standard procedures and use of assets.

Some of the exercises may also include outside agencies that will be involved in the disaster response activities. This exercise will help test the inter-agency coordination and communication protocols that have been established.

Procedures and protocols to be followed during a disaster may be modified and updated based on feedback received during aforementioned preparedness exercises.

Preparedness must be reviewed at regular intervals to ensure adequate preparedness amongst personnel for disaster response.

Some aspects of Capacity Building and Training measures are provided in Chapter 6.
CHAPTER – 6
(Capacity Building and Training Measures)
Chapter 6: Capacity Building and Training Measures

As described in Chapter 5: Preparedness Measures, capacity building and training is essential for effective Disaster Management and Response.

6.1 Approach

The approach for capacity building and training is based on analysis of existing disaster management institutional arrangements, assets, protocols and procedures. The goal of the analysis is to identify appropriate capacity building and training exercises to ensure adequate preparedness for smooth and effective operations during a disaster.

6.2 Capacity Building Plan

6.2.1 Institutional Capacity Building

a) NESCO shall ensure that it has sufficient manpower/resources at different skill levels and thereby reducing the dependency on third parties during disasters.

b) All NESCO personnel shall be trained on at least one essential function apart from their core responsibility in a phased manner and a list of the same shall be maintained.

c) Every Divisional officer shall have list of resources under his division and also corresponding competency/skill list

d) Skill and inventory upgradation activities shall be carried out on regular basis

6.2.2 Community Capacity Building

NESCO shall conduct exercises with civic authorities such as the Police, Fire, Municipalities, Hospitals and Waterworks to establish coordination and communication protocols to be used during a disaster.

6.2.3 Disaster Management Education and Training Activities

Disaster management education and training helps each individual in the organization know his/her duties during a disaster. This kind of education helps an individual to
understand the exact hierarchy structure and duties one needs to perform during a disaster situation. This reduces the amount of confusion that usually exists at the time of disaster. Training activities play a vital role in reducing the response and recovery time and thereby increasing the customer satisfaction. Accordingly, NESCO shall design appropriate training exercises. Training exercises could consist of mock scenarios that include all parts of the disaster response apparatus. Training exercises conducted with equipment in place will also familiarize personnel with the use of the equipment. These exercises must be held at least once in a year (and/or before every monsoon). Details of training exercises shall be maintained by GM (Technical).
CHAPTER – 7
(Response and Relief Measures)
Chapter 7: Response and Relief Measures

7.1 Response Planning

Response planning constitutes the following activities:

7.1.1 Warning and Alert

a) Early Warning Systems:

As described in Chapter 5, an Early Warning team, reporting to an officer (at GM level) must coordinate with the appropriate authorities to monitor and communicate potential disaster situations.

b) Warning dissemination:

As described in Chapter 4, Section “Basic Mitigation Measures”, sub-section (1), the SDMC [through the HEAD OF COMMERCE] will ensure that any warnings and communication are appropriately communicated to all employees, stakeholders and media.

7.1.2 SDMC Meeting

A meeting of the SDMC must be immediately called for by the Chairperson, SDMC.

<table>
<thead>
<tr>
<th>Location</th>
<th>Address</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>NESCO UTILITY Corporate Office, Balasore</td>
<td>06782-269864</td>
</tr>
<tr>
<td>Alternative</td>
<td>To be decided</td>
<td></td>
</tr>
</tbody>
</table>

7.1.3 Resource Mobilization Checklist

Details are presented in the following section “Procedure for Action during a Disaster”.

7.1.4 Demobilization and Winding Up:

1. Documentation:
Documentation of actions taken, expenditures incurred, special services offered etc. should be maintained and completed within a stipulated time from close of disaster. Please see Chapter 11, Section “Administrative Procedure to be adopted at the time of emergencies” for details on documentation to be maintained.

7.1.5 Success stories and Lessons for future:

The SDMC will review activities of personnel during the disaster to document success stories or shortcomings that may be rectified in the future. Key lessons learned can be used to update the DMP if required.

7.2 Procedure for Action during a Disaster

7.2.1 Flow of Information
Source of occurrence of disaster information are collected from IMD/TV/Govt. of Odisha/ Govt. of India/Collectors. Flow of information shall be basically as below -

7.2.2 Plan of Action
On receiving a notification of declaration of disaster from State Govt./OSDMA, or if the early warning systems indicate that there is a potential for a disaster, the Chairperson (SDMC) must be immediately informed. [If the Chairperson is not available, the GM (Technical) must be immediately informed]. Please refer to Chapter 11 for procedures related to administrative duties, operational and financial powers.
1. The Chairman (SDMC) should convey to Head of Emergency Operations, the intent to declare a “State of Disaster” in NESCO, via phone call/SMS/in writing. The Chairman (SDMC) also conveys to GM (Technical) and GM (Operations) the intent to declare a “State of Disaster”, via phone call/SMS/in writing.

2. Sr. GM COMMERCE immediately follows the requisite communication protocol (as per guidelines stated in Chapter 4, Section “Basic Mitigation Measures”)
   a. Send a bulk SMS/Wireless message to all employees, including members of the SDMC
   b. Send associated content (if any) to all media and priority stakeholders

3. SDMC Meeting: A meeting of the SDMC must be immediately called for by the Chairperson, SDMC to supervise response and relief efforts.

4. Disaster Management & Control Centre (under GM (Operation)) must be immediately operational. [Note: A part of the existing NESCO customer service centre may be used for the same; however, the Disaster management & control centre must be dedicated to handling communication only from NESCO personnel and not the general public.]

5. The safety and availability of personnel is conveyed by said personnel to the Disaster management & control centre via a reporting mechanism (Please see Chapter 4, Section “Basic Mitigation Measures” for details).

6. Prepare First Assessment Report for SDMC that includes
   a. Lists of personnel available in various areas and list of mobilizing points
   b. Any early damage reports that are available
   c. Any action taken (for e.g. turning off power in any area in advance)

7. Tasks are assigned to individuals (if necessary). Every Section Office (and higher) can take action as laid out in Chapter 11.

8. Prepare Second Assessment Report for SDMC that includes
   a. A current detailed damage estimate
   b. Equipment/man-power requirements for complex problems/areas
c. List of high priorities (including regions that will need attention)

d. Requirements for assistance from non-NESCO agencies

9. Reporting of information on a continuous basis to Disaster management & control centre including interim reports.


11. Any Other Documentation:

    Please see Chapter 11, [Administrative Procedure to be adopted at the time of emergencies] for details on all documentation to be maintained.

7.2.3 Contact information of SDMC members

Contact information of all SDMC members is available in Annexure 1
CHAPTER – 8
(Reconstruction and Recovery Measures)
Chapter 8: Reconstruction and Recovery Measures

NESCO shall strive to recover to normal service to its consumers as soon as possible.

The Recovery Plan activities will include the following:

1. Develop a priority schedule (location and time-frame) for recovery of normal services to affected areas
2. Conduct a detailed damage and loss assessment
3. Restoration of infrastructure
4. Reconstruction/repair of infrastructure/ damaged assets

8.1 Approach clearance & Damage assessment

As an emergent response to disaster, need of clearing approach roads to the critical areas, locations & installations attains first priority which shall be done with the available resources to facilitate expedient restoration.

Action should be initiated immediately for assessments of physical damages caused, so that resource management can be done effectively for early restoration. The estimation of damage will be done in two stages, in first stage the Eye Estimation is to be done by visiting different places and reporting the extent of damages. This will give broad information about the voltage level wise length of line damage (in terms of Spans/Kms etc), Transformers toppled down/damaged/submerged, Sub-station structural damage/submerged etc. The further refinement shall be made after thorough inspection of each element of the network going through the testing procedures etc. Accordingly the damage can be categorized with respect to different voltage level lines & sub-stations as per below;

1) Line Damage
   a) 33 KV – Poles, Conductors, Insulators, cross arms, Stays etc.
   b) 11 KV - Poles, DPs, Conductors, Insulators, cross arms, Stays etc.
   c) LT line - Poles, Conductors, AB cables, Insulators, cross arms, Stays etc.

2) Sub-station Damage
a) 33/11 KV Sub-station
   i) Civil damage,
   ii) Transformer & Switchgear damage
   iii) Structural damage

b) DTR S/s
   i) DP damage,
   ii) Transformer damage
   iii) DP accessories damage

Based upon damage report received, Control Room at the Corporate Office shall consolidate the estimation of total damage and provide to EDMC.

8.2 Plan of action (POA) for Restoration

- On testing, if the lines & equipments are found healthy, then they are to be charged step by step from 33 KV line to LT line.
- For rest of the lines/Sub-stations, after completion of restoration/repair work at affected locations, the same shall be checked & charged as per the procedure.
- In case of availability of power in nearby area from same source and from where supply restoration is easy than from restoring the original network, the work of extending power temporarily from available source shall be taken up.
- Wherever required temporary transformers shall be installed to restore the supply.
- If required, Work Order or LOI (Letter of Intent) shall be issued to enlisted contractor(s) to gear up the work at affected areas for early restoration of power supply. If necessary, number of contractors/gangs shall be increased depending upon increased volume of devastation.
- Materials shall be arranged & released on war footing basis for use in the field.
• Plan to be prepared for early restoration of power supply in respect of District Head Quarters, Block Head Quarters, Gram Panchayats & for all the villages affected. Accordingly action shall be initiated for restoration of power supply.

• Details of reports pertaining to restoration is to be prepared and sent to State Govt./ District Administration/OSDMA through Control Room.

8.3 Restoration Protocol

• 220/132/33KV grids S/s are to be kept in touch to restore 33 KV feeders which are cleared for restoration.
• Immediately after the disaster, priority shall be given to restore 33 KV power supply up to 33/11KV Substations.
• Subsequently priority should be given for restoration of 11KV feeders, DTRS and then LT lines.
• Priority should be given for resumption of power supply to emergency units like Hospitals, Water Supply, Communication & Broadcasting Station/Network, District Headquarters, Sub-division Headquarters, Railways, Relief camps, Fire Stations, etc.
• If the intensity of damage is more, then staff will be diverted from nearing Division and Sub-division/ elsewhere for early restoration of power.
• Minimum relevant materials along with T&Ps shall be kept ready at all the stores / sub stores / temporary emergency store for immediate mobilization after disaster.

8.4 Deployment of In-house team

In house team along with enlisted contractors will be deployed to the affected areas during Disaster in planned manner for efficient utilization of resources. In case of requirement of Forest or OSDMA teams, respective DDMA may be contacted.

8.5 Debris clearance

Debris clearance will be made through machineries like Dozers, JCBs, cranes which may be hired on rent basis for smooth transportation of man and
materials, tools, etc. Assistance of ODRAF/NDRF/ police may be taken for smooth completion of work

8.6 Monitoring & control

The entire process of restoration work will be monitored from the Circle/District level to Corporate level for smooth operation. Particularly District nodal officer i.e. SE electrical will supervise the entire process and the same will be conveyed to the Nodal officer at Corporate level. During this process materials from stores will be utilized properly along with manpower engaged as the case may be for restoration.

8.7 MIS

MIS to cover information on damage and restoration on daily basis shall be provided by each control room to Corporate Office Control Room in respect of each team/ Feeder/ District.

a) Format for Physical progress

<table>
<thead>
<tr>
<th>Damage information</th>
<th>% of damage</th>
<th>% of Restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Emergency (1st phase)</td>
</tr>
<tr>
<td>District head quarter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban area including all NAC and Municipality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural area</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b) Format for Financial progress

<table>
<thead>
<tr>
<th>Fund mobilization in Rupees</th>
<th>District - 1</th>
<th>District - 2</th>
<th>District - 3</th>
<th>District - 4</th>
<th>District - 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day before occurrence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After occurrence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st week</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd week</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
8.8 Declaration of complete restoration

After full fledged completion of restoration work the concerned executive engineers will submit the declaration regarding completion of restoration to the nodal officers i.e. SE with intimation to nodal officer at corporate level for onward submission to Government.
CHAPTER – 9
(Financial Resources for Implementation of SDMP)
Chapter 9: Financial Resources for Implementation of SDMP

NESCO shall make financial allocations in preparing and executing the disaster management plan. The GM (Finance) shall plan for the following:

1. Funds for Prevention and Mitigation Activities
2. Funds for Preparedness and Training Activities
3. Funds for Response Activities (including pre-authorization to draw money from escrow in the event of an immediate emergency)
4. Funds for Disaster Risk Insurance

For the purpose of expediting services to its customers, NESCO will delegate special financial powers during an emergency to its personnel. For a detailed list of financial authority and allotment procedures in an emergency, refer to the procedure provided in Chapter 11.

9.1 Financial Arrangement

9.1.1 State Budget

NESCO will submit to the State Government for approval of a budget in the prescribed form for the next financial year, showing the estimated receipts and expenditure, and the sums which would be required from the State Government during that financial year. State Govt. may approve assistance from the SDRF (State Disaster Response Fund), Chief Minister Calamity Relief Fund (CMRF) or in form of Grant in aid provisions in the Budget to carry out specific projects/schemes related to disaster management/mitigation/capacity building.

9.1.2 Loan

NESCO may borrow money from the FIs/Banks/open market with the previous approval of State government to carry out disaster management functions as described in DM Act 2003.
Being a Regulated entity, to carry out the disaster management/mitigation/capacity building activities, the expenditures are required to be approved by Odisha Electricity Regulatory Commission (OERC) and allowed in the Annual Revenue Requirement (ARR) of NESCO. Accordingly Escrow arrangements/priorities are also required to be modified with GRIDCO.

To raise funds through external borrowing, NESCO is required to provide requisite revenue inflow security and free assets for hypothecation to the borrowing agency.

Support from the State Govt., OERC & GRIDCO is required for successful implementation and long term sustenance of the SDMP by NESCO.

9.2 **OERC observation on implementation of Disaster Mitigation Plan (DMP) in ARR & RST Order 2014-15**

Relevant paras of ARR & RST Order 2014-15 passed by OERC are reproduced below;

“255. *All the DISCOMs have proposed some measures for execution of disaster mitigation plan (DMP). For execution of DMP, the utilities require huge investments. Hence, DISCOMs have planned to execute the DMP in a phased manner and to execute additional they have proposed to levy a charge of 5 p/u in electricity bill.*

256. *Objectors have stated that the proposal of a cess of 5 p/u sold to all consumers was not justified and hence unacceptable. CESU in its rejoinder pointed out that the Disaster Mitigation Plan contained the following activities: namely, Infrastructure strengthening through underground Cabling, NBLS Towers etc in urban areas of Bhubaneswar and Cuttack, Provisions of Towers in River Crossing Locations, Provision of H-Pole in low lying areas, Institutional Set*
up as a capacity building measure etc. The three DISCOMs have claimed that to provide better and immediate service to the consumer in the event of Force Majeure condition, the organizational set up is required to face the unforeseen events.

257. We feel that Disaster Mitigation is an important objective of modern governance and Govt. has major role to play with proactive support from DISCOMs. However, the natural disasters happen casually and sporadically over geographical regions. Therefore, taxing all consumers of the State @ 5 Paisa/Unit for implementation of DMP in certain calamity-prone locations is not a wise proposal and also not equitable.”

However, NESCO will propose in the ensuing year tariff petition to approve the factorization of additional expenditures on account of implementation of disaster mitigation plan/activities before OERC.
CHAPTER – 10
(Monitoring, Evaluating, Updating and Maintaining the SDMP)
Chapter 10: Monitoring, Evaluating, Updating and Maintaining the SDMP

The SDMP should be evaluated, updated and maintained periodically.

10.1 Authority for Maintaining and Reviewing the SDMP

An external consultant who is an expert in disaster management, who is part of the SDMC is responsible for the maintenance of the SDMP and bringing it up for review. He is vested with powers of incorporating necessary changes to the SDMP and getting those approved by the SDMC.

10.2 Proper Monitoring and Evaluation of SDMP

The authority assigned to maintain and review the SDMP, should also carry the evaluation and monitoring of the same. The concerned official should have sound knowledge of the DM Act, 2005. The official should ensure that the strategies formulated out during a disaster are on par with the guidelines provided in the Act.

The SDMP plan should be evaluated by the SDMC before its adoption.

10.3 Pre-disaster Evaluation

a) Ensuring that the formulated SDMP is as per Disaster Management Act, 2005 and aligned with the DDMP. This is to ensure that the SDMP follows the guidelines laid down by the Government of India.

b) Applying the existing SDMP to the disasters that occurred in the NESCO operating region and evaluate the outcomes. The strategies formulated as per SDMP should give better results. If the results of the analysis are not as expected, then the SDMC should make necessary modifications to the SDMP and re-evaluate the same.

c) Applying the existing SDMP to expected disaster scenarios, evaluate the outcomes
and modify the SDMP if the results are not satisfactory.

10.4 **Post-disaster Evaluation**

Post any disaster, the SDMC will review activities of personnel during the disaster and identify if the SDMP should be modified accordingly.

10.4.1 **Schedule for Updating the SDMP**

The SDMC should decide on the frequency of review and revision of the SDMP. A review of the SDMP should necessarily be conducted post any declared disaster. In the absence of any disaster, it is advisable to review the SDMP at least once a year.

10.5 **Communication of SDMP to Stakeholders**

Any time the SDMC updates and approves the SDMP, it should be circulated to all stakeholders.
CHAPTER – 11

(Standard Operating Procedures (SOPs) and Checklists for Emergency and Disaster Management)
Chapter 11: Standard Operating Procedures (SOPs) and Checklists for Emergency and Disaster Management

SOPs and checklists should be prepared for various personnel for effective response to emergencies and disasters. These SOPs and checklists must be maintained and updated to reflect any changes in procedures, technology and equipment.

The following are some SOPs currently being followed/to be followed in NESCO for Emergency Management.

**11.1 Administrative Procedure to be adopted at the time of Emergencies**

1. All leaves sanctioned to the officers and workmen shall stand suspended once emergency is declared. The officers and workmen on leave shall report back to their respective controlling officers immediately.

2. All officers responsible for operations shall be on duty for 24 hours and shall ensure their sub-ordinate officers/officials to be on duty round the clock, required for the emergency.

**11.1.2 Material procurement and services in Emergencies**

1. Special delegation of powers to the officers for purchase of materials, obtaining services of man power and execution of works are given as per clause 11.2.2 & 11.2.3 below, to Administrative Procedures for Emergency Operation.

2. The Superintending Engineers (Ele.) of Circles and Executive Engineers (Ele.) of Divisions shall take into account the materials in stock in various stores and make necessary arrangement to exercise mobilization of materials in their jurisdiction. Only after review of stock of materials at stores and mobilization of materials, balance materials required shall be procured by the respective officers. However, the officers who are empowered to procure materials shall certify that no materials are available at stores for emergency work and hence, procured while issuing the
purchase orders.

3. Material procurements are to be made at the CAPEX Procurement Rates from the same suppliers by placing repeat orders.

4. Procurement may be made through OSIC, NSIC, from Open market as per the OERC approved cost data rate.

5. If procurement of materials could not be taken up in the above two categories, then it may be from the suppliers/ manufacturers who have recently supplied the same to other Government agencies Distribution Utility at the latest rates.

6. Once the NESCO declares closure of emergency, the field officers have to furnish necessary certificate regarding purchase of material and non-availability of the same in the stores, work executed etc., and the Accounts Officers who are responsible for passing of bills, closure of accounts and making payment shall ensure to complete the same within 15 days from the date of closure of emergency.

7. The expenditure incurred shall be booked under appropriate heads of account.

8. After 15 days from the date of closure of emergency, field officer shall furnish the certificate for the works carried out during the emergency period. If any officer fails to do so or deviates from set procedure, the action shall be initiated against the delinquent after giving show cause notice to explain the reasons and following due procedure.

9. The SEs/EEs (Ele.) shall seek declaration of emergency by GM (Tech) through telephonic talk/SMS followed by a written requisition duly indicating the area for which the emergency to be declared.

10. After declaration of emergency by GM (Tech.), the emergency restoration work shall be carried out and expenditure booked against the newly created heads of account.
account with caption "Emergency restoration of power supply-calamity".

Sample 1 - incurred towards Capital Expenditure nature.
Sample 2 - incurred towards R&M expenses nature.

11. After restoration of power supply, the SEs/EEs (Ele.) shall seek for closure of emergency by GM (Tech) through telephonic talk/SMS followed by a written requisition.

12. The SEs/EEs (Ele.) shall send a report within 3 days duly indicating the quantum of damages and the estimated amount after closure of emergency declared.

13. A token budget per Circle/Division will be allocated by the GM (Fin) in consultation with GM (Tech) for utilization in carrying out power supply restoration work during the period of emergency.

14. The Circle Superintending Engineers (Ele.), are authorized to re-appropriate the special budget grant per division allotted within its jurisdiction during emergency period in case of expenditure incurred during the restoration work goes beyond the earlier allocation in any division.

15. The GM (Operation) are authorized to re-appropriate the special budget grant per Circle if the expenditure incurred in particular O&M circle goes beyond the total special allocation made to each division in that circle.

16. After re-appropriation of the special grants during the emergency period by the Superintending Engineers (Ele.) of O&M circles and after the closure of accounts (within 15 days from the date closure of the emergency) they shall send the accounts to the Head of Emergency Operations/GM (Fin) duly seeking recoupment of the same. The Head of Emergency Operations/GM (Fin) shall release this amount as recoupment to the respective Superintending Engineers (Ele.) of O&M circles for reallocation among the divisions in their jurisdiction depending upon the
17. In case, the Superintending Engineers (Ele.) of O&M circle encounter another emergency declaration before closure of the earlier emergency, / before finalization of accounts, he/she shall seek recoupment of the budget grant towards expenditure incurred duly furnishing a certificate accordingly.

18. The Superintending Engineers (Ele.) of O&M circles shall submit the statement of accounts on the 16th day from the date of closure of emergency to the General Manager (Fin)/Head of Emergency Operations positively.

11.2 **Annexure to Administrative Procedure**

11.2.1 **List of Works to be carried out during Emergency for Restoration of Power Supply**

i. Rectification of fallen poles.
ii. Re-conducting/re-stringing of snapped conductors.
iii. Replacement of faulty distribution transformers and or restoration of DP Structure.
iv. Rectification of fallen LT/HT lines.
v. Clearing of fallen trees/branches.
vi. Rectification/ restoration of 33/11 KV Substation

11.2.2 **Financial Powers**

Special delegation of powers for purchase of materials and execution of works on emergency only;

1. Sub-ordinate officers in the O&M jurisdiction can exercise powers of their immediate superior officer like;

- Superintending Engineers (Ele.) can exercise GM (Operation) power.
- Executive Engineers can exercise Superintending Engineers power.
Assistant Executive Engineers can exercise Executive Engineers power.

2. They are permitted to procure the required materials at most economical and competitive rates without tendering procedure up to a maximum of Rs. 1,00,000/- (Rupees One Lakh Only).

11.2.3 Modalities for managing Expenditure and maintenance of Accounts during Emergency for Restoration of Power Supply

1) A separate Bank Account may be opened at the Corporate Office for the funds for restoration works relating to Disaster.
2) Any receipt of Funds from Energy Dept./State Govt./SRC/SDRF/NDRF/Central Govt./External Financial Agencies/FIs on account of Disaster restoration work shall be deposited/credited in the said account.
3) All payment of account of restoration work shall be made Division(s)/Party directly from this Bank Account.
4) All payments shall be made by issue of cheque/bank transfer. No funds shall be diverted from this account for any other purposes.
5) The cheques shall be issued to Supplier/Contractor only after due approval of the estimate of the work, measurement of work and scrutiny of vouchers etc. as approved by the Competent Authority.
6) However, the fund shall be transferred to different Divisions as per the actual requirement duly approved by the Competent Authority.
7) A separate subsidiary Cash Book shall be maintained for all the receipts and expenditures and transaction made for this purpose at Division level.
8) All records/vouchers towards expenditure on these head shall be kept separately at the Division level.
9) A work Case Record shall be opened which will have objective statement which shall contain the pre-disaster status, damages, salvaged material to be re-used, fresh/new material required, specific problem if any requiring shifting of line alignment material used, labour incidental expenditures etc.
10) A few photographs if possible of the damages & restoration may be kept in Case Record.

11) For immediate restoration of power on urgent basis to meet the situation, the works has been carried out on war footing. If the estimate has not been prepared/approved before execution of work, payment shall be made on physical measurement certificate from JE, SDO and respective EEs.

12) The work executed during Disaster restoration shall be countersigned by the SE of the concerned Circle.

13) After temporary restoration work for urgent power supply attempt should be taken forthwith to rectify the infrastructure construction work in all respect such as coupling of poles, provision of guarding, stay, provision of anti climbing device by using barbed wire & fixing up danger board for safety purpose.

14) The rectification work shall be carried out after preparation of the section wise proper estimates with due approval by the Competent Authority.

15) The estimate shall clearly indicate the item wise requirement of materials.

16) The estimate shall have the summary statement clearly indicating the item wise material, labour and ancillary expenditure.

17) The rectification work shall be completed within stipulated time of restoration as given by the State Govt./Competent Authority.

18) The procurement of electrical equipment such as Transformers, Conductors, PSC poles, RS joist etc. shall be done through either repeat order or inviting short tender notice complying the technical parameters.

19) As far as possible procurement may be made from Govt. organization like RSP, OSIC, BHEL at a negotiated price and for them bank guarantee may not be insisted upon.

20) Payment towards mobilization advances shall be made against bank guarantee and final payment against the supply of materials shall be made after proper inspection & verification.

21) A separate Stock Register for this purpose only shall be maintained in Central Store Division.
22) All receipt of materials purchased for this purposes, diversion of materials from other ongoing schemes like DESI, CAPEX, and RGGVY etc. shall be recorded properly.
23) All issue of materials to different Divisions for utilization on this account and return for the borrowed/diverted materials shall be duly accounted for.
24) The consignee for the purchase made at Circle level shall be Central Store Division.
25) A separate size Stock Register for this purpose shall be maintained by each Section Officer.
26) All the materials received from Central Store or direct from any Supplier, if any as well as diversion from other scheme shall be recorded in the receipt side of the Register.
27) All issue of materials for this purpose shall be accounted for with detailed noting about the utilization of the same in specific areas i.e lane, sahi etc, in the remark column.
28) A Stock Register of damaged material (Fully/Partially) may be maintained in each section.
29) All the damaged material (Fully/Partially) which will be feasible to be carried back to the section offices shall be returned to the Central Store as per the prevailing practice.
30) Internal audit team of the Utilities comprising of Senior Officer of the Finance Branch and technical Branch will take up audit work relating to the Disaster restoration work.
31) The audit team constituted for the purpose will go through Stock Register maintained at Central Store as well as each individual site store maintained by JE.
32) In addition to the Stock Register, the audit team shall also verify the approved estimate, JMC, invoice, bills, vouchers register, cash book, general ledger, subsidiary ledger etc. They shall also conduct site inspection.
33) The audit shall be carried out for all the transactions.
34) Besides the registers, documents, books of accounts on this score shall be kept in safe custody for further inspection and possible audit by different agencies.
35) All the restoration work shall be completed at the earliest.
36) Books of accounts shall be closed within one month from the date of completion of restoration work.

37) A monthly financial and physical statement of expenditure shall be submitted to Energy Department within first week of succeeding month.

38) The utilization certificate shall be submitted in the prescribed form as per the OGFR.

11.3 Responsibility Matrix for emergency response functions

D-24 hours: Alert from GM (Technical) must go to all NESCO personnel. Testing and availability of emergency equipment must begin.

D-12h: All communication equipment must be tested at this time.

D-4h: All personnel must be at their designated positions, and all required response equipment must be assigned to the teams.

D+ zero: Turn off power of the “Line” based on reported failure complaints and local knowledge (usually by Unit Officer or higher).

D+2h: Based on the seriousness of the event, continue execution of response effort, including isolating vulnerable points, detecting problems and mobilizing relief efforts.

11.4 Ways to disseminate Cyclone Warnings

The different telecommunication channels used for warning dissemination are as follows;

- Landline/Telex/Telephone
- VHF/HFRT (Internal)
- Police Wireless
- AFTN (Aviation)
- Internet (e-mail)
- Websites
- Radio/TV network
- Interactive voice response system
- (IVRS)
- Mobile Phones (including SMS)

These should be used to get updated and planning of actions.

11.5 Cyclone tracking/warning Web Sites
For Cyclone tracking/warning IMD’s Web Site is official for the State government which is;

India Meteorological Department - [http://www.imd.gov.in/section/nhac/dynamic/cyclone.htm](http://www.imd.gov.in/section/nhac/dynamic/cyclone.htm)

However, there are few other renowned global Web Sites which can be helpful for Cyclone tracking. The Web Sites are as shown below;

5) Cooperative Institute for Meteorological Satellite Studies [http://cimss.ssec.wisc.edu/tropic2/](http://cimss.ssec.wisc.edu/tropic2/)

### 11.6 NESCO Disaster Management Plan; Maintenance/Updation

#### 11.6.1 Introduction

Maintenance/ Review of DMP has to be a dynamic process of updating the plan on a periodic basis. The back-bone of maintaining/ review the plan is in carrying out mock drills and updating the plan based on the lesson learnt as an outcome of the mock exercise which consists of identifying the gaps and putting in place a system to fill the same.

- The SDMP Preparedness and Response Plan should be reviewed and updated regularly, based on inputs as under:
  
  (a) Drills and Rehearsals.
  
  (b) Recommendations from all Depts. in their Annual DM Report.
  
  (c) Lessons learnt from Cyclone in other states and countries.
(d) Directions from Ministry of Home Affairs, National Disaster Management Authority, Government of India, etc.

11.6.2 NESCO Disaster Management Plan; Testing

While updating the plan the following aspects need to be considered by the SDMC every year:

1. Critical analysis of the outcome of exercises & mock drills as part of plan testing.
2. Incorporation of lessons learnt in the updated plan as an outcome of mock exercises through identification of gaps and measures to fill them.

The plan must be thoroughly tested and evaluated on a regular basis, at least twice a year. The plan testing should preferably be organized in the months of June and October every year.

After plan testing and incorporation of lesson learnt, the SDMC should send a copy of the revised and updated plan to the following officials:

1. Principal Secretary, Dept. of Energy, Government of Odisha
2. Managing Director, Odisha State Disaster Management Authority
3. Principal Secretary, Revenue and Disaster Management Dept.
4. State Relief Commissioner, Govt. of Odisha
5. Head of all line Depts.

11.6.3 The main objectives of plan testing are to:

1. Determine the feasibility and compatibility of back up facilities and procedures
2. Identity areas in the plan that need modification.
3. Identify training needs of key stakeholders.
4. Assess the ability of the organization/department to respond to cyclone threats.

All the stakeholders, which have specific roles and responsibilities in the plan, must have a
system to ensure that all Officers of their departments who have a specific role to play are fully conversant with their responsibilities/tasks.

11.7 Debrief and Evaluation-Mock Drills

1) After the mock exercise debriefing and evaluation is very important. It is of critical importance that these insights are collected from participants (who participated in the exercise) and used to modify the plan.

2) Hot debriefing is very effective as it is carried out immediately after the exercise. It also includes documentation in terms of recommendations and improvements of the plan.

3) The lessons learned from the mock exercise are likely to be similar to those from real events. The only major difference is that exercises are controlled events, specifically designed to test procedures and they can be repeated again and again until sound/workable arrangements are in place.

Mock Drills shall be conducted as per the defined frequency given below;

<table>
<thead>
<tr>
<th></th>
<th>Divisional Offices</th>
<th>Corporate Offices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Table Top</strong></td>
<td>Half Yearly</td>
<td>Half Yearly</td>
</tr>
<tr>
<td><strong>Field</strong></td>
<td>Yearly</td>
<td>Yearly</td>
</tr>
</tbody>
</table>

11.8 Preparedness and Response for Monsoon

11.8.1 Safety

Safety is important for both public and the department. General procedures for safety within the department:

1. All the linemen/field staff shall use relevant safety gadgets while working on distribution network and also creating proper safety zone before starting
repair/maintenance work.

2. On safety aspects, all the section officers will inspect the hazardous locations and same may be rectified before starting of monsoon especially distribution box/metering box/LT feeder pillar box where door is open, take action to close the door properly to avoid leakage of current during rain and blocking of water inside the equipment.

3. All the Section vehicles shall be well equipped with (additional 1 JE + 4 Linemen) manpower, materials and safety accessories rendering services on hired basis shall be equipped with Medical Kit for providing First Aid treatment for the fatalities and tool kit for attending vehicle minor breakdown.

4. Essential safety material to be used is [responsibility of Assistant Executive Engineer (Elec.)]:

<table>
<thead>
<tr>
<th>Earthing Rod sets</th>
<th>High voltage tester</th>
<th>Safety Helmet with induction sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety goggles</td>
<td>Safety shoes</td>
<td>Tool spanners</td>
</tr>
<tr>
<td>Safety belt</td>
<td>Safety Reflecting Jacket</td>
<td>Tester</td>
</tr>
<tr>
<td>Rubber hand gloves</td>
<td>Cutting Pliers</td>
<td>Poly propylene Rope with different size</td>
</tr>
<tr>
<td>Screw driver</td>
<td>Rain coat</td>
<td>LED Torch</td>
</tr>
<tr>
<td>High voltage tester, Men at work’ sign board</td>
<td>Head Torch</td>
<td></td>
</tr>
<tr>
<td>Insulated GOS operating Rods</td>
<td>Fibber ladder</td>
<td>Hickory rods</td>
</tr>
</tbody>
</table>

11.8.2 Restoration

1. Executive Engineers will ensure that the update of interruption information shall reach the consumer via different mode of communications duly updating the information by feeder managers.

2. Executive Engineer will monitor all resource mobilization like man power, materials, vehicles, etc, among the subdivisions in their jurisdiction.
3. Superintending Engineer will be the Nodal officer of the Circle to facilitate the work of pooling man power, materials, vehicles, etc, among the divisions in their jurisdiction.

11.8.3 Functioning during monsoon

1. Each Section working as a service station shall have full-fledged 2 teams of 1 Junior engineer with 4 line men each with separate vehicle including all safety tools/equipment and other necessary line materials with wireless Mobile Phone facility and shall functions 24x7. Additional vehicles shall be provided.
2. The cable testing team will work for 24x7 to locate the fault in the underground cable system and cable testing team in each Division ready to attend to any cable fault within given time.
6. Prior information to consumers regarding power outages through SMS/TV Scrolling/Announcements wherein JE/SDO will update the status.
7. All the District/Circle control rooms will act as Nodal centers to co-ordinate with field and Helpline.

11.9 General Terminology Used in Weather Bulletins

A) Intensity of Rainfall

<table>
<thead>
<tr>
<th>Intensity of Rainfall</th>
<th>Terminology Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1.mm to 2.4 mm (24 hrs)</td>
<td>Very light rain</td>
</tr>
<tr>
<td>2.5 mm to 7.5 mm</td>
<td>Light rain</td>
</tr>
<tr>
<td>7.6 mm to 34.9 mm</td>
<td>Light to Moderate rain</td>
</tr>
<tr>
<td>35.0 mm to 64.9 mm</td>
<td>Moderate rain</td>
</tr>
<tr>
<td>65.0 mm to 124.9mm</td>
<td>Heavy rain</td>
</tr>
<tr>
<td>Exceeding 125 mm.</td>
<td>Very Heavy rain</td>
</tr>
</tbody>
</table>

B) Special distribution of weather phenomenon

<table>
<thead>
<tr>
<th>Percentage Area Covered</th>
<th>Terminology Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. 1 to 25 Isolated
2. 26 to 50 Few Places
3. 51 to 75 Many Places
4. 76 to 100 At most Places

C) Emergency Situation

1. When water level is rising above the danger of H.F.L
2. When intensity of rainfall is above 65 mm/hr
3. When breaches are anticipated and may lead to disaster.
4. When water levels are rising alarmingly.

D) Evacuation

1. White Signal - Alert condition
2. Blue Signal - Ready for Evacuation
3. Red Signal - Immediate Evacuation
Annexure
### Annexure 1: Emergency Contact Information

1) **Contact Information of SDMC Members**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Phone(O)</th>
<th>Phone(Mobile)</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.O.</td>
<td>06782-269864</td>
<td>9438907919</td>
<td><a href="mailto:md@nescoodisha.com">md@nescoodisha.com</a></td>
</tr>
<tr>
<td>C.O.O.</td>
<td>06782-269864</td>
<td>9438906001</td>
<td><a href="mailto:commerce@nescoorissa.com">commerce@nescoorissa.com</a></td>
</tr>
<tr>
<td>Sr. GM COMMERCE</td>
<td>06782-269864</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GM (Operation)</td>
<td>06782-269864</td>
<td>9438906006</td>
<td><a href="mailto:operation@nescoodisha.com">operation@nescoodisha.com</a></td>
</tr>
<tr>
<td>GM (Projects &amp; EMS)</td>
<td>06782-269864</td>
<td>9438906004</td>
<td><a href="mailto:project@nescoodisha.com">project@nescoodisha.com</a></td>
</tr>
<tr>
<td>AGM(ABT)</td>
<td>06782-261296</td>
<td>9438906016</td>
<td><a href="mailto:abt_nesco@rediffmail.com">abt_nesco@rediffmail.com</a></td>
</tr>
<tr>
<td>GM (Fin)</td>
<td></td>
<td>9438906005</td>
<td><a href="mailto:ca_pkm@rediffmail.com">ca_pkm@rediffmail.com</a></td>
</tr>
<tr>
<td>SE, Balasore</td>
<td></td>
<td>9438906090</td>
<td><a href="mailto:sebalasore@nescoodisha.com">sebalasore@nescoodisha.com</a></td>
</tr>
<tr>
<td>SE, Baripada</td>
<td></td>
<td>9438906091</td>
<td><a href="mailto:sebaripada@nescoodisha.com">sebaripada@nescoodisha.com</a></td>
</tr>
<tr>
<td>SE, Bhadrak</td>
<td></td>
<td>9438906092</td>
<td><a href="mailto:sebhadrak@nescoodisha.com">sebhadrak@nescoodisha.com</a></td>
</tr>
<tr>
<td>SE, Jajpur Road</td>
<td></td>
<td>9438906093</td>
<td><a href="mailto:sejajpur@nescoodisha.com">sejajpur@nescoodisha.com</a></td>
</tr>
<tr>
<td>SE, Keonjhar</td>
<td></td>
<td>9438906094</td>
<td><a href="mailto:sekeonjhar@nescoodisha.com">sekeonjhar@nescoodisha.com</a></td>
</tr>
<tr>
<td>External Consultant</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) **Contact Information of Disaster Management & Control Center Members**

<table>
<thead>
<tr>
<th>Designation</th>
<th>Phone(O)</th>
<th>Phone (Mobile)</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External Consultant</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 91 of 106
3) **Circle Level Disaster Management & Control Center**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Designation</th>
<th>Appointed Officer</th>
<th>Mobile Phone/Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SE</td>
<td>Designated</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>EE (O/O SE Circle)</td>
<td>Designated</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>EE (from any division)</td>
<td>Nominated by SE</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>AEE (O/O SE Circle)</td>
<td>Nominated by SE</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>AEE (from any division/sub-division)</td>
<td>Nominated by SE</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>AFM (from any division)</td>
<td>Nominated by SE</td>
<td></td>
</tr>
</tbody>
</table>

4) **Division Contact Details (Executive Engineers)**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Division</th>
<th>Mobile</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BED, Balasore</td>
<td>9438906099</td>
<td><a href="mailto:bedbls@rediffmail.com">bedbls@rediffmail.com</a></td>
</tr>
<tr>
<td>2</td>
<td>CED, Balasore</td>
<td>9438906096</td>
<td><a href="mailto:ced_balasore@rediffmail.com">ced_balasore@rediffmail.com</a></td>
</tr>
<tr>
<td>3</td>
<td>BTED, Basta</td>
<td>9438906097</td>
<td><a href="mailto:nesco_basta@rediffmail.com">nesco_basta@rediffmail.com</a></td>
</tr>
<tr>
<td>4</td>
<td>JED, Jaleswar</td>
<td>9438906098</td>
<td><a href="mailto:nescojed@gmail.com">nescojed@gmail.com</a></td>
</tr>
<tr>
<td>5</td>
<td>SED, Soro</td>
<td>9438906095</td>
<td><a href="mailto:sedsoro@gmail.com">sedsoro@gmail.com</a></td>
</tr>
<tr>
<td>6</td>
<td>BNED, Bhadrak</td>
<td>9438906103</td>
<td><a href="mailto:bned_n@rediffmail.com">bned_n@rediffmail.com</a></td>
</tr>
<tr>
<td>7</td>
<td>BSED, Bhadrak</td>
<td>9438906104</td>
<td><a href="mailto:ee.bsed@gmail.com">ee.bsed@gmail.com</a></td>
</tr>
<tr>
<td>8</td>
<td>JRED, Jajpur Road</td>
<td>9438906105</td>
<td><a href="mailto:nesco_jred@yahoo.co.in">nesco_jred@yahoo.co.in</a></td>
</tr>
<tr>
<td>9</td>
<td>JTED, Jajpur Town</td>
<td>9438906106</td>
<td><a href="mailto:nesco_jted@yahoo.co.in">nesco_jted@yahoo.co.in</a></td>
</tr>
<tr>
<td>10</td>
<td>KUED, Kuakhia</td>
<td>9438906107</td>
<td><a href="mailto:nescokuakhia@gmail.com">nescokuakhia@gmail.com</a></td>
</tr>
<tr>
<td>11</td>
<td>AED, Anandapur</td>
<td>9438906110</td>
<td><a href="mailto:nescoaed@gmail.com">nescoaed@gmail.com</a></td>
</tr>
<tr>
<td>12</td>
<td>KED, Keonjhar</td>
<td>9438906108</td>
<td><a href="mailto:nescopeonjhar@gmail.com">nescopeonjhar@gmail.com</a></td>
</tr>
<tr>
<td>13</td>
<td>JED, Joda</td>
<td>9438906109</td>
<td><a href="mailto:jedjoda@gmail.com">jedjoda@gmail.com</a></td>
</tr>
<tr>
<td>14</td>
<td>BPED, Baripada</td>
<td>9438906100</td>
<td><a href="mailto:nesco_bped@rediffmail.com">nesco_bped@rediffmail.com</a></td>
</tr>
<tr>
<td>15</td>
<td>RED, Rairangpur</td>
<td>9438906102</td>
<td><a href="mailto:redrairangpur@yahoo.com">redrairangpur@yahoo.com</a></td>
</tr>
<tr>
<td>16</td>
<td>UED, Udala</td>
<td>9438906101</td>
<td><a href="mailto:nesco.ued@gmail.com">nesco.ued@gmail.com</a></td>
</tr>
</tbody>
</table>
5) **Stock of major essential materials at Sub-stores (Annexure - 5)**

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Sub-division</th>
<th>Division</th>
<th>Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Transformer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution Transformer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conductors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSC Poles</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RS Joist</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insulators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Arms</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthing Sets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stay Sets</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circuit Breakers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MS Channel &amp; Angle</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nut &amp; Bolts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6) **Accessory materials to be kept at field level/Sub-stores during Emergency**

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Sub-division</th>
<th>Division</th>
<th>Circle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crane</td>
<td>First Aid Box</td>
<td>Safety belt</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ladder/Bucket Van</td>
<td>Emergency Tool Box</td>
<td>Safety Reflecting Jacket</td>
<td>Welding Machine</td>
<td></td>
</tr>
<tr>
<td>Power Hack saw</td>
<td>Emergency Manual</td>
<td>Tester</td>
<td>Gas Cutter</td>
<td></td>
</tr>
<tr>
<td>Telescopic proner</td>
<td>Rubber Hand Gloves</td>
<td>Cutting Pliers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire extinguisher</td>
<td>Earthing Rod sets</td>
<td>Poly propylene Rope of different size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lorry</td>
<td>Insulated GOS operating Rods</td>
<td>Screw driver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile DTR (250 kVA)</td>
<td>High voltage tester</td>
<td>Rain coat</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mobile DTR (500 kVA)</td>
<td>Safety Helmet with induction sensor</td>
<td>LED Torch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dewatering Pumps</td>
<td>Safety goggles</td>
<td>Head Torch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DG Sets</td>
<td>Safety shoes</td>
<td>Fibber ladder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emergency Lights</td>
<td>Tool spanners</td>
<td>Hickory rods</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 93 of 106
7) **List of Items to be maintained for implementation**

   a) List of alternate contact information for District Authorities
   b) List of Vehicles under GM (Technical) [for use in Disaster]
   c) List of Equipment Contractors
   d) List of Generator Suppliers
   e) List of Priority Stakeholders in Circle
   f) List of Employee Competencies
   g) List of Media and NGO Contacts
   h) List of Messages/Communication

8) **Important Websites**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Department</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MHA</td>
<td><a href="http://www.mha.nic.in">www.mha.nic.in</a></td>
</tr>
<tr>
<td>2</td>
<td>NDMA</td>
<td><a href="http://www.ndma.gov.in">www.ndma.gov.in</a></td>
</tr>
<tr>
<td>4</td>
<td>OSDMA</td>
<td><a href="http://www.osdma.org">www.osdma.org</a></td>
</tr>
<tr>
<td>5</td>
<td>NIDM</td>
<td><a href="http://www.nidm.net">www.nidm.net</a></td>
</tr>
<tr>
<td>6</td>
<td>IMD</td>
<td><a href="http://www.imd.gov.in">www.imd.gov.in</a></td>
</tr>
<tr>
<td>7</td>
<td>OSWAN</td>
<td><a href="http://www.oswan.gov.in">http://www.oswan.gov.in</a></td>
</tr>
</tbody>
</table>
Annexure 2 - List of codes/guidelines for safety of building/structures from natural hazards

As these codes and guidelines are subjected to be updated from time to time by different Institutions/organizations therefore the latest updated version shall be referred at the time of conceiving a project. List provided below is indicative and may not be exhaustive.

I. For General Structural Safety

1) BIS National Building Code 2005
4) IS 2911 (Part 1): Section 1: 1979 "Code of Practice for Design and Construction of Pile Foundation Section 1

II Protection from Cyclones / Wind Storms

1) IS 875 (3) -1987 "Code of Practice for Design Loads (Other than Earthquake) for Buildings and Structures, Part 3, Wind Loads"
2) IS 802 Part 1 Section 1 1995
3) IS 5613 Part 1 Section 1, 1995
4) REC Construction Standards (for Rural Electrification) as a whole and E-1 specific to the wind pressure
5) CEA technical standards for construction of electrical plants & lines Part B (Regulations 2010)

III For Earthquake Protection

1) IS: 1893-2002 "Criteria for Earthquake Resistant Design of Structures (Fifth Revision)"
2) IS: 13920-1993 "Ductile Detailing of Reinforced Concrete Structures subjected to Seismic Forces - Code Practice"
3) IS:4326-1993 "Earthquake Resistant Design and Construction of Buildings – Code Practice (Second Revision)"

Annexure 3 – New Projects being formulated by the State Govt. for enhancing the resiliency of power distribution network

a) Radial to Ring Conversion Project (RRCP)

The Ring Network provides better continuity of service than the radial system, with only short interruptions for switching. Hence, to provide a higher reliability of supply security, State Govt. in Energy Dept. proposed to have at least two sources of supply to the distribution transformers/ Primary Sub Station. In case of component failure from one source, supply from other source can (normally open) be restored after isolating the faulty portion. The supply restoration is quicker and is not directly depended on the fault repair time.

Budget provision of Rs.10Crore is kept for the FY 2014-15 for detailed study, preparation of DPR and other necessary preparatory activities before taking up full-fledged implementation of the work.

b) Reliability Enhancement of Power Supply to District Headquarter - DHQ Scheme

The objective of the Scheme is to have uninterrupted and quality power supply to the district head quarters. During power outages emergency services like Hospitals, Water Supply, Communications and Administrative functions etc. which are mostly located & operated in the District Headquarters are worst affected. In order to avoid this type of situation, it is proposed to take various steps for system improvements starting from 33KV line to Primary Substation, 11KV feeder re-conductoring/up-gradation & UG cabling including LT line & Distribution Transformer up-gradation so as to enhance the reliability of power in District Headquarters.

A tentative Cost Estimate about Rs.200 Crore has been prepared based on the estimated requirement of the system strengthening and separation of feeder lines based on preliminary estimates for the 30 Towns. In order to make detailed estimate,
Detailed Project Report (DPR) is required to be prepared after requisite field study and availability of components and proposed requirements at the field. Therefore, a budget provision of Rs.20Crore is kept for the FY 2014-15 for 1st phase works implementation. In the 1st phase Balasore and Sambalpur districts are considered during 2014-15.

c) Disaster Response Centers (DRC)

Immediately after the occurrence of disasters like cyclone and floods, the dearth of the skilled manpower as well as the specific machines, tools and implements had become the bottleneck for quick restoration of electricity. Electricity being most essential need of the people and a key infrastructure for enabling the numerous other services, the lesson left by the Cyclone Phailin is the preparedness for quick restoration of the electrical network by use of skilled men, mechanized tools, implements and machine.

To initiate the action and finalizing the blue print for the above exercise, a token amount of Rs.5Crore is kept under the heading institutional set up for the distribution disaster response system.

d) Smart GRID Project

The existing distribution systems of Distribution Companies in Odisha have very little or no automation which leaves a significant gap in untapped benefits for both the Distribution Companies and its end-customers. Whereas, Power Distribution utilities in rest of India are looking for more T&D Automation programs as a means to achieve reliability improvements.

The basic guideline in SCADA is based upon developing a single power system model which shall be the foundation for all system functionality. This network model shall support all operational and analytical functions that may need to be undertaken by both operational and network planning staff, working in either the control centre or in the field. Besides, it supports both manned and unmanned mode of control.
The new 550 nos. of substations proposed under ODSSP would come up with Supervisory Control and Data Acquisition (SCADA) & DMS system. Presently, there are about 591 nos 33/11 kV substations in Odisha which can be taken up for the SCADA and DMS. The existing 33 kV and 11 kV VCBs are to be retrofitted to make SCADA enabling.

In order to make detailed estimate, Detailed Project Report (DPR) is required to be prepared after requisite field study and availability of components and proposed Technology at the field. Therefore, a budget provision of Rs.15Crore is kept for FY 2015-16 for detailed study, preparation of DPR and other necessary preparatory activities before taking up full-fledged implementation of the work.

e) Disaster Resilient HT System – in 60 Kms area from Seacoast

The Central, Southern and North Eastern parts of the State which share about 480 Km coastline are vulnerable to cyclone & floods resulting in frequent occurrence of damages to the public and private properties and loss of lives.

According to various wind & hazard maps published in the country, on an average 50 Kms area from the sea coast is having maximum threat of cyclone and falling under very high damage risk zone B (wind speed – 180 Km/Hr).

Under the above identified high risk zone, 4 districts of NESCO (i.e. Balasore, Bhadrak, Jajpur & part of Mayurbhanj) falling under NESCO, are vulnerable from cyclone point of view.

Critical Infrastructure besides Several thousand kilometers of LT line having maximum threat in above area is detailed below;

<table>
<thead>
<tr>
<th>Discom</th>
<th>Power Transformer (Nos.)</th>
<th>33 KV Line (Kms)</th>
<th>11 KV Line (Kms)</th>
<th>Distribution Transformer (Nos.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NESCO</td>
<td>124</td>
<td>769</td>
<td>8094</td>
<td>19305</td>
</tr>
</tbody>
</table>
It is therefore essential to build the Distribution system which is resilient to withstand the disasters to the maximum extent possible as well as take minimum time for restoration. Following approaches are proposed:

i) Critical Installations such as Water Supply, Hospitals, Railways, Airports, Bus stands, Telecommunications etc. are to be treated as Vital areas and shall have UG cabling with double circuit supply or NBLS towers.

ii) 33/11KV substation shall be kept above the maximum recorded flood level

iii) Trunk lines (33KV) overhead lines shall be erected with reinforced NBLS towers having capacity to withstand wind pressure of 300kmps. Wherever possible line shall be made double circuit.

iv) All 33KV line shall be UG cabling and double circuit in a ring/ mess mode having provision of RMU and sectionalizers.

Initially Rs.20Crore is kept as budgetary allocation during FY 2015-16, for survey & preparation of DPRs etc.

f) Odisha Power System Emergency Assistance Project (OPSEAP) – Distribution

The learning left behind by Cyclone Phailin is a requirement of an upgraded robust T&D network which can withstand the Cyclone and flood to a reasonable extent as well as take minimum time for restoration.

To start with and in optimization of resources, the key Districts of NESCO UTILITY namely Balasore, Bhadrak & Jajpur are planned in the 1st phase for building cyclone resilient 33 KV & 11 KV system, U/G cabling, SCADA/DMS at Balasore town. The objective is that with immediate restoration of the power supply to these Towns after any disaster.

The main objectives of the project are as follows;

i) To build a power supply Distribution network resilient to the Super cyclone of the wind speed of 350 kmph.
ii) To design distribution network infrastructure adequate to take care of load growth of next 10 years and create the same for catering load growth of 5 years.
iii) To elevate the outdoor infrastructure above the defined flood levels
iv) Deployment of modern techniques in Power distribution such as GIS, Compact Sub-stations, RMUs etc and implementation of SCADA.
v) Implementation of Smart Grid concept will be adopted soon.
vi) Creation of emergency restoration cell.

As per the Govt. of Odisha decision, the project along with transmission system upgradation would primarily be funded by Asian Development Bank (ADB) through “Odisha Power Sector Emergency Assistance Project (OPSEAP)” and rest by the State Government. The total Project cost is Rs. 1000Cr. (Transmission system - Rs. 414.55 Cr. & Distribution system - Rs. 585.45 Cr.). The loan assistance from ADB would be limiting to $100 Million i.e. Rs.615.00 Cr (@ of Rs.61.50 per dollar) inclusive of Transmission up-gradation cost and the balance amount of Rs. 385 Cr. would be funded by the State Government. However, the ADB loan would not be available for Smart Grid and Solar PV Project and the same would be funded by the State Government. State has kept a budgetary provision of Rs. 250 Cr. during FY 2015-16.
Annexure 4 Sample Check List for Natural Disaster Impact Assessment

Name of the Project:

State:

District:

Project Estimate Rs. ____________ (Lacs)

1. Sitting of the Project

1.1 Location of Project site

   ⊗ Latitude

   ⊗ Longitude

   ⊗ Height above mean sea level

1.2 Earthquake Zone (Any known geological fault nearby may be listed)

1.3 Flood proneness & Vulnerability:

   ⊗ Past history of floods the area

   ⊗ Observed Highest flood level

   ⊗ Frequency of flooding
Depth of flooding

Duration of flooding

Damage/loss (maximum, average, potential)

1.4 Cyclone Proneness (If close to sea coast) & Vulnerability:

- Frequency and Intensity
- Wind speed zone - information on highest wind speed
- Distance of site from sea coast
- Record of past storm surge

1.5 Landslide Proneness & Vulnerability:

- Location of Hill slope vis-a-vis the project’s location
- Past history of landslides,
- Possibility of mud flows/rock falls/snow avalanches etc.

1.6 Tsunami proneness (If close to sea coast) & Vulnerability:

- Past history

1.7 Existence of Dams or Barrages upstream

- Distance from the project. Was dam breach effect considered on the project?
If so, have the dam break analyses been carried out? Has their impact on safety of the project been evaluated?

2. Natural / Type of Project

2.1 All the projects of the natural/type mentioned below are liable to damage by natural disasters and inadequacies of design or any of their components is likely to accentuate the vulnerability of the area to the disasters and / or lead to rise in damage/loss to lives, property, livelihood systems environment,

- Communications: towers, lines, building
- Transportation: Roads, Railways, Bridges, Tunnels
- Power: Power houses, sub stations, power lines
- Water Resources: Dams, barrages, appurtenant structures, river training structures, Canals
- Habitations: townships- planning from the point of view of safety against hazards
- Water supply and sanitation projects including water supply and sewer lines
- Ports & Harbors
- Building projects
- Any other
3. Hazards Risk to the Project

Have the following been evaluated:

- Probable maximum seismicity at site and site dependant seismic design parameters
- Probable Maximum storm surge
- Probable Maximum wind speed
- Probable Maximum precipitation
- Probable maximum flood discharge and level
- Probability of occurrence of floods, earthquakes, landslides, mud flows, avalanches, cyclones, tsunamis
- Soil liquefaction proneness under probable earthquake intensities

4. Mitigation / Reduction of Risk:

4.1 There are specific codes, manuals, guidelines etc. developed by Bureau of Indian Standards, NDMA and concerned organizations for sitting, design, construction and maintenance of various types of infrastructures, Indicative and not exhaustive list of some of them are provided above.

4.2 Have the relevant BIS codes and guidelines been complied with?

4.3 Have adequate safeguards to meet the risks of natural hazards as evaluated at Para 3 above, been adopted?
5. Impact of the project on the Environment and the People

Has the impact of the environment and the people been studied with the respect to the following and what mitigation measures have been adopted? An illustrative but not exhaustive list of scenarios is given below:

5.1 The earthquakes and landslides may damage the pipelines to transport and storages to store harmful and inflammable materials and gases in the project area. Has any study been made to assess the danger to the environment and the people posed by those occurrences? And if so what measures have been proposed?

5.2 The railway lines and roads run across the drainage lines and if adequate waterways at appropriate locations are not provided, it may result in rise in water level and drainage congestion in up-stream areas. Has this aspect been studied and if so, what mitigation measures have been proposed?

5.3 Land-slides triggered by earthquakes as well as due to inherent instability of slopes accentuated by rains, may lead to blockage of drainage channels and accumulation of water up-stream. These blockages may collapse due to their inherent instability or aided by rains. Men, machines and explosives can also be used to remove blockage and reduce flooding upstream. These lead to sudden release of water and flooding and erosion in down-stream areas. It may be stated whether any study has been carried out in this regard and what mitigation measures have been proposed?

5.4 As all the projects involve acquisition of land and influx of large number of people in the area to take up construction activities, it may result in deforestation and soil erosion. Measures for prevention of deforestation and arresting soil erosion are required to be taken. It may be stated whether any study has been carried out in this regard and what mitigation measures have been proposed?
5.5 If the project involves storage of water, failure of any component may cause flooding and large scale damage to lives, property and infrastructure etc. Please state whether any study has been made and if there is a possibility thereof, what measures have been proposed to meet the eventuality?