Efficient disaster management calls for meticulous planning. The paradigm shift in management of disasters from Reactive Approach of Relief, Restoration and Rehabilitation to the Pro-active Approach of Planning, Preparedness and Prevention revalidates the need for strengthening the planning process as well as the institutional mechanism for planning. Section 23 of the Disaster Management Act 2005 provides for preparation of State Disaster Management Plan. Disaster preparedness and response have been spearheaded in the State by Odisha State Disaster Management Authority through planning at different levels of administration. Disaster Management plans have been prepared from the village to the district level for effective management of disasters. Though disasters in different parts of the State are closely monitored at the State level with keen involvement of all stakeholders, the present State Disaster Management Plan further strengthens the process of disaster management through response protocols developed by the Departments of the Government. Besides, the State Disaster Management Plan also covers the essential attributes of disaster management like capacity building and technology approach to disaster management.

Odisha, owing to its geographical location, is vulnerable to natural disasters like flood, cyclone, storm surge, whirl wind and tsunami etc. the economic and industrial development has also increased the exposure to human-induced disasters. Almost every part of the State is subject to some natural or man-made disasters. The socio-economic vulnerabilities of the people in addition to the physical ones make it difficult for the people to cope with the impact of these incidents without adequate planning and timely response. Hence, the State Disaster Management Plan will play its pivotal role in timely and planned response to mitigate the damaging effects of the disasters.

The efforts put in for preparation of this document would be amply rewarded, if the planning and preparedness initiatives taken as per the State Disaster Management Plan reach the targeted population in order to reduce their vulnerability and minimise their sufferings in case a disaster strikes. This document needs continuous updating and incorporation of relevant information by all the Stakeholders of disaster management.
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CHAPTER-1
INTRODUCTION

Odisha is vulnerable to multiple natural hazards. Due to its sub-tropical littoral location, the state is prone to tropical cyclones, storm surges and tsunamis. It has a 480 km coastline. There are eleven major river systems in Odisha such as the Subarnarekha, the Budhabalanga & Jambhira, the Baitarani, the Brahmani, the Mahanadi, the Rusikulya, the Vansadhara, the Nagabali, the Indravati, the Kolab, and the Bahuda. Its densely populated coastal plains are the alluvial deposits of its river systems. The rivers in these areas with heavy load of silt have very little carrying capacity, resulting in frequent floods, only to be compounded by breached embankments. About two-third of the total cultivated area being rain-dependent, drought poses a serious threat at regular intervals in the event of failure of Monsoon. Though a large part of the state comes under Earthquake Risk Zone-II (Low Damage Risk Zone), the Brahmani-Mahanadi graven and their deltaic areas come under Earthquake Risk Zone-III (Moderate Damage Risk Zone) covering 44 out of the 106 urban local bodies of the state. Although the coast of the State was not affected by the tsunami of December 2004, it remains a potential hazard for the State.

Apart from these, loss of life due to lightning has remained the highest of all natural calamities over the last decade. Heat-wave conditions during summer months also lead to heat-stroke death and other suffering to the people. And its occurrence is not limited to any particular season or month although increased number of fire accidents occurs in the summer months.

Section 23 of the Disaster Management (DM) Act 2005 provides that there shall be a DM plan for every State. It outlines the broad coverage of the plan as well as the requirements of consultation in the preparation of the state plans. It also provides for annual review and updating of the state plan, and enjoins upon the state governments to make provisions for financing the activities to be carried out under the state plans. It provides for the departments of the state governments to draw up their own plans in accordance with the state plan.
The State Plan includes-

(a) The vulnerability of different parts of the State to different forms of disasters;
(b) The measures to be adopted for prevention and mitigation of disasters;
(c) The manner in which the mitigation measures shall be integrated with the development plans and projects;
(d) The capacity-building and preparedness measures to be taken;
(e) The roles and responsibilities of each Department of the Government of the State in relation to the measures specified in clauses (b), (c) and (d) above;
(f) The roles and responsibilities of different Departments of the State in responding to any threatening disaster situation or disaster.

Objectives of the plan

- Making Odisha disaster resilient and prepared to respond to disasters with sense of urgency in a planned way to minimize human, property and environmental loss.
- Saving human lives as the highest priority along with minimum loss of property and environment.
- To protect and minimize the loss of lives and property/infrastructure from disasters.
- To minimize the suffering of people due to disasters.
- To minimize the disaster risk and vulnerability of people and infrastructure in the State.
- Promote a culture of prevention and mitigation through curriculum revision, Information Education Communication (IEC) awareness campaign, preparation of DM plans at all level, mock drills, communicating hazards, risk and vulnerability at community level, streamlined and institutional techno-legal framework.
- To build the capacity of all stakeholders in the State to cope with the disasters and promote community based disaster management.
- Mainstreaming disaster management concerns into the developmental planning process.
- Develop efficient disaster response/relief mechanism in the State with identified roles and responsibilities of the stakeholders.
• To provide clarity on roles and responsibilities for all stakeholders concerned with disaster management.
• To ensure co-ordination and promoting productive partnership with all other agencies related to disaster management.
• Commence recovery programme as an opportunity to build better in case of a future disaster by incorporating community in the programme
CHAPTER-II
STATE PROFILE

Odisha is located between the parallels of 17.49N and 22.34N latitudes and meridians of 81.27E and 87.29E longitudes. It is bounded by the Bay of Bengal on the east; Chhattisgarh on the west, Jharkhand and West Bengal on the north and Andhra Pradesh on the south. It has a coast line of about 480 km. It extends over an area of 1,55,707 square km covering about 4.87% of the total area of India. According to the 2011 census, it has a total population of 4,19,47,358 (3.73% of the total population of India) out of which about 2,12,01,678 are men and 2,07,45,680 are women.

The State is broadly divided into four geographical regions viz. the northern plateau, central river basins, eastern hills and coastal plains. The northern plateau region comprises mainly Mayurbhanj, Keonjhar and Sundargarh districts. The central river basins lie between the northern plateau and eastern hills and include Bolangir, Sonepur, Sambalpur, Deogarh, Bargarh, Jharsuguda, Dhenkanal & Angul districts and a part of Cuttack district. The eastern hills which constitute the last portion of the Eastern Ghats, lie to the south and southwest of central river basins stretching for about 250 km in northeast – southwest direction through the districts of Koraput, Rayagada, Nabarangpur, Malkangiri, Kalahandi, Nuapada, Gajapati and a part of Ganjam district. The eastern hills are elevated and are generally 900 m above sea level. The coastal plains comprise mostly of Balasore, Bhadrak, Kendrapada, Jagatsinghpur, Jajpur, Puri, Khordha, Nayagarh districts and a portion of Ganjam and Cuttack districts. The areas of the state north of latitude 20°N have elevation up to 500m above sea level, in general and in the south western districts, they rise to 1500-1600m above sea level.

Climate

The climate of the state is characterized by hot summer and cold winter in the interior. The climate of the coastal region near the Bay of Bengal is moist equable. The State can be divided into ten agro-climatic zones on the basis of soil, weather and other relevant characteristics. Its land can be classified into three categories, low (25.6%),
medium (33.6%) and up-lands (40.8%) with various types of soil like red, yellow, red-loamy, alluvial, coastal alluvial, laterite and black soil, etc. with low and medium texture. Characteristics of different agro-climatic zones in Odisha are presented in following table.

**Agro-climatic Zones in Odisha**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Agro-climatic zone</th>
<th>Climate</th>
<th>Mean annual rainfall (in mm)</th>
<th>Soil group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>North western plateau</td>
<td>Hot and moist</td>
<td>1648</td>
<td>Red and yellow</td>
</tr>
<tr>
<td>2</td>
<td>North central plateau</td>
<td>Hot and moist</td>
<td>1535</td>
<td>Red loamy</td>
</tr>
<tr>
<td>3</td>
<td>North eastern coastal plateau</td>
<td>Hot and moist sub-humid</td>
<td>1568</td>
<td>Alluvial</td>
</tr>
<tr>
<td>4</td>
<td>East and south eastern plateau</td>
<td>Hot and humid</td>
<td>1449</td>
<td>Coastal alluvial saline (near the coast line)</td>
</tr>
<tr>
<td>5</td>
<td>North eastern ghat</td>
<td>Hot and moist sub-humid</td>
<td>1597</td>
<td>Laterite and brown forest</td>
</tr>
<tr>
<td>6</td>
<td>Eastern ghat high land</td>
<td>Warm and humid</td>
<td>1522</td>
<td>Red</td>
</tr>
<tr>
<td>7</td>
<td>South eastern ghat</td>
<td>Warm and humid</td>
<td>1522</td>
<td>Red, mixed red and yellow</td>
</tr>
<tr>
<td>8</td>
<td>Western undulating</td>
<td>Warm and moist sub-humid</td>
<td>1527</td>
<td>Black, mixed red and black</td>
</tr>
<tr>
<td>9</td>
<td>West central table land</td>
<td>Hot and moist</td>
<td>1527</td>
<td>Red, heavy textured colourous</td>
</tr>
<tr>
<td>10</td>
<td>Mid central table land</td>
<td>Hot and dry sub-humid</td>
<td>1421</td>
<td>Red loamy, laterite mixed red and black</td>
</tr>
</tbody>
</table>

The year may be divided into four seasons. The winter season from December to February is followed by the pre-monsoon or hot weather season from March to May. The period from June to September constitutes the southwest monsoon season and the period of October and November is the post-monsoon season. During the period from December to February, generally low temperatures prevail over the state except in the coastal belt. In the hot weather season from March to May, weather is generally dry and uncomfortable in the interior, while due to lower temperatures, the plateau regions are, comparatively less uncomfortable. Weather tends to be oppressive during July due to high humidity and high temperature. The rest of the period of the monsoon is fairly comfortable due to reduced day temperatures, although humidity continues to be high.

**River and the Drainage System**

All the rivers of Odisha are primarily peninsular rivers and have originated from (a) the Chhota Nagpur plateau in Jharkhand, (b) the Amarkantak plateau in Chattisgarh, or (c) the Eastern Ghats within Odisha. All these rivers are non-perennial in character.
The main rivers in the state include:

- Rivers originating from Chhotnagpur plateau: These include Subarnarekha and Brahmani. While Subarnarekha’s stretch within Odisha is small, Brahmani and its tributaries form an important drainage sub-system in Odisha.

- Rivers from the Amarkantak plateau: The Mahanadi and its tributaries (25 on the right bank and 2 on the left bank, more important among which are the Tel, the Jira and the Jhaun) form the largest drainage sub-system on the central eastern coast of India. The Mahanadi is divided into a series of distributaries and sub-distributaries.

- Rivers originating in the Mahanadi delta: There are seven such rivers (the Samolia, the Gobari, the Prachi, the Kadua, the Dhanua, the Ratnachira and the Nuna).

- Rivers from Keonjhar: The Baitrani, which has a total length of 344 km, with the tributaries, such as the Deo and the Indrani, forms a major drainage sub-system in Odisha. A peculiar feature of Baitarani is that in its lower reaches, it drains into the distributaries of the Brahmani, and has a common mouth to the Bay of Bengal at Dhamra.

- Rivers from the eastern slopes of the Eastern Ghats: These rivers include the Budhabalanga, the Salandi, the Rushikulya and several other smaller streams.
**Tidal Sections of the Rivers:** The tidal sections of rivers and their distributaries are confined to the lower reaches of the rivers in the coastal plain. The tidal sections vary as per the shape of the river mouth, depth of the channel, and extension of the sand bars in the river mouths. The tidal channels vary from a maximum of 90 km in the case of Brahmani to a minimum of 5 km in the case of Baghuni from their respective mouths. The Mahanadi is tidal for about 35 km, whereas the Devi, a distributary of the Mahanadi is tidal for 45 km.

**Coastline**

The Odisha coast which is 480 km long and 10 – 100 km wide forms a part of east coast of India. The coastal territory is drained by a number of rivers like Mahanadi, Brahmani, Baitarani, Devi, Budhabalanga, Subarnarekha Rushikulya and some other smaller ones. These rivers carry a large volume of sediments which have formed the above huge single delta. Hence the Odisha coast is under uninterrupted influence of freshwater flow and delta building processes. The coastline is in general oblique to the global wind system which generates strong littoral currents and represents one of the world’s largest littoral drift areas. In the northern Odisha coast i.e. north of Dhamra coast, the tidal range increases and wave energy diminishes resulting in formation of mudflats. The brackish water coastal lagoon i.e. Chilika lagoon has been formed because of formation and growth of barrier spit from Paluru. The other important features of Odisha coast are mangroves, estuaries and other related sedimentary as well as sandy environments like sand dunes.

**Demographic details**

As per 2011 census, Odisha has a total population of 4,19,47,358 (male-2,12,01,678 female-2,07,45,680), out of which 3,49,51,234 live in rural Odisha. The density of population per sq km is 269. Odisha has a sex ratio (females per 1000 males) of 978 (Rural- 988, Urban-934). The literacy rate is 73.45% (70.78% in rural areas and 86.45% in urban areas). The decadal growth rate is 13.97% as against 15.94% for all India, and indeed this has been the third lowest growth rate of population among the major Indian states. This has occurred not because of a normal process of demographic transition but
due to a peculiar demographic regime, namely, a relatively faster decline in the birth rate from a relatively low level on the one hand and a relatively slower decline in the death rate from a relatively higher level on the other. As per 2001 census, the Scheduled Tribe and Scheduled Caste population in the State is 81,45,081 (22.13%) and 60,82,063 (16.53%) respectively.

**Socio – Economic profile**

Nearly 84% of Odisha’s population live in the rural areas and depend mostly on agriculture for their livelihood.

The State has abundant mineral resources including precious and semi-precious stones. It has also plentiful water resources. Planned exploitation and optimum utilization of rich natural resources like mineral, land, water and others including human resources holds the key to rapid economic development of the State.

One of the major concerns of the State has been to accelerate the all round development of scheduled tribes and scheduled castes. For historical reasons, this segment of the society has remained socially and economically backward. Therefore, concerted efforts have been made under different Plans to bring them into the mainstream of development. The State Government is committed to the development of these communities. Accordingly, various special programmes and welfare measures have been launched for their benefit, which include legal aid, rehabilitation of marginalised STs and SCs, housing facilities, establishment of special employment exchanges, reservation in employment, etc.

**Administrative divisions**

Odisha is divided into 30 districts for administrative convenience. These are again regrouped into 3 revenue divisions (Central, Southern and Northern).

- **Central Division** comprising of Cuttack, Jagatsinghpur, Kendrapada, Jajpur, Balasore, Bhadrak, Puri, Khordha, Nayagarh, and Mayurbhanj districts.
- **Southern Division** comprising Ganjam, Gajapati, Koraput, Nabarangpur, Rayagada, Malkangiri, Kalahandi, Nuapada, Kandhamal, and Boudh districts.
• **Northern Division** comprising Sambalpur, Deogarh, Jharsuguda, Bargarh, Bolangir, Sonepur, Sundargarh, Dhenkanal, Angul, and Keonjhar districts.

The 30 districts have been subdivided into 58 sub-divisions. Odisha has 317 tahasils and 314 blocks. These 314 blocks comprise 51,551 villages under 6236 Gram Panchayats. There are 3 Municipal Corporations, 37 Municipalities, 67 Notified Area Councils, and 2 Industrial Towns. There are 534 General Police Stations, 6 Women Police Stations besides 34 Energy Police Stations, 7 Vigilance, 5 Marine and 1 Cyber Crime Police Stations. The State is divided into 21 Lok Sabha Constituencies and 147 Assembly Segments.

Agriculture in Odisha is the mainstay of majority of the populace and thus, holds the key to socio-economic development of the State. The State has cultivated area of 61.80 lakh hectares out of which 29.14 lakh hectares is high land, 17.55 lakh hectares medium land and 15.11 lakh hectares low land. The State is broadly divided in to 4 Physiographic zones those are further subdivided into 10 agro-climatic zones. The agricultural lands are exposed to saline inundation, flooding and water-logging,
particularly in the deltaic areas. With more than 2/3rd of crops grown rainfed, a good harvest is much dependent on a favourable monsoon.

States climate is tropical, characterized by high temperature, high humidity, medium to high rainfall and short and mild winters. The normal rainfall of the State is 1451.2 mm. The actual rainfall received, vary from district to district. About 84% of rainfall is received during the period from June to September. Even though the quantum of rainfall is quite high, its distribution during the monsoon period is highly uneven and erratic. As a result, flood and drought visit regularly with varying intensity. The frequent occurrence of these natural calamities badly affects the production of kharif rice, the major crop of the State. Similarly, in drought years, there is considerable loss in production of pulses and oilseeds both during kharif and rabi. These, stand as stumbling blocks in the way of enhancing crop production and productivity.

There are 3 Government Medical Colleges, 32 District Hospitals, 27 Sub-divisional Hospitals, 377 Community Health Centers, 1226 PHCs (New), 314 Rural Family Welfare Centers, 10 Urban Family Welfare Centers and 79 other hospitals in the State. In addition, there are 5 Ayurvedic Hospitals, 619 Ayurvedic Dispensaries, 9 Unani Dispensaries, 4 Homoeopathic Hospitals and 564 Homoeopathic Dispensaries. Besides, there are 16 ANM Training Schools and 6688 Sub-Centers.

With vast mineral resources, abundance of raw materials, comfortable power situation and sufficient skilled manpower, the State has an immense potential for industrialization. Large industries like Rourkela Steel Plant, National Aluminum Company, Indian Charge Chrome Ltd., Paradip Phosphates Ltd. and coal based power plants at Talcher, Kaniha and Banharpali have been set up in the State during different Plan periods.

There are 3661 registered factories in the State out of which 487 are hazardous factories. 24 major accident hazards have been identified for taking special precautionary measures. By the end of 2002-03, Odisha had 358 large and medium industries with an investment of Rs.3,584.71 crore and employment potential for 85,777 persons.
Odisha has railway routes of 2384 kms with 274 stations. Lengths of different types of roads are indicated below (As on 2000-01):

<table>
<thead>
<tr>
<th>Type of Road</th>
<th>Length (kms)</th>
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</thead>
<tbody>
<tr>
<td>National Highways</td>
<td>2752</td>
</tr>
<tr>
<td>State Highways</td>
<td>4970</td>
</tr>
<tr>
<td>Major district roads</td>
<td>3727</td>
</tr>
<tr>
<td>Other district roads</td>
<td>4445</td>
</tr>
<tr>
<td>Classified village roads</td>
<td>4670</td>
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<tr>
<td>Village roads</td>
<td>24843</td>
</tr>
<tr>
<td>Forest roads</td>
<td>7317</td>
</tr>
<tr>
<td>P.S. roads</td>
<td>20372</td>
</tr>
<tr>
<td>G.P. roads</td>
<td>139973</td>
</tr>
<tr>
<td>Municipal roads</td>
<td>17480</td>
</tr>
</tbody>
</table>

**Ecology**

**Springs and Hot Springs:** There are a number of springs and a few hot springs in Odisha. There are 3 hot springs at Deulijharna, Atri, and Taptapani.

**The Lakes, Lagoons and Marshes:** Among the artificial freshwater lakes, only 2 (in the upper catchment of the Rushikulya in Ganjam district, at Saroda and Bhanjanagar) existed before 1950. Later, artificial freshwater reservoirs were formed in Cuttack (by construction of anicuts over the Mahanadi at Naraj, Jobra and Birupa). Major irrigation projects created a number of such reservoirs, which include Hirakud (on the Mahanadi in Sambalpur), Machhakund, Balimela (on the Sileru), Rengali (on the Brahmani), Mandira (on the Sankh), and Upper Indravati (on the Indravati). Apart from these, there are scores of reservoirs created by medium-scale irrigation projects, such as at Hadagarh (on the Salandi) and the Poteru (on the Potteru).

Among the natural lakes, the Chilika, a tourist destination and a bird sanctuary, is the largest. Its area varies between 1,165 sq km during annual floods, and 891 sq km during dry seasons. Ansupa is another freshwater lake on the left bank of the Mahanadi (in Cuttack district). There is a marsh, *Udyanakhanda*, on the coast at Ichhapur on the border of Odisha and Andhra Pradesh (in Ganjam district), where water is brackish. The *Sar*
Pata, the Samagra Pata, and the Tampara are 3 old lagoons (in Puri district) initially cut-off from the Bay of Bengal. They have now been silted up to a large extent.

**Soil:** Broadly, the soil of Odisha may be classified as transported and residual soil on the basis of its mode of formation. The catchment basins of the different drainage systems in Odisha are dominated by granite and gneissic rocks, which have resulted in a sandy soil. Clayey soils pre-dominate the middle and lower reaches of the drainage channels.

**Erosion:** Soil erosion is a constant and continuous problem faced in the State. The erosion is increasing over the years due to (a) land redemption for road construction, temporary fair-weather roads, industrial and township growths, (b) large scale deforestation and soil degradation, (c) inappropriate land management practices, (d) quick siltation of gully control structures and silt retention dams, and (e) lack of maintenance of the different soil conservation measures.

**Flora and Fauna:** The forests of Odisha house many useful plants such as, various timber species, orchids, medicinal plants and aromatic plants. About 33% of the total forest cover is predominated by sal (*Shorea robusta*), while the remaining is characterized by species such as teak (*Tectona grandis*), piasal (*Prerocarpus marsupium*), bandhan (*Ougeinia oojeinensis*), kangada(*Xylia xylocarpa*), kasi (*Bridelia retusa*), sisu (*Dalbergia sisoo*), asana (*Terminalia alata*), karuma (*Adina cordifolia*) and dheura (*Anogeissus acuminata*). Various types of bamboos (*Bambusa spp.*), sandalwood (*Santalum album*), sal seeds and resins (*Jhuna*), kendu (*Diospyros melanoxylon*) leaves, canes (*Calamus app.*) myriobalans (*Terminalia spp.*), salap (*Caryota urens*) are some of the important minor forest products.

Orchids are fairly common in different ecological habitats throughout the state. About 120 species of orchids, including several rare ones are found. Similipal, Mahendragiri and Singhrooj are orchid rich forests.

As many as 220 medicinal and quasi-medicinal plant varieties are found in the Gandhamardan Hills alone. Similipal is another known source of medicinal plants. The important medicinal plants include Sarpagandha (*Rauvolfia serpentine*), Swasamari (*Tylophora asthamatica*), kochila (*Strychonos nux-vomica*), Koruan (*Holarrhena antidysneterica*) and Thalkudi (*centella asiatica*). These are some of the widely available medicinal plants in the state.
The coastal mangroves also house a number of rare and endangered species. Mangrove forests comprise taxonomically diverse, salt tolerant trees and other plant species, which thrive in inter-tidal zones of sheltered tropical source, estuaries and overwash islands. Mangrove forest, which once dominated, have depleted due to overharvesting, fresh water diversion, urban growth pressures, charcoal and timber industries and mounting pollution. Rapid depletion of mangrove forest has made Odisha coast vulnerable to cyclones and storm surges.

**Stakeholders of the State DM Plan**

The State Disaster Management Authority (SDMA), Revenue & Disaster Management Department, Odisha State Disaster Management Authority (OSDMA) and the Office of the Special Relief Commissioner are the major institutions in the State that deal with all the phases of disaster management. All the major line departments of the State Government, the District administration, UN Agencies, other technical institutions, Panchayati Raj Institutions, Urban Local Bodies, community at large and NGOs etc. are the stakeholders of the State disaster management plan. The role of the stakeholders is portrayed with the objective of making the concerned organizations understand their duties and responsibilities regarding disaster management at all levels, and accomplishing them.

**Roles & Responsibilities**

**State Government**

- Ensure that all the principal authorities and role players shall take necessary steps to mitigate and manage disasters.
- Make sure that the State administration and local authorities shall take into consideration the guidelines laid down by the Authority while planning its activities.
- Facilitate procurement related to disaster management of materials, equipment and services in connection with the disaster management and ensuring their quality.
- Issue a direction for the purpose of avoiding an imminent damage arising out of a disaster or mitigation of its effects.
• Suspend operation of any executive order if such executive order prevents, hinders or delays any necessary action in coping with disaster.

Departments of the State Government
• Provide assistance to the OSDMA, Special Relief Commissioner, Collectors and local authorities in disaster management activities.
• Carry out relief, reconstruction and rehabilitation activities under the supervision of the SRC and the Collector at the State level and in the district level respectively.
• Co-ordinate preparation and the implementation of plan with other departments, local authorities, communities and stakeholders

Odisha State Disaster Management Authority (OSDMA)
• Promote an integrated and coordinated system of disaster management including prevention or mitigation of disaster by the State, local authorities, stakeholders and communities.
• Collect/cause to be collected data on all aspects of disasters and disaster management and analyze it and further cause and conduct research and study relating to the potential effects of events that may result in disasters.
• Act as a repository of information concerning disasters and disaster management.
• Prepare and update the policies and plans for disaster management in the State.
• Promote or cause to be promoted awareness and preparedness, advise and train the community and stakeholders with a view to increasing capacity of the community and stakeholders to deal with potential disasters.
• Coordinate and monitor activities relating to prevention and mitigation of disasters, including capacity-building.
• Monitor the progress of the preparation and updating of disaster management plans and coordinate the implementation of such plans.

Special Relief
• Facilitate Relief, Restoration and Rehabilitation in the event of Disaster.
• Coordinate an effective emergency response and relief on the occurrence of a disaster.
• Review and monitor emergency response plans and guidelines and ensure that the district level DM plans are prepared, revised and updated.

• Develop an appropriate relief implementation strategy for the State taking into account the unique circumstances of each district and deficiency in institutional capacity and resources of the State.

• Provide directions to the Collector and the local authority having jurisdiction over the affected area to provide emergency relief in accordance with disaster management plans to minimize the effects of disaster.

The District Administration

• Facilitate and coordinate with district level line Departments, PRIs to ensure pre and post - disaster management activities in the district.

• Assist community training, awareness programmes and the installation of emergency facilities with the support of PRIs, non-governmental organizations, and the private sector.

• Take appropriate actions to smoothen the response and relief activities to minimize the effect of disaster.

• Take post disaster rehabilitation and reconstruction activities.

• Coordination of activities of different stakeholders of disaster management at district level including the NGOS.

• Coordinate relief assistance provided by different organizations for equitable distribution of relief materials among the affected people. Jhfsjfhfjs

• Recommend Special Relief and State Government for declaration of disaster

Panchayati Raj Institutions and Urban Local Bodies

• Provide assistance to District Administration, Special Relief and OSDMA in disaster management activities.

• Facilitate capacity building of People’s representatives and community members.

• Awareness Generation regarding disaster preparedness.

• Ensure prepositioning of relief Material at strategic locations.
Private Sector

- The private sector should ensure their active participation in the pre-disaster activities in alignment with the overall plan developed by the OSDMA and District Administration.
- They should also adhere to the regulation and other specifications, as may be stipulated by relevant local authorities.
- Provide support and assist in response activities.

Community Groups and Voluntary agencies

- Local community groups and voluntary agencies including NGOs should actively assist in prevention and mitigation activities under the overall direction and supervision of the OSDMA and District Administration.
- They should actively participate in all training activities as may be organised and should familiarize themselves with their role in disaster management.
- Preparation and implementation of disaster management plan in respect of other organizations.

Citizen

It is a duty of every citizen to assist the District Administration or such other person entrusted with or engaged in disaster management whenever his aid is demanded generally for the purpose of disaster management.

Disaster Management Initiatives at State Level:

Odisha State Disaster Management Authority (OSDMA) has made long strides towards improving disaster preparedness and response standards of the state through a culture of capacity building. Apart from preparedness, OSDMA has initiated number of efforts and response mechanism to meet both natural and manmade disasters.

Multipurpose Cyclone Shelters (MCS)

Till date OSDMA has constructed 135 nos. of Multipurpose Cyclone Shelters in 06 coastal districts of the state stretching from Ganjam to Balasore. The Cyclone Shelter Buildings are designed to withstand a wind speed of 300 km per hour. The plinth level has been fixed above the recorded high tide level to prevent inundation by possible storm surge or high
floods. Most of these buildings have been constructed within school premises for use as schools and for other community activities during normal time. All the Cyclone Shelters have been provided with generator sets for alternative power supply; disruption in power supply being a known phenomenon during cyclone.

Community based Cyclone Shelter Management and Maintenance Committee (CSMMC) constituted at the shelter level are responsible for the sustainable maintenance and management of these shelters by generating resources on putting these buildings in income generating use. The MCS buildings have been handed over to the respective Cyclone Shelter Management and Maintenance Committee (CSMMC). Task Forces have been constituted for each shelter and they have been trained on Search & Rescue, First Aid and use of basic search and rescue equipment provided to the cyclone shelters.

Another 163 Multipurpose Cyclone Shelters are being constructed with all weather road connectivity under the World Bank assisted National Cyclone Risk Mitigation Project (149) and Integrated Coastal Zone Management Project (14).

**Multipurpose Flood Shelters**

Construction of 50 multipurpose flood shelters in 9 flood prone districts has been taken up with funds sanctioned in the 1st phase out of Chief Minister’s Relief Fund. Out of these, 16 Flood Shelters have been completed. The remaining shelter buildings except one (locked in litigation) are likely to be completed soon. Besides, construction of 38 more such shelters has been taken up with funds from Chief Minister’s Relief Fund sanctioned in 2nd phase. Construction of these buildings is under progress.

**Odisha Disaster Rapid Action Force (ODRAF)**

Odisha Disaster Rapid Action Force (ODRAF) has been formed in 10 units. Seven units have been formed out of Odisha Special Armed Police (OSAP) Battalions and three units have been formed out of District Armed Police Reserve (APR). These ODRAF units are located at ten different locations in the State based on the vulnerability profile to reduce response time for their deployment. These units are at Cuttack, Chatrapur, Balasore, Jharsuguda, Koraput, Bhubaneswar, Paradeep, Bolangir, Rourkela & Baripada.
All the ten units are being equipped and trained to combat multi-faceted operations like Water related Search and Rescue, Relief Line Clearance, Collapsed Structure Search and Rescue (CSSR), and Medical First Responder (MFR). Further, these units are also equipped with 92 different types of emergency equipment including communication equipment.

ODRAF has not only responded in various operations related to natural and manmade disasters to save the lives but also it is imparting awareness and operational level training to govt. officials, urban and rural volunteers, school students and Task Force members of the Cyclone Shelter Maintenance and Management Committee (CSMMC) for Capacity Building of the stake holders to mitigate and minimize the disaster risk.

**Capacity Building of Fire Services Units**

All the Fire Stations of the state have been strengthened with the provision of search & rescue equipment as the second line of Multi-hazard Response Force. The details are placed in the ODRAF /Fire section.

**Disaster Risk Reduction (DRR) Programme: (2009-2012)**

GoI-UNDP Disaster Risk Reduction (DRR) programme was implemented by OSDMA. It is envisaged to support Central and State government initiatives by providing critical inputs that would enhance the efficiency and effectiveness of the efforts in Disaster Risk Reduction. The programme was designed to strengthen the institutional structure to undertake disaster risk reduction activities at various levels including risk being enhanced due to climate change and develop preparedness programmes, policies and practices in order to minimize the risk to life and property. The programme had two components;

1. Institutional Strengthening and Capacity Building for Disaster Risk Reduction.
2. Urban Risk Reduction.

Institutional Strengthening and Capacity Building for disaster risk reduction project was implemented in the three districts in Odisha such as Bolangir, Ganjam and Kendrapara and the Urban Risk Reduction Project in the urban areas of Bhubaneswar, Angul and Talcher.
National Cyclone Risk Mitigation Project (NCRMP)

The National Cyclone Risk Mitigation Project (NCRMP) is being implemented in Odisha with assistance from Government of India and the World Bank. Odisha State Disaster Management Authority (OSDMA) has been identified as the Nodal Agency for implementation of the project in the coastal districts of Balasore, Bhadrak, Kendrapara, Jagatsinghpur, Puri & Ganjam. The Government of India with World Bank assistance will provide 75% of the Project cost as grant and the State Government will bear 25% of the project cost. Construction of 149 Cyclone Shelters and 06 Godown, construction of all weather approach road to 143 cyclone shelters and raising & strengthening of saline embankments are major structural interventions sought under the project.

The project period is from 01.01.2010 to 31.12.2015, with retroactive financing from 01.01.2010. Tenders for 60 cyclone shelters in 55 packages and 59 approach roads in 27 packages have been finalized and works in respect of 43 packages of cyclone shelters and 23 packages of approach roads have started. The works are being executed by Rural Development Department. The quality of construction is being monitored by engagement of an independent firm as Third Party Quality Auditor (TPQA).

Integrated Coastal Zone Management Project (ICZMP)

Government of Odisha with assistance from Ministry of Forest & Environment, Government of India and World Bank is implementing an integrated project called Integrated Coastal Zone Management Project (ICZMP) to coordinate activities of various agencies & Departments for the sustainable management and usages of coastal resources. Under the project OSDMA is executing construction of 14 Cyclone Shelters in two coastal stretches i.e. Gopalpur to Chilika and Paradeep to Dhamara.

Establishment of Doppler Weather Radar Stations

OSDMA in association with India Metrological Department (IMD) has taken up steps for establishment of Doppler Weather Radar (DWR) Stations at Gopalpur, Balasore, Sambalpur and Paradeep. Construction of building at Paradeep is complete. The State Government has provided an amount of Rs.17.00 crore for construction of buildings at the remaining locating. Works Department is executing these projects. IMD will provide the DWR equipment. The DWR is specially designed for cyclone tracking, detection and
forecasting. Once the Radar Stations are commissioned, facilities for tracking events of extreme weather condition will be locally available.

**Making the Schools Disaster Resilient**

School safety initiative is an endeavor of Odisha State Disaster Management Authority to protect the young lives and provide them with a safe learning environment. This involves training of children on life saving skills and effective response, strengthening schools buildings to withstand natural disasters, hunting hazards in schools through non structural mitigation measures and developing school safety plans.

**Mainstreaming Persons with Disability in Disaster Risk Reduction Practices**

OSDMA in collaboration with Handicap International has taken initiative for mainstreaming disability in community based disaster risk management practices.

**Capacity Building Activities under 13th Finance Commission Grant**

Effective disaster response requires trained manpower to deal with complex situations where effective and speedy handling can reduce the impact of a disaster on human life and property. OSDMA has initiated a number of measures for building capacity within the administrative machinery for better handling disaster response out of the grant received under 13th Finance Commission grant.

**Mock Drill**

Mock drill is an essential attribute of testing the preparedness planning at different levels. Mock drills are conducted every year on 19th June at the cyclone shelter level to make the local population aware about the preparedness to face disasters. Odisha State Disaster Management Authority (OSDMA) organizes mock drills at different levels.

This Mock tsunami exercise was organized simultaneously in 20 Indian Ocean countries including India in 2011. The exercise in which Odisha participated aimed at testing the Indian Ocean Tsunami Warning and Mitigation System (IOTWS) and to evaluate the system’s operational capacity, the efficiency of communications among the stakeholders, and the state of preparedness of emergency services. Table Top exercises and joint mock drills are also conducted with external agencies like East Coast Railways and National Disaster Response Force (NDRF).
VULNERABILITY ASSESSMENT

Vulnerability to various Hazards

The unique geo-climatic conditions of Odisha make the state vulnerable to various natural disasters. Odisha has a history of recurring natural disasters. On the east, the state is surrounded by Bay of Bengal and has a coastline length of 480 km. Though the coastline is about 17% of the east coast, Odisha has been affected by nearly 35% of all the cyclonic and severe cyclonic storms that have crossed the eastern coast and associated storm surges that have often inundated large tracts of the coastal districts. Similarly, Mahanadi, one of the major rivers flowing in the State and its tributaries has the potential to cause very severe. Odisha has 10 other major river systems which cause flood regular intervals. Of a total geographical area of 15, 571 lakh hectares, 1.40 lakh hectares are very flood prone. The State is also vulnerable to flash floods and landslides.
The frequency, intensity and extent of droughts in the State are gradually on the rise. This is leading to crop failures, decline in surface and groundwater levels, increasing unemployment and under-employment, migration and indebtedness. Drought is particularly frequent and severe in the Western districts of the State.

A portion of the State is prone to moderate earthquakes. In addition, the state is also affected by disasters like severe heat waves, epidemics, forest fire, road accidents, etc.

The record of previous disasters in the State substantiates the fact that the state is prone to one or more forms of natural disasters. There are many instances where a particular area has been struck by a number of disasters simultaneously or repeatedly by one or the other type of disasters.

**Recent Major Disasters**

**Super Cyclone 1999:**

The Cyclone which hit the Odisha coast on 29\textsuperscript{th} & 30\textsuperscript{th} October, 99 was so disastrous and damaging that it was indeed termed as ‘Super Cyclone’. Although many cyclones had struck the State in the past but it was really in superlative degree so far as enormity & ferocity is concerned. It was certainly incomparable with all the previous cyclones and even all forms of natural disasters.

**Extent of Damage:**

- Districts Affected : 14
- Blocks Affected : 128
- GPs Affected : 2399
- Villages Affected : 17993
- People Affected : 1.89 Crore
- People died : 8913
- Live stock perished : 4.45 Lakhs
Floods in Odisha

In the recent past Odisha faced severe floods in 2006, 2007, 2008 and 2011. A brief account of the flood damage and the response activities undertaken to manage the disasters are placed below.

**Flood 2006**

Due to flood/heavy rain 245 Blocks, 3574 GPs, 18912 Villages, 67.39 lakh Population and 4.90 lakh hectare crop areas of the State was affected. 105 persons lost their lives due to flood/heavy rain. 28,327 hectares of crop area were under sand cast due to the floods.

Due to occurrence of series of depressions over Bay of Bengal, heavy to very heavy rainfall was experienced over all catchments of all river systems during July & August. As a result, floods occurred in all major rivers causing damages to life & properties in 27 districts.

**Extent of Damage:**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of District Affected</td>
<td>27</td>
</tr>
<tr>
<td>No. of Blocks Affected</td>
<td>245</td>
</tr>
<tr>
<td>No. of GP Affected</td>
<td>3574</td>
</tr>
<tr>
<td>No. of villages Affected</td>
<td>18912</td>
</tr>
<tr>
<td>No. of ULB Affected</td>
<td>73</td>
</tr>
<tr>
<td>Crop Area affected (in lakh hectare)</td>
<td>4.65</td>
</tr>
<tr>
<td>Population affected (in lakh)</td>
<td>67.39</td>
</tr>
<tr>
<td>Human live lost</td>
<td>105</td>
</tr>
<tr>
<td>Livestock lost</td>
<td>1656</td>
</tr>
<tr>
<td>No. of houses damaged</td>
<td>130460</td>
</tr>
</tbody>
</table>
Response:

Qtl.65694.28 Rice, Qtl. 11771.38 Chuda, Qtl. 1530.04 Gur, 60421 Packets of Biscuits, 15868 no. of Polythene Sheets, 9406 Pcs of Dhoti, 4476 Pcs of Utensil, 854 pairs of Garment were distributed to the flood affected people. 32.05 lakh beneficiaries were covered under emergent relief. 1336 nos. of boat were engaged in relief and rescue operation. 63,776 persons were evacuated and shifted to shelter places. 5 units of ODRAF Team and one unit of NDRF Team were also engaged in relief and rescue operation. 121,588 persons were provided cooked food in 247 nos. of free kitchen centres, 217 nos. of Health Team were deployed. 483714 ORS packets and 44,68,544 nos. of Halogen Tab. were distributed. Safe drinking water was provided to flood victims through tankers. 11,32,300 water sachets & 57,684 nos. of water bottle were distributed. 26,689 nos. of well and 25,796 nos. of Tube well were disinfected. 127 nos. of veterinary doctor were deployed in the flood affected areas for animal care. 89,211 animals were treated, 483422 nos. of cattle were vaccinated. 1202.55 MT of Cattle Feed was supplied to the affected districts. The Health measures taken in flood affected areas were so accurate that no epidemic was spread out.

Public utilities specifically roads, river/canal embankment were extensively damaged due to floods in five phases. Major bridges and roads were severely damaged due to flood/heavy rain and landslide in Rayagada, Gajapati, Koraput district. 523 no. of breaches in river embankments and 1508 no. of breaches in canal embankments were occurred. 1716 nos. of R & B road were damaged.

Floods 2007

July 2007:

Due to continuous heavy downpour over upper & lower catchments of river Subarnarekha, Jalaka, Baitarani, Budhabalanga and their tributaries from 4th to 6th July, 2007 flood brought havoc in five districts namely Balasore, Bhadrak, Jajpur, Keonjhar and Mayurbhanj in the first week of July. Storm surge and saline inundation affected parts of Kendrapara district during the said period.
Heavy rainfall was experienced during the last week of June due to deep depression over the Bay of Bengal affecting the districts of Koraput, Kandhamal, Nayagarh, Ganjam, Sundargarh and Angul.

**August & September 2007:**

All the coastal districts received heavy to very heavy rainfall due to deep depression over North West Bay of Bengal during August and September. All catchments of major rivers of Southern and Northern Odisha received heavy rainfall from 5th to 7th August’2007 & 23rd to 26th September. As a result, floods came in rivers Vansadhara, Baitarani, Subarnarekha, Badanadi, and Budhabalanaga. Similarly, the entire North Odisha was completely submerged by the floods.

**Extent of Damage:**

<table>
<thead>
<tr>
<th></th>
<th>July</th>
<th>August</th>
<th>Sept</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of District Affected</td>
<td>12</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>No. of Blocks Affected</td>
<td>46</td>
<td>100</td>
<td>66</td>
</tr>
<tr>
<td>No. of GP Affected</td>
<td>304</td>
<td>952</td>
<td>969</td>
</tr>
<tr>
<td>No. of villages Affected</td>
<td>1865</td>
<td>4865</td>
<td>5677</td>
</tr>
<tr>
<td>No. of ULB Affected</td>
<td>5</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>Crop Area affected (in Lakh hectare)</td>
<td>1.21</td>
<td></td>
<td>1.97</td>
</tr>
<tr>
<td>Population affected (in Lakh)</td>
<td>13.32</td>
<td>22.47</td>
<td>42.35</td>
</tr>
<tr>
<td>Human live lost</td>
<td>32</td>
<td>20</td>
<td>39</td>
</tr>
<tr>
<td>Livestock lost</td>
<td>19495</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of houses damaged</td>
<td>27810</td>
<td></td>
<td>76902</td>
</tr>
</tbody>
</table>
Floods 2008

The State of Odisha was ravaged by floods in June and September during the year 2008. The floods that occurred in June 2008 and in September 2008 are unprecedented and were calamities of rare severity. The water level recorded in the Subarnarekha exceeded all the past records. The floods in June’08 brought havoc in districts namely Balasore, Bhadrak, Jajpur, Mayurbhanj and Keonjhar. Hardly was there any breathing gap, the State experienced yet another a devastating flood in the Mahanadi River System in September 2008.

The flood in September 2008 was due to heavy rainfall in the upper as well as in lower catchments of the Mahanadi River System under the effects of a deep depression in the Bay of Bengal from 16th to 21st September 2008. The magnitude and severity of the flood in this system even surpassed the ferocities of 1982 and 2001 floods which were known to be greatest floods in the system. The Ministry of Home Affairs, Government of India termed this flood in September’08 as an “Unprecedented Flood Situation” in its communication, vide their letter No.11011 / 2008 MHA-DM-I Dt.20.09.08. During September, 19 districts namely, Angul, Bargarh, Bhadrak, Bolangir, Boudh, Cuttack, Gajapati, Jagatsinghpur, Jajpur, Kalahandi, Kendrapara, Keonjhar, Khurda, Nayagarh, Puri, Rayagada, Sambalpur, Nuapara and Subarnapur were seriously affected. Ultimately, 21 districts were affected by floods in two phases.
**Extent of Damage:**

<table>
<thead>
<tr>
<th>Damages</th>
<th>June</th>
<th>September</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Districts affected</td>
<td>6</td>
<td>19</td>
</tr>
<tr>
<td>Blocks affected</td>
<td>25</td>
<td>145</td>
</tr>
<tr>
<td>GPs affected</td>
<td>277</td>
<td>1880</td>
</tr>
<tr>
<td>Villages affected</td>
<td>1768</td>
<td>8026</td>
</tr>
<tr>
<td>ULBs affected</td>
<td>9</td>
<td>29</td>
</tr>
<tr>
<td>Population affected (In lakh)</td>
<td>14.94</td>
<td>45.23</td>
</tr>
<tr>
<td>Human lives lost</td>
<td>14</td>
<td>96</td>
</tr>
<tr>
<td>Houses damaged</td>
<td>45,190</td>
<td>212965</td>
</tr>
</tbody>
</table>

**Response:**

In all, 4,30,856 people were evacuated to safer places and kept in temporary shelters during the floods. For rescue and relief operation, 54 power boats with 162 crew of ODRAF / State Fire Service, 43 boats with 215 crew of NDRF, 25 Boats with 100 crew of BSF, 5 Boats with 50 Crew of Navy (INS Chilika) were immediately pressed into action. In addition to that 78 Boats with 140 crew of State Port Engineering Organization of SRC were also deployed. Besides, 1,810 boats owned by private individuals were utilized by the District Administrations for rescue and relief operation. All the five units of Odisha Disaster Rapid Action Force (ODRAF) were deployed in Cuttack, Balasore, Bhadrak, Jajpur & Mayurbhanj districts for rescue and relief operation.

Evacuated people were provided with adequate quantities of dry food and cooked food through free kitchen centres. 1,118 free kitchen centers were opened covering 4,16,395 beneficiaries. In view of the intensity of the high floods and devastation, emergent relief was sanctioned for a period of 15 days for the marooned people of the flood affected Districts. Emergent relief in shape of rice, chuda and guda was distributed in the flood affected villages. In addition to that, dry food, candles, matchboxes, kerosene and other essential materials were distributed. Children and infants in the flood affected areas were also provided with nutritious baby food for a period of 15 days at a package worth of Rs.225/- per child.
The helicopters of Indian Air Force pre-positioned well in advance at Bhubaneswar Air Port were immediately pressed into service to facilitate the air-dropping of food packets in the marooned areas. Food packets containing chuda, gud, biscuits, match box, candle, salt etc. were air-dropped through IAF MI 17 Helicopters in Kendrapara, Cuttack, Jagatsinghpur, Puri Districts. 96 sorties were made to drop 57,390 food packets and 2 sorties were made for landing of 6 MT of food materials. The air dropping operation was conducted from 20th Sept.'08 to 27th Sept.'08. During this flood for the first time, marooned people were rescued through winching.

Similarly, during June floods, 48 sorties were made to drop 28,602 food packets and 40 sorties made for landing of 102.2 MT of food materials in marooned areas of Balasore District. The air dropping operation was conducted at I.T.R., Chandipur from 19th June’08 to 23rd June’08.

Schools were kept closed in the flood affected areas of Cuttack, Jagatsinghpur, Kendrapra, Jajpur, Puri, Khurda, Nayagarh, Sonapur, Boudh, Bolangir Districts for use as relief camps and free kitchen centers 83242 families were provided with polythene sheets for temporary shelter since houses were damaged either fully or severely. In order to prevent outbreak of epidemics, 172 medical teams were deployed in the flood affected Districts and 559 Medical Relief Centres were opened. 3,32,121 ORS packets, 36,29,933 Halogen tablets were distributed.

Adequate arrangements were made for supply of safe drinking water in the flood affected areas. 103 water tankers and 129 mobile vans were deployed. 49,49,700 water pouches were distributed. 2,149 wells and 25,976 tube wells were disinfected. 2,778 bags of bleaching powder were distributed in the flood affected areas.

The State Government also took due care of the animal resources. Affected animals were shifted to safer places. 272 veterinary teams were deployed in the flood affected areas. 4.31 lakh livestock were treated and vaccinated. 5,540 MT of cattle feed of high quality was distributed.

**Floods 2011**
The State faced severe floods in two phases during the month of September 2011. The flood in 1st and 2nd week of September 2011 in the Mahanadi River System was triggered
mostly by enormous precipitation in its upper catchment in Chhattisgarh. The inflow into the Hirakud reservoir was almost twice the full reservoir. Normal life, livelihood and infrastructure were severely impacted and massive devastation took place in 19 affected districts. The magnitude of the flood and the severity of its impact are comparable to the high floods of 2001, 2003, 2006 & 2008. Besides the flood in the Mahanadi system, the State experienced severe floods during 3rd week of September 2011 in river Brahmani, Baitarani Budhabalanga and Subarnarekha affecting 10 districts. Cumulatively, 21 districts were affected in both phases of flood in September 2011.

During 1st phase of floods in September, 102 blocks of 19 districts were affected covering 4897 villages of 1067 GPs, with a population of 34.44 lakh. During 2nd phase of floods in September, 71 blocks of 10 districts were affected covering 4060 villages of 890 GPs, with a population of 25.32 lakh. Cumulatively, 21 out of 30 Districts were affected due to two phases of floods in September, 2011.

Details of areas vulnerable to floods, cyclones and earthquakes:

<table>
<thead>
<tr>
<th>Type of Hazard</th>
<th>Particulars</th>
<th>% of Area vulnerable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flood</strong></td>
<td>Flood Prone</td>
<td>1.9%</td>
</tr>
<tr>
<td></td>
<td>Flood Protected</td>
<td>2.4%</td>
</tr>
<tr>
<td></td>
<td>Outside Flood Area</td>
<td>95.7%</td>
</tr>
<tr>
<td><strong>Cyclone</strong></td>
<td>198-180 Km/h</td>
<td>24.1%</td>
</tr>
<tr>
<td></td>
<td>169.2 Km/h</td>
<td>3.3%</td>
</tr>
<tr>
<td></td>
<td>158.9-140.9 Km/h</td>
<td>72.6%</td>
</tr>
<tr>
<td><strong>Earthquake</strong></td>
<td>Low damage risk Zone</td>
<td>84.2%</td>
</tr>
<tr>
<td></td>
<td>Moderate damage risk zone</td>
<td>15.8%</td>
</tr>
</tbody>
</table>

Source: Vulnerability Atlas of India, 1997
Disaster Specific Vulnerability

I) Vulnerability to floods:
Amongst all the natural disasters afflicting the State, floods are the most frequent and devastating. Almost 80% of the annual rainfall is concentrated over a short monsoon period of 3 months. While the coastal plains are very flat, the slopes in the inlands are precipitous. This leads to heavy siltation, flash floods and poor discharge of flood waters into the sea and thus the embankments are breached with alarming frequency.

In Odisha, damages due to floods are caused mainly by the Mahanadi, the Brahmani and the Baitarani, which have a common delta where floodwaters intermingle, and, when in spate simultaneously, wreak considerable havoc. The problem is further accentuated when flood synchronises with high tide. The silt deposited constantly by these rivers in the delta area raises the bed levels and the rivers often overflow their banks or break through new channels causing heavy damages. Floods and drainage congestion also
affect the lower reaches along the Subarnarekha River. Rivers Rusikulya, Vansadhara and BudhaBalang and also cause occasional floods.

The entire coastal belt is prone to storm surges, which is usually accompanied by heavy rainfall thus making the estuary region vulnerable to both storm surges and river flooding. Few districts in the western part of Odisha are prone to flash floods. The various factors which contribute to the high degree of vulnerability and damages in the State during floods are:

Nearly 80% of the rainfall in the State occurs within 3 months, which also coincides with the main cropping season. High population densities in the flood-prone coastal and delta regions, increased encroachment in the flood plains because of comparatively better livelihood opportunities and development are important contributors to the increased vulnerability to flood. Poor socio-economic condition of the majority living in the flood plains, and the local economy being primarily dependent on the monsoon paddy add to the vulnerability of the community.

II) Vulnerability to cyclones:

The East Coast of India is one of the six most cyclone-prone areas in the world. Of all severe cyclones that make landfall on the eastern coast, 20% hit Odisha, particularly during April – May and September – November. Once every 2 - 3 decades, a severe cyclone strikes Odisha. All the coastal districts are vulnerable to cyclones.
After the 1999 super cyclone, the state government has taken measures like installation of modern communication systems, construction of cyclone shelters and other improved infrastructure including pucca houses for the poor in the cyclone prone areas to reduce the physical vulnerability of the coastal districts to cyclonic winds and tidal surges. However, poor socio economic conditions, weak housing, large settlements (including densely populated islands near the sea coast) in areas extremely prone to tidal surges, depletion of mangroves and tree shelterbelts, location of highly hazardous industries in cyclone prone areas, poor road communication to many villages near the coast make the state vulnerable to cyclones.

Nearly one third of the cyclones of the east coast of India visit Odisha coast. With the current trend of the climatic variability accompanied with global warming and increased green house effects, the coastal areas of Odisha are likely to be affected by many more extreme cyclonic disturbances and low pressure systems of greater magnitude. Although the total number of cyclonic disturbances is more along the Odisha coast, as a natural hazard the severe storms are of greater public concern in view of their large scale damage potentiality, loss of life and property. By taking together the storms and severe storms which mostly create havoc and incur greater amount of damage, the Odisha Coastal Zone is twice more vulnerable in comparison to the other eastern states.

**Recurrence Interval and Probability of Occurrence:**

As regards the spatial variation in the vulnerability of the different sections of the Odisha Coastal Zone, it is observed that it varies from Balasore to Ganjam (from north to south) in a decreasing order.

The disturbances which develop in the pre and post monsoon period intensify into severe storms of devastating nature. It is revealed from the past experience that the most vulnerable months for the occurrence of a severe cyclone is October followed by the month of September.

The source area of origin of the cyclonic disturbances in the Bay of Bengal extends over the entire sea surface. But however the area to the west of Andaman coast lying between 60N to 100N and 850E to 880E is a high probability source area of origin for the
severe storms. The second in the importance will be the eastern part of the Andaman Islands and the third is an area close to the Gangetic delta.

With regard to storms, the source area of origin in the Bay of Bengal remains confined to two important locations, one to the 400 to 500 km east of the Gopalpur and Vishakhapatnam and the other patch is 500 to 600 km east of Chennai and Rameswaram. As regards the severe storms which had affected Odisha coast, their source area of origin is located about 500 km. south of Paradip and east of Vishakhapatnam.

The cyclones which had affected Odisha coast are normally sea origin and land dissipation. The cyclones of land origin and land dissipation or sea dissipation are negligible. There are some cyclones which originate in the sea adjacent to the Odisha coast and dissipate in the sea. Such events had not much impact on the Odisha Coastal Zone.

**III) Vulnerability to droughts:**

The normal rainfall of the state, calculated on the basis of the average of 50 years of annual rainfall from 1901 to 1950 was 1503 mms, with 73 rainy days. The rainfall pattern, however, started showing a declining trend over the last 50 years. The declining and fluctuating decennial variation can be clearly seen from the figure given below.

Source: Department of Agriculture & Office of the Special Relief Commissioner, Govt. of Odisha.

The average rainfall from 1950-99 stands at 1349 mm, a decline by more than 10% from the previous 50 years. The frequency of years with rainfall above the normal and below the normal of 1503 mm rainfall is given in the Table below:

<table>
<thead>
<tr>
<th>Rainfall Interval (in mm)</th>
<th>Frequency during the decade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50’s</td>
</tr>
<tr>
<td>1500 and above</td>
<td>5</td>
</tr>
<tr>
<td>1499-1300</td>
<td>3</td>
</tr>
<tr>
<td>1299-1100</td>
<td>2</td>
</tr>
<tr>
<td>1099-1000</td>
<td>-</td>
</tr>
<tr>
<td>Less than 1000</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Department of Agriculture, Govt. of Odisha
Less than 1000 mm. of rainfall occurred 5 times during the last 50 years, in 1965, 1974, 1976, 1979 and 1996. All these happened to be severe drought years in the sense that caused considerable reduction in Kharif rice production. Severe droughts also occurred, once in 1987-88, when the rainfall was 1041 mm and again in 1982-83, when the rainfall was 1091 mm. But the year 1982-83, witnessed both flood and drought, when the rainfall for the entire month of August was received in a few days, and then the rains ceased completely afterwards. However, no trend can be observed in occurrence of droughts as the decade of 70’s accounted for the most number of drought years. It is therefore very difficult to make any prediction about the drought. From the past data it can be observed that there is at least one severe drought year in every decade.

State receives 80% of the rainfall during the monsoon months from June-September. Of late, the quantum and distribution of rainfall over time and space has tended to be deficient, erratic and uneven. The rainfall deficiency in the monsoon season varied from 26% to 36%, seven times during the last 35 years causing severe droughts and crop loss. Moderate droughts have also occurred, singly and in conjunction with floods, in 1966, 1972, 1980, 1981, 1982, 1984, and 1998. Thus droughts are very frequent, affecting some parts of the state, almost every alternate year. Droughts in Odisha generally occur during the Kharif season and are harmful mainly to the paddy crop. Non paddy Kharif crops like Maize, Ragi, Millets, Pulses & oilseeds generally are not affected as the quantum of monsoon rainfall received even in the worst drought years is more that 750 mm, which is quite sufficient for these crops. In years of poor rainfall, even irrigated areas also suffer due to insufficient storage in the reservoirs.

The pattern of drought in the state is of a varied one, sometime affecting the entire state, sometimes a few regions, and sometimes a few districts. However, the contiguous patch consisting of the subdivisions of Padamapur, Bolangir, Titilagarh, Patnagarh, Nuapada, Khariar, Bhawanipatna and Phulbani comprising of 47 blocks have been identified as chronic drought-prone zones. The construction of Upper Indravati Project has considerably improved the position in Bhawanipatna Sub division. Many other areas also have started showing improvement during the 90’s, but all these areas still need close monitoring.
**Risk Assessment:**

The impact of the drought is mainly felt in agriculture, resulting in loss of production. Besides crop loss, droughts also create problems of irrigation and drinking water, loss of employment, scarcity of essential commodities, migration of farm labourers, increasing rural indebtedness, land and asset alienation, etc. People who get worst affected are small and marginal farmers, agricultural labourers.

**IV) Vulnerability to heat wave:**

Climatic changes, decrease in tree cover, depletion of ground water resources and increase in day temperature especially during the months of May and June, have made majority of the districts of the state vulnerable to heat wave. In 1998, the state witnessed a severe heat wave, which claimed over 2,000 lives. Several districts also suffered from extreme scarcity of drinking water.

The heat wave condition in Odisha is becoming increasingly prominent and regular. However, the main risk due to heat wave is heat stroke. After the large number of deaths in 1998, the main causal factor was identified as lack of awareness and not following certain do’s and don’ts during heat wave conditions. Though extensive awareness campaigns has reduced large number of fatalities post 1998, poor socio-economic conditions, lack of enforcement and adoption of good working conditions during the summer months and remain the main risks of heat wave.

**V) Vulnerability to Tornadoes**

The State has had past histories of tornados and is also vulnerable to hail storms, thunder and lightning deaths or injury nearly every year.

**VI) Vulnerability to Earthquakes:**

In major parts of Odisha, seismicity is moderately high. A couple of events originated close to the basin marginal faults of Gondwana Graven. Records of historical seismicity indicate activity also along the Odisha coastal belt. Current seismicity is related to activity along Gondwana Basin boundary faults and those associated with continent-oceanic crust transition zone in the Bay of Bengal. Within the Mahanadi coastal basin, several subsurface faults trending in E-W, NE-SW and NW-SE directions but mostly curvilinear in nature have been interpreted from DSS profile.
As per the recent categorization, the country has been divided into four zones (II, III, IV and V) and now Odisha falls between Zones II and III i.e. low damage risk zone and moderate damage risk zones. However, it may be noted that major part of Gujarat, including Ahmedabad, also comes in the moderate risk zone but Ahmedabad City was badly affected by the impact of the Bhuj 2001 earthquake. The details of the location of the districts, according to seismic zones, are given in the Table below:

<table>
<thead>
<tr>
<th>District Coming Under Moderate Risk Zones (Zone-III)</th>
<th>Districts Coming Under Low damage Risk Zones (Zone-II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sundargarh, Jharsuguda, Barghar, Sambalpur, Deogarh, Anugul, Dhenkanal, Jajpur, Cuttack, Khurda, Puri, Jagatsighpur, Kendrapada, Bhadrak, Mayurbhanj, Balasore,</td>
<td>Malkanagiri, Korapur, Rayagada, Gajapati, Ganjam, Kahndhamala, Nawrangpur, Kalahandi, Nuapada, Bolangir, Sonepur, Boud, Nayagarh, Phulbani, Keonjhar,</td>
</tr>
</tbody>
</table>

Source: Vulnerability Atlas of India, 1997 & UNDP, Bhubaneswar
While the entire district of Jagatsighpur comes under the Moderate Damage Risk Zone only, parts of all other districts mentioned in the moderate risk zone also come under low damage risk zones. Apart from the state capital, important cities like Cuttack, Sambalpur, Bargarh, Anugul, Puri, important industrial installations, the Pardeep Port and the Hirakud dam also falls under moderate risk zone.

VII) Vulnerability to Tsunami

Odisha coast in vulnerable to tsunami. 328 villages covering 6 coastal districts located within 1.5 km of the coastline are identified as tsunami prone villages. Since there is no specific tsunami event in the recent past, the disaster cannot be ruled out. As per the scientific study conducted by IIT, Kharapur, the state can be experienced tsunami within 4 hour from the nearest, if the tsunami occurs at the nearest point in the Indo-Burman plate.

VIII) Vulnerability to chemical disasters:

Over the years, there is substantial increase in industrial activities in the State. Many industries in the state store handle and process large volume of hazardous chemicals. This has caused potential threat to the employees, general public and environment in general. The industries, which are handling hazardous chemicals, are known as Major
Accident Hazard (MAH) units. Many technological accidents have occurred in the state as well as in the country damaging lives and properties. The leakage of ammonia gas from OSWAL Fertilizer and Chemicals at Paradeep during the 1999 supercyclone has reflected the seriousness of the problem. Some areas in the state have been identified having cluster of industries handling hazardous chemicals and pose chemical and industrial disaster. List of districts with type of hazards is given in the Table below.

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Area</th>
<th>District</th>
<th>Types of Hazardous Chemicals Handled</th>
<th>Type of Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Paradeep</td>
<td>Jagatsinghpur</td>
<td>Ammonia, Phosphoric Acid, Sulphuric Acid, Petroleum Products</td>
<td>Toxic Gas Leak, Fire</td>
</tr>
<tr>
<td>2.</td>
<td>Rourkela</td>
<td>Sundargarh</td>
<td>Carbon Monoxide, Liquid Oxygen, Ammonia, Hydrogen, Naphtha, Chlorine, Petroleum Products, Explosives (Secondary), Acids</td>
<td>Fire, Explosion, Toxic Gas</td>
</tr>
<tr>
<td>3.</td>
<td>Ganjam</td>
<td>Ganjam</td>
<td>Chlorine, Petroleum Product</td>
<td>Toxic Gas</td>
</tr>
<tr>
<td>4.</td>
<td>Cuttack</td>
<td>Cuttack</td>
<td>Chlorine, Petroleum Product</td>
<td>Toxic Gas, Fire</td>
</tr>
<tr>
<td>6.</td>
<td>Balasore</td>
<td>Balasore</td>
<td>Chlorine, LPG, Naphtha, Petroleum Products</td>
<td>Fire, Toxic Gas</td>
</tr>
<tr>
<td>7.</td>
<td>Jharsuguda-Belpahar</td>
<td>Jharsuguda</td>
<td>LPG, Petroleum Products, Explosives</td>
<td>Fire</td>
</tr>
<tr>
<td>8.</td>
<td>Rayagada</td>
<td>Rayagada</td>
<td>Chlorine</td>
<td>Toxic Gas</td>
</tr>
</tbody>
</table>

Source: State Pollution Control Board, Odisha

Odisha does not have any nuclear industry. Recently, the work of an oil refinery plant has started at Paradeep. Large industries contribute to the Toxic Pollution of the environment. The petroleum products, including various storage places, are also potential hazardous locations. Increased industrial activities and the risks of hazards caused by accidents during transitions of hazardous materials have increased the vulnerability of the State to industrial and chemical hazards.

IX) Vulnerability to accidents:

Road accidents pose a major challenge to be handled with care. The figures are however not complete since each and every accident case is not reported at the police
stations. Thus, the actual number or road accident cases may be still higher. In Odisha there were 16,800 motor vehicles in 1961. Thirty-nine years later in 2000, the figure has gone up to 3,51,385, a 51-fold increase, whereas the road length has increased by 7.4% only. In fact, there are several roads where the vehicular traffic has increased to 4 to 5 times their capacity.

With the stagnation in the growth of railways and neglected network of other modes of transport, like waterways and airways in the State, road transport obviously acts as the principal mode of transportation, as has been evident during the last few decades. The increase in the number of vehicles has also increased the unsafe practices and risks of road users. The State is also vulnerable to train and air accidents, boat capsize festival related disasters, fire and electrical accidents.

**X) Fire Accidents**

Fire accidents are quite common, especially in rural areas because of the following factors

a) Individual housing with roof of straw and storage of straw/hay in close proximity of the house
b) Close proximity of houses in many areas leading to spread of fire and wider destruction
c) Lack of availability of adequate water and nil or poor equipment for firefighting especially in rural areas and small towns.
d) Lack of awareness of basic do’s and don’ts when people live in houses that uses inflammable materials
e) Human error or carelessness

The State is also becoming increasingly vulnerable to electrical accidents. The main causes of such accidents are:

a) Use of substandard electrical fittings
b) Lack of check up of overused electrical items
c) Lack of trained electricians
d) A combination of the above factors
XI) Religious gatherings

There are large gatherings in selected festivals like the car festival at Puri where possibilities of festival related disasters like epidemics, stampedes are quite high. There are also recent incidents of deaths due to boat capsize. Poor condition of boats, untrained boatmen, lack of rescue equipment, overloading of boats are major causes of boat capsize and deaths.

XII) Vulnerability to Biological Hazards:

i. Biological hazards to human beings:

All natural disasters are usually followed by conditions susceptible to epidemics or communicable diseases and non-communicable diseases like psychological trauma, malnutrition, etc. Epidemics and biological hazards are potential threats to Odisha because:

➤ Odisha is prone to many water and vector borne communicable diseases, which get compounded by poor health knowledge, poor sanitation and scarcity of drinking water.

➤ Ecological changes and regular impact of different kinds of natural disasters like floods, cyclones, droughts and climatic disorders like heat wave create a favourable climate for emergence of new types of pathogenic agents.

➤ The Malaria upsurge in non-endemic areas and drug resistance to malaria in endemic areas is a matter of increasing concern to the State.

➤ There is always the potential threat of outbreak of enzoonotic diseases in rural and tribal areas.

➤ Food poisoning from eating inedible roots and tubers. It is quite common in tribal areas.

➤ Industrial/chemical health hazards are potential dangers to many industrial belts of Odisha.

➤ Increase in urbanization leading to a rise in the number of slum dwellers with extremely poor sanitation and drinking water facilities, very poor health awareness and the increasing risk of waterborne diseases and transportation of vector borne diseases from endemic to non-endemic areas.

➤ The possibility of international travelers/tourists bringing in new types of diseases.
Large numbers of people from Odisha migrate to other parts of the country in search of livelihood, which increases the threats of STD, AIDS and other such diseases.

The possibility of the use of biological and chemical weapons by terrorists cannot be ruled out in any corner of the globe.

ii. **Epidemics amongst animals:**

The main diseases and the causal factors that affect animals in the state are:

a) Poor disease surveillance system
b) Lack of trained personnel, poor equipments and communication systems
c) Traditional beliefs of not slaughtering cows in spite of the animal being infected by diseases like TB, Anthrax, etc. leading to spread of the disease to human beings and sometimes death.

**XIII) Vulnerability of critical infrastructure to natural hazards:**

Apart from vulnerability of human beings, the critical infrastructures both in public and private sector are also highly vulnerable to the natural and human induced hazards. The details are given in the table below.

**A) Potential effects of natural hazards on water supply system**

<table>
<thead>
<tr>
<th>Hazard Type</th>
<th>Infrastructure Type</th>
<th>Impact</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>High winds</td>
<td>Reservoirs</td>
<td>Wave surcharge, overtopping of dams</td>
<td>Scour downstream, endangered dams, Power and telecom failure</td>
</tr>
<tr>
<td></td>
<td>Over head cables</td>
<td>Blown down</td>
<td></td>
</tr>
<tr>
<td>Storm surge</td>
<td>Treatment works</td>
<td>Flooded</td>
<td>Close down</td>
</tr>
<tr>
<td></td>
<td>Pumping Station</td>
<td>Flooded</td>
<td>Close down</td>
</tr>
<tr>
<td>Heavy rains</td>
<td>Reservoirs</td>
<td>Over topping of dams</td>
<td>Possible dam failure</td>
</tr>
<tr>
<td></td>
<td>Rivers</td>
<td>Riverine floods</td>
<td>Difficult treatment</td>
</tr>
<tr>
<td></td>
<td>River off take</td>
<td>Scour</td>
<td>Loss of source</td>
</tr>
<tr>
<td></td>
<td>Treatment works</td>
<td>Flooding</td>
<td>Close down</td>
</tr>
<tr>
<td></td>
<td>Pumping stations</td>
<td>Flooding</td>
<td>Close down</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Reservoirs</td>
<td>Structural failure of dams</td>
<td>Loss of supply, flooding damage downstream</td>
</tr>
<tr>
<td></td>
<td>Ground water</td>
<td>Liquefaction of deposits</td>
<td>Fracture of wells, supply failure</td>
</tr>
<tr>
<td></td>
<td>Transmission mains,</td>
<td>Line fracture</td>
<td>Supply cut</td>
</tr>
<tr>
<td></td>
<td>aqueducts, Canals</td>
<td>Damaged</td>
<td>Loss of operation, reduced output, close down</td>
</tr>
<tr>
<td></td>
<td>Treatment works</td>
<td>Damaged</td>
<td>Loss of storage</td>
</tr>
<tr>
<td></td>
<td>Service reservoirs</td>
<td>Damaged</td>
<td>Lost or reduced capacity</td>
</tr>
<tr>
<td></td>
<td>Pumping stations</td>
<td>Pipe fracture</td>
<td>Burst, leakage, loss of storage</td>
</tr>
<tr>
<td></td>
<td>below and above ground</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Distribution system</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### B) Potential effects of natural hazards on electricity generation and distribution

<table>
<thead>
<tr>
<th>Hazard Type</th>
<th>Infrastructure Type</th>
<th>Impact</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Winds</td>
<td>Transmission towers and Lines</td>
<td>Collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Generating stations, Cooling towers, sub-stations,</td>
<td>Damage and partial collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Distribution lines (overhead)</td>
<td>Collapse</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Sea surge</td>
<td>Generating stations, other facilities</td>
<td>Equipments</td>
<td>Shut down</td>
</tr>
<tr>
<td></td>
<td>Distribution cables</td>
<td>Flooded</td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Heavy rain</td>
<td>Reservoirs</td>
<td>Over topping of dams</td>
<td>Possible progressive</td>
</tr>
<tr>
<td></td>
<td>Generating stations, other facilities</td>
<td>Flooded</td>
<td>failure</td>
</tr>
<tr>
<td></td>
<td>Sub-stations, other facilities</td>
<td></td>
<td>Loss of supply</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Dams</td>
<td>Damage from ground failure and motions</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Generating stations, Sub-stations, other facilities</td>
<td>Damage from Ground failure and motion, e.g.</td>
<td>Loss of supply</td>
</tr>
<tr>
<td></td>
<td>Distribution lines</td>
<td>isolators, equipment support frames</td>
<td>Local loss of supply</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collapse of lines and pole mounted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>transformers</td>
<td></td>
</tr>
</tbody>
</table>

### C) Potential effects of natural hazards on communication systems

<table>
<thead>
<tr>
<th>Hazard Type</th>
<th>Infrastructure Type</th>
<th>Impact</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>High winds</td>
<td>Radio and TV towers</td>
<td>Disorientation</td>
<td>Disruption to or loss of</td>
</tr>
<tr>
<td></td>
<td>Overhead cables, Serving of cables</td>
<td>Collapse of poles</td>
<td>transmission capability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loss of poles</td>
<td>Loss of transmission, high fault rate</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Radio and TV towers</td>
<td>Damage/collapse</td>
<td>Complete loss of transmission</td>
</tr>
<tr>
<td></td>
<td>Overhead cables</td>
<td>Collapse of Poles, serving of cables</td>
<td>High fault rate, loss of service</td>
</tr>
<tr>
<td></td>
<td>Underground cables</td>
<td>Damage to cables and broken ducts</td>
<td>Complete loss of service</td>
</tr>
<tr>
<td></td>
<td>Telephone exchanges</td>
<td>Dislocation of printed circuit boards,</td>
<td>Long term loss of services</td>
</tr>
<tr>
<td></td>
<td></td>
<td>collapse of building</td>
<td></td>
</tr>
<tr>
<td>Heavy rain</td>
<td>Radio and TV towers, Underground cables Telephone Exchanges</td>
<td>Interference with signal path Flooded Flooded</td>
<td>Temporary loss of service High fault rate Complete loss of service</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------------------</td>
<td>---------------------------------------------------</td>
</tr>
<tr>
<td>Storm surge</td>
<td>Radio and TV towers, Over head cables, Underground cables Telephone Exchanges</td>
<td>Flood damage to radio equipments Collapse of poles, severing of cables Flooding Flooding and major damage</td>
<td>Complete loss of transmission Loss of service High fault rate Complete loss of service</td>
</tr>
</tbody>
</table>

**Socio-economic Vulnerability**

The vulnerability of an area is determined by the capacity of its social, physical, environmental and economic structures to withstand and respond to hazards. An analysis of the vulnerability in a given geographic location, an understanding of the socio-economic factors and the capability of the community to cope with disasters, gives an understanding to the development and disaster managers to plan for risk reduction against future hazards.

**Socio–Economic Vulnerability**

Besides estimation of the housing damage risk, the other socio economic vulnerability factors also need attention from the disaster managers. It is seen that the people below poverty line, the fisherman families who are mostly coastal inhabitants, the primary workers, single women families, disabled persons, the children in the age group of 0-6 years and the aged are some of the most vulnerable population to be affected by cyclones. They have neither the minimum capacities to withstand the damage nor they have the economic support to recover from the losses incurred in the hazards and come to normalcy as far as the securities of the basic living needs are concerned. Similarly the other economic and institutional vulnerability remains with the grass root level institutional infrastructure done at the community and panchayat level such as dispensaries, primary schools, village road, orchads and plantation area, standing kharif crops which constitute the backbone of the rural economy and community support system. Very often the village road networks get affected which deprive the communication and linkage in the aftermath of the hazards and render the communities isolated from the supply and linkage network. The limited
community and panchayat level resources can hardly be sufficient for restoration and the problem continues as a vicious cycle.

One of the most important occupational groups is rural artisans and weavers. Traditional equipment and looms, poor infrastructure, inadequate training, poor marketing network, limited scope for value addition, lack of product diversification, competition from product substitutes, etc. plague the artisans and weavers. Their socio-economic condition is further affected by disasters and forces them to convert into daily wage earners, small and marginal farmers. Disasters like floods and cyclones have destroyed their rudimentary infrastructure, product stock and equipment making them extremely vulnerable to disasters.

While in the cyclone and flood prone areas people lose their livelihood infrastructure, animals and tools people living in chronic drought prone areas are forced to often sell their productive assets under distress conditions.

Social Structure:
Scheduled Castes and Scheduled Tribes account for about 34% of the State’s population and they constitute a high percentage of the lower income and expenditure group who are relatively disadvantaged in terms of assets, education, income and land. A large section of the tribal people live near forest areas and depend on collection and marketing of forest produces and rain-fed agriculture for their sustenance. However, reduction in employment generating forestry operations, degrading forest resources has been forcing them to change their occupational pattern. No matter what occupational group the poor belong to, their socio-economic vulnerability, weak coping mechanisms, lack of alternative employment and income opportunities and poor infrastructure, make these sections of the poor extremely vulnerable to disasters.

Education:
Education is a basic requirement that helps in improving the coping capacities of the population. But the literacy pattern in the State is quite skewed and the percentage of literacy amongst vulnerable communities, particularly the Scheduled Castes and Tribes is very low. For these people inadequate or lack of education becomes a strong detriment for exploring alternative occupational or employment opportunities in the event of a disaster.
Gender discrimination:

Even though women constitute nearly half of the population, they are more vulnerable to disasters because of socio-cultural barriers to various forms of livelihood opportunities. Added to this, women have very few resources over which they have exclusive rights or control. They also have reduced mobility due to existing socio-cultural practices, which make women more vulnerable to disaster impacts. Thus, lack of access to better livelihood and education, discrimination in work status and wage earning capacity, lack of alternative employment opportunities coupled with their marginalized social status, make women more vulnerable to disasters. The vulnerability of women and other marginalised sections also lead to poor access to information and hence are discriminated against during relief and rehabilitation phases after disasters.

People needing special care:

Children, old and infirm people, mentally retarded are more vulnerable to disasters. A large number of children have poor education, inadequate access to health care, nutrition and shelter. A sizeable number of children are orphans. There are also disabled children and persons in rural and urban areas. The State has a high concentration of aged people, widows, sick and malnourished persons. The above categories of people including pregnant women are the most vulnerable during and after disasters because of their physical vulnerability and also their lack of capacity of earning their livelihood.

Urbanization:

The State has increasing trends of people migrating from rural areas to towns and cities in search of employment and livelihood. Urbanization has led to high rates of migration to cities, in search of employment opportunities. This has led to increase in the density of population in towns and cities. The majority of the immigrants usually belong to the lower income strata of population. The increasing influx of poor immigrants to an area adds pressure on the existing infrastructure and land resources. Being poor, these immigrants settle in slums or areas vulnerable to disasters and lacking in basic infrastructure like safe drinking water, sanitation and drainage facilities. The immigrant population as well as the number of slums is on the rise in cities like Bhubaneswar, Cuttack, Rourkela, Samablpur, Berhampur, Anugul, Jharsuguda, Bargarh and Khurda and these slums are vulnerable to all
forms of natural and man-made disasters. Lack of spatial urban planning has led to unplanned growth of towns and cities. Majority of the cities have extremely inadequate drainage, waste management and sanitation facilities. This makes the population highly vulnerable to various diseases. Narrow roads, poorly maintained overhead electric and telephone wires, and congested drains make these settlements vulnerable during floods and cyclones.
CHAPTER-IV
INSTITUTIONAL STRUCTURE

Revenue and Disaster Management Department

The Department shoulders the responsibility of providing immediate relief to the people affected by various calamities such as floods, droughts, cyclones, hailstorms, earthquakes, fire accidents, etc. It also takes initiatives for relief, rescue, rehabilitation and restoration work. The Department is headed by the Principal Secretary/Addl. Chief Secretary, Revenue and Disaster Management Department who exercises all administrative and financial powers of Department.

He is assisted by a group of experienced officers and staff. Special Relief Commissioner who is ex-officio Special Secretary to Government, Revenue & Disaster Management Department.

Special Relief Organization

The Special Relief Organisation was looks after the created under the Board of Revenue in 1965-66 for relief and rescue operation during and after occurrence of various natural calamities. Since its inception to the present day, the scope of Relief Organisation has been diversified. Now it deals with disaster management i.e. responsibility of prevention, mitigation, preparedness, response, relief and rehabilitation in connection with natural disasters. It coordinates with districts/departments for quick relief and rescue operation, reconstruction and rehabilitation work. It also promotes disaster preparedness at all levels in the State with the assistance of Odisha State Disaster Management Authority (OSDMA). Quick response in the natural calamities is the hall-mark of Special Relief Organisation. Recently, the State Emergency Operation Centre has been made operational at Rajiv Bhawan, Bhubaneswar with state of art communication net-work. The State EOC at Bhubaneswar functions round the clock through out the year. The Organisation is headed by the Special Relief Commissioner (SRC) who exercises all administrative and financial powers. He is assisted by a group of experienced officers and staff. During any natural disaster, the office functions round the clock in an emergency mode.
Odisha State Disaster Management Authority

Odisha State Disaster Mitigation Authority (OSDMA) was set up by the Government of Odisha as an autonomous organization vide Finance Department Resolution No. IFC-74/99-51779/F dated the 28th December 1999 (in the intermediate aftermath of the Super-cyclone in 1999). It was registered under the Societies Registration Act, 1860 on 29.12.1999 as a non-profit making & charitable institution for the interest of the people of Odisha, with its headquarters at Bhubaneswar and jurisdiction over the whole State. The Department of Revenue is the administrative department of OSDMA vide Revenue Department Resolution No.39373/R dated 26th August 2000. Subsequently, the name of the Authority was changed from Odisha State Disaster Mitigation Authority to Odisha State Disaster Management Authority vide Revenue & Disaster Management Department Resolution No. 42317/R&DM dated 27th September, 2008.

The Authority has the mandate not only to take up the mitigation activities but also the relief, restoration, reconstruction and other measures. These activities cover the entire gamut of disaster management including preparedness activities and also include:

- Coordination with the line departments involved in reconstruction,
- Coordination with bilateral and multi-lateral aid agencies,
- Coordination with UN Agencies, International, National and State-level NGOs,
- Networking with similar and relevant organizations for disaster management.

The Disaster Management Act, 2005 came into force from 1st of August 2007. The Disaster Management Act 2005 lays down a three tier institutional structure for disaster management at the National, State and District levels in the form of NDMA, SDMA, and DDMA. National Policy on Disaster Management (NPDM) has further specified the roles and responsibilities of various organisations for disaster response. Under the Act, the following institutions have been created at the State and District levels.

State Disaster Management Authority (SDMA)

State Disaster Management Authority (SDMA) has been constituted by the Government under sub-section (1) and (2) of section 14 of Disaster Management Act 2005 (53 of 2005) vide notification no.42370 dated 20th October 2010. The Honorable Chief
Minister of Odisha is the ex-officio Chairperson and the Honorable Minister, Revenue and Disaster Management is the Vice-Chairman. Other members are

1. Hon’ble Minister, Revenue and DM - Member-cum-Vice Chairperson
2. Hon’ble Minister, Agriculture - Member
3. Hon’ble Minister, Agriculture - Member
4. Chief Secretary - Member-cum-Ex-Officio, Chief Executive Officer

5. Development Commissioner/
   Addl. Development Commissioner - Member
6. Secretary, Home Department - Member
7. Secretary, Department of Water Resources - Member
8. Secretary, Agriculture Department - Member
9. Secretary, Revenue and DM Department - Member.

The Chief Secretary is the Member-cum-Ex-Officio CEO of the SDMA. Office of the Special Relief Commissioner has been designated as the secretariat of the SDMA. The Special Relief Commissioner has been declared as the additional CEO. State Disaster Management Authority will have the responsibility for laying down policies and plans for disaster management

**State Executive Committee**

The State Executive Committee (SEC) has been constituted by the Government under sub-section (1) and (2) of section 20 of the Disaster Management Act, 2005 to assist the SDMA in performance of its function and to coordinate action.

- Chief secretary - Chairperson, Ex-officio
- Development Commissioner/
  Addl. Development Commissioner - Member
- Agriculture Production Commissioner - Member
- Secretary, Revenue and DM Department - Member
- Special Relief Commissioner - Member
State Executive Committee shall have the responsibility for implementing the National Plan and the State Plan and act as coordinating and monitoring body for management of disasters in the State and will be in charge of the State Disaster Response Fund.

**District Disaster Management Authority (DDMA):**

District Disaster Management Authorities (DDMAs) have been constituted in all districts by the State Government under the sub-section (1) and (2) of section 25 of Disaster Management Act 2005 to oversee Disaster Management activities at District level. The Collector is the Chairperson of DDMA where as the Chairman, Zilla Parishad is the Co-Chairperson. Superintendent of Police, the Chief District Medical Officer and Executive Engineers in charge of embankments are other members of DDMA.

<table>
<thead>
<tr>
<th>Collector and District Magistrate</th>
<th>-</th>
<th>Chairperson, Ex-Officio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Chairman, Zilla Parishada</td>
<td>-</td>
<td>Co-Chairperson, Ex-Officio</td>
</tr>
<tr>
<td>2. Superintendent of Police</td>
<td>-</td>
<td>Member, Ex-Officio</td>
</tr>
<tr>
<td>3. Chief District Medical Officer</td>
<td>-</td>
<td>Member, Ex-Officio</td>
</tr>
<tr>
<td>4. Executive Engineer in charge of Embankments</td>
<td>-</td>
<td>Member, Ex-Officio</td>
</tr>
<tr>
<td>5. ADM in charge of Emergency</td>
<td>-</td>
<td>Chief Executive Officer, Ex-Officio</td>
</tr>
<tr>
<td>6. Executive Engineer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rural Development Department</td>
<td>-</td>
<td>Member</td>
</tr>
<tr>
<td>7. Project Director, DRDA</td>
<td>-</td>
<td>Member</td>
</tr>
<tr>
<td>8. Dy. Director, Agriculture</td>
<td>-</td>
<td>Member</td>
</tr>
</tbody>
</table>

**Administrative arrangement:** The Department of Revenue and Disaster Management is the administrative department for management of disasters. Special Relief Commissioner (SRC) is in charge of response phase of disasters, whereas, Odisha State Disaster Management Authority (OSDMA) deals with preparedness and mitigation aspects. OSDMA provides support to SRC during response phase. At the district level, Collector is the District Relief Officer and Disaster Manager. Block is the lowest unit of relief administration. Block Development Officer and Tahasildars jointly manage relief administration at the lowest level. A State level Natural Calamity Committee functions under the chairmanship of the Chief Minister for overall supervision and monitoring at the
state level. At the district level, District Natural Calamity Committee along with DDMA functions with representation from district level officers and peoples’ representatives under the chairmanship of the district Collector for supervision and monitoring. Block Disaster Management Committees (under the chairmanship of the Chairperson, Panchayat Samiti), G.P. Disaster Management Committees (under the chairmanship of the Sarpanch) and Village level Task Force Committees have been constituted in the programmed areas (16 districts) under GoI-UNDP Disaster Risk Management programme for day-to-day management of disasters and risk reduction measures.
CHAPTER-V
CAPACITY BUILDING

Capacity building is an essential attribute of effective management of disasters. The Disaster Management Act 2005 also envisages for well structured capacity building arrangement for disaster management at different levels in Government machinery and other stakeholders. Training is be imparted at various levels according to the needs and requirement of respective departments and other stakeholders. As far as disaster preparedness at different levels is concerned, training is necessary for effective implementation of disaster management plans at the state, district and block level respectively and the training needs of various departmental functionaries and other stakeholders would be determined by the roles / Emergency Support Functions (ESFs) vis-à-vis various facets of disaster management.

The following training requirements have been identified for capacity building of different stakeholders.

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Broad Groups</th>
<th>Departments/ Agencies to be involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Policy and Planning</td>
<td>All MLAs, Secretaries and HODs</td>
</tr>
<tr>
<td>2</td>
<td>Construction / Public Works Sector</td>
<td>PWD, R&amp;B, Rural Works, Tourism, Urban Development, Irrigation, Water Resources</td>
</tr>
<tr>
<td>3</td>
<td>Search &amp; Rescue, Law &amp; Order</td>
<td>ODRAF, Civil Defense, Home Guards, Police, Fire and Emergency Services</td>
</tr>
<tr>
<td>4</td>
<td>Social Sector</td>
<td>Social Justice and Empowerment, W&amp;CD, ICDS, NGOs</td>
</tr>
<tr>
<td>5</td>
<td>Management &amp; Coordination Sector</td>
<td>Revenue &amp; DM Department, SDMA, District Administration</td>
</tr>
<tr>
<td>6</td>
<td>Industrial Sector</td>
<td>Industry</td>
</tr>
<tr>
<td>7</td>
<td>Health Sector</td>
<td>Health Department, CDMO, Red Cross, Animal Husbandry, NGOS</td>
</tr>
<tr>
<td>8</td>
<td>Livelihood Sector</td>
<td>Agriculture, Horticulture and Forest</td>
</tr>
<tr>
<td></td>
<td>Stakeholder</td>
<td>Role in Disaster Management</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>Communication</td>
<td>BSNL &amp; other private Network Operators, Police, Home Guards, Forest, Electricity</td>
</tr>
<tr>
<td>10</td>
<td>IEC and Media</td>
<td>I &amp; PR</td>
</tr>
<tr>
<td>11</td>
<td>Voluntary Sector</td>
<td>NCC, NSS, NYKS, Women and Youth Organizations, CSO, CBO, Market Organizations, VDMTs, Youth Services and Sports etc.</td>
</tr>
<tr>
<td>12</td>
<td>Service Sector</td>
<td>Food &amp; Civil Supplies, Forest Corporation, Transport, Health</td>
</tr>
<tr>
<td>13</td>
<td>Public Representative Sector</td>
<td>Elected Representatives of Panchayati Raj, and Urban Local Bodies</td>
</tr>
<tr>
<td>14</td>
<td>Forest Sector</td>
<td>Department of Forest &amp; Environment</td>
</tr>
<tr>
<td>15</td>
<td>Tourism &amp; Civil Aviation Sector</td>
<td>Department of Tourism and Civil Aviation, OTDC</td>
</tr>
<tr>
<td>16</td>
<td>Education Sector</td>
<td>Universities, Higher and Elementary Education</td>
</tr>
</tbody>
</table>

**STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREAT (SWOT) ANALYSIS AND THE ROLE OF EACH STAKEHOLDER DEPARTMENT IN DISASTER MANAGEMENT:**

A Training Needs Assessment Workshop was organised on 8th and 9th Jan 2013 at Bhubaneswar to identify the training requirements of different disaster stakeholders. The workshop was attended by the Deputy Collectors, Emergency of 10 districts & NGO representatives of 10 districts working in the areas related to disaster risk reduction. Based on the training need assessment exercise conducted during the two-day workshop, the SWOT analysis was carried out for different departments. The findings of the analysis were compiled as in Table mentioned below.
### SWOT Analysis of Institutional Mechanism at the State Level:

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>State has already established SDMA, SEC and DDMA.</td>
<td>Although the institutions have been notified but are still to become functional. No dedicated human resources are available with DDMAs.</td>
<td>Strengthening the already notified institutions by taking appropriate measures and makes them fully functional / operational.</td>
<td>In case of a mega disaster, the State / District may not be in a position to respond effectively.</td>
</tr>
<tr>
<td>State Disaster Management Authority (SDMA) has been created within the Revenue Department to deal with disaster related issues.</td>
<td>Department is more relief oriented than proactive in tackling disasters holistically in the State. Lack of capacity to deal disaster management in a holistic way.</td>
<td>GoI-UNDP DRR Programme May be helpful to strengthen the existing system in the state. Capacity Building Programmes out of 13th Finance Commission Grant may be helpful to enhance the capacity of various stakeholders.</td>
<td>If department does not start reacting in a proactive manner, the opportunities may not result in achieving the desired results.</td>
</tr>
<tr>
<td>Establishment of State Emergency Operation Centre (SEOC) &amp; District Emergency</td>
<td>Lesser Human Resource to manage the DECOs. Less HR to operate the Equipments provided to SEOCs /</td>
<td>SEOCs / DEOCs are established and functional. Further strengthening with Emergency</td>
<td>If SEOC &amp; DEOC are not established with latest communication tools &amp; Decision Support System (DSS), it may be difficult to deal in case of a mega</td>
</tr>
</tbody>
</table>
## Capacity building at District level for effective management of disasters

*Based on the analysis, training and capacity building programmes could be taken up at different levels as follows:*

<table>
<thead>
<tr>
<th>Major Role in Disaster Management</th>
<th>Strengths</th>
<th>Weakness</th>
<th>Opportuniti es</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Disaster Level:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To have an overview of the state and district level administrative,</td>
<td>Large human resource at different levels in the</td>
<td>No proper Training / exposure to district</td>
<td>Proper training will lead to better</td>
<td>Disaster management related</td>
</tr>
<tr>
<td>Institutional and techno-legal regime (including relief code) structure of DM.</td>
<td>To have proper DM plans at different levels including regular updation &amp; their integration with development plans.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To have an effective operational EOC.</td>
<td>To have an effective emergency support functions &amp; their coordination mechanism.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To have an inventory of resources &amp; material available in the district.</td>
<td>To have the modalities for deployment of army during extreme emergencies.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To manage relief camps and camp for volunteers arriving for relief operation.</td>
<td>Mapping &amp; vulnerability assessment of the area. Formulation and strict.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District and is well spread up to the village level.</th>
<th>Critical knowledge of the area.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manpower with the administration is involved in the activities related to Disaster Management.</td>
<td>Role and responsibilities are not clearly defined &amp; understood also.</td>
</tr>
<tr>
<td>At the time of crisis these actions can lead to better coordination and response.</td>
<td>EOC not functional.</td>
</tr>
<tr>
<td>At the time of crisis these</td>
<td>DDMPs not properly formulated.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Officials in disaster management.</th>
<th>Lack of coordination among different stakeholders.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of proper plans will ensure not only better post disaster management but also ensure better prevention, mitigation &amp; preparedness.</td>
<td>Time is available for community training and Capacity building.</td>
</tr>
<tr>
<td>Safety of infrastructure</td>
<td>The database.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management of any disaster like situation.</th>
<th>Activities may be taken over by some other agency if not handled properly.</th>
</tr>
</thead>
<tbody>
<tr>
<td>As per experience DM has become highly unprofessional and if no improvements are made, the conditions will deteriorate further.</td>
<td>Lack of lack of interest in DM and DRR activities at all levels.</td>
</tr>
</tbody>
</table>

DM is
| Implementation of building by-laws. | Actions can lead to better coordination and response. | Lack of EOCs and reliable communication network to manage crisis. | Time is available for community training and capacity building. | viewed as additional and extra work. |
| Construction/retrofitting of public buildings particularly schools, hospitals, community centre, panchyats offices etc. and publically funded buildings like IAY houses for earthquake resistance. | Construction/retrofitting of public buildings particularly schools, hospitals, community centre, panchyats offices etc. and publically funded buildings like IAY houses for earthquake resistance. | Regular monitoring of structural safety of public buildings, water tanks, roads, bridges, dams and other built structures. | Lack of trained staff & lack of equipment. Lack of knowhow about damage assessment. | The database of NGOs, CBOs can be prepared and they can be trained for emergencies. |
| Training of Govt. Officials / volunteers in Medical First Aid (MFA) and Search and Rescue (SAR). | Training of Govt. Officials / volunteers in Medical First Aid (MFA) and Search and Rescue (SAR). | The district administration has good experience in disaster response. | Disaster response mechanism is not equipped to hand | DM / DRR is not seen as an opportunity. |

**Post Disaster Level:**

| Maintenance of law and order. | The District Administration has good experience in disaster response. | Disaster response mechanism is not equipped to hand | Time is available for filling up the gaps. | Non-functional DDMAs can jeopardize |
| Recovery of dead bodies and their | Recovery of dead bodies and their | Recovery of dead bodies and their | Recovery of dead bodies and their | Recovery of dead bodies and their |
- Restoring lines of communication & information flow.
- Quick assessment of damage.
- Quick relief distribution
- Restoration of minimum communication.
- Establishment and functioning of Control Room

| big disasters. |
| Lack of specialized SAR Teams. |
| Inadequate SAR equipment |
| Inadequate preparedness. |
| Community not trained to handle emergencies properly. |

The on-going programmes if implemented properly can lead to better response.

the opportunities available.
CHAPTER-VI

FUNDING ARRANGEMENT FOR FINANCING DISASTER RELIEF

State Disaster Response Fund:

As per the provisions of Disaster Management Act, 2005 and based on the recommendation of the 13th Finance Commission, the Government of Odisha has constituted the State Disaster Response Fund (SDRF) replacing the Calamity Relief (CRF). The amount of corpus of the SDRF determined by the 13th Finance Commission for each year the Finance Commission period 2010-15 has been approved by the Central Government. The Central Government contributes 75% of the said fund. The balance 25% matching share of contribution is given by the State Government. The share of the Central Government in SDRF is released to the State in 2 instalments in June and December respectively in each financial year. Likewise, the State Government transfers its contribution of 25% to the SDRF in two installments in June and December of the same year.

Ministry of Home Affairs, upon being satisfied that exigencies of a particular calamity so warrant, may recommend an earlier release of the Central share up to 25% of the funds due to the State in the following year. This release will be adjusted against the instalments of the subsequent year.

As per the Guidelines on Constitution and Administration of the State Disaster Response Fund (SDRF) laid down by the Ministry of Home Affairs, Government of India, the SDRF shall be used only for meeting the expenditure for providing immediate relief to the victims of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst and pest attack. The State Executive Committee headed by the Chief Secretary SEC decides on all matters connected with the financing of the relief expenditure of immediate nature from SDRF.
National Disaster Response Fund:

As per the provisions of Disaster Management Act, 2005 and recommendation of the 13th Finance Commission, the National Disaster Response Fund (NDRF) has been constituted at the Government of India level replacing the National Calamity Contingency Fund (NCCF). The NDRF is administered by the National Executive Committee.

In the event of a calamity of a severe nature when the State’s SDRF is insufficient to meet the relief requirements, additional central assistance is provided from National Disaster Response Fund (NDRF), after following the laid down procedure. The State Government is required to submit a memorandum indicating the sector-wise damage and requirement of funds. On receipt of memorandum from the State, an Inter-Ministerial Central Team is constituted and deputed for an on the spot assessment of damage and requirement of funds for relief operations, as per the extant items ad norms. The report of the Central Team is considered by the Inter-Ministerial Group (IMG) / National Executive Committee (NEC) headed by the Home Secretary. Thereafter, the High Level Committee (HLC) comprising of the Finance Minister, the Agriculture Minister, the Home Minister and the Deputy Chairman, Planning Commission considers the request of the State Government based on the report of the Central Team, recommendation of the IMG thereon, extant norms of assistance and approves the quantum of assistance form NDRF. This is, however, subject to the adjustment of 75% of the balance available in the State’s SDRF for the instant Calamity.

Expenditure from SDRF/ NDRF is incurred by the State Government on eligible calamities as per the Items and Norms of expenditure from State Disaster Response Fund and the National Disaster Response Fund prescribed by the Ministry of Home Affairs, Government of India with the concurrence of Ministry of Finance.

Chief Minister’s Relief Fund:

Whirlwind, Tornadoes and Disasters like lightening, Heat wave, Boat Tragedy in normal times are responsible for about 75% of total human causality due to all types of disasters. Yet these disasters have been included in list of eligible calamities for incurring
expenditure from SDRF / NDRF. The State Government has made provisions for payment of ex-gratia to the bereaved families of persons who die due to such calamities.

**Release of Funds to Departments and Districts:**

Funds required towards pure relief to affected persons / families of natural calamities in shape of emergency assistance, organizing relief camp / free kitchen / cattle camp, agriculture input subsidy and other assistances to affected farmers, ex-gratia as assistance for death case grievous injury, house building assistance, assistance for replacement of milch / draught animals and poultry, assistance to fisherman / fish seed farmers / sericulture farmers, assistance for repair / restoration of dwelling houses damaged due to natural calamities are administered through the respective collectors. Part funds towards repair / restoration of immediate nature of the damaged public infrastructure are released to the Departments concerned. On receipt of requisition from the Collectors / Departments concerned, funds are released after obtaining approval / sanction of S.E.C. However, funds towards pure relief are released under orders of Special Relief Commissioner / Chief Secretary and the same is placed before the State Executive Committee in its next meeting for approval. To save delay, Collectors have been instructed to disburse the ex-gratia assistance from the available cash and record the same on receipt of fund from Special Relief Commissioner.
CHAPTER-VII

DEPARTMENTAL RESPONSE PLANS
Revenue and Disaster Management

Revenue administration touches all sections of the society and is concerned with their problems. The domain of the Revenue and Disaster Management Department (R&DM) transcends the matters relating to land, providing land to the landless and protecting the Government land to being the State nodal department for providing immediate relief to the people affected by various calamities, taking up restoration and rehabilitation measures.

The Revenue &DM Department has two distinct organizations working under it. The Special Relief looks after the relief, restoration and rehabilitation aspects and the Odisha State Disaster Management Authority (OSDMA) looking after the planning, preparedness and prevention aspects of disaster management.

Besides the above organizations, the institutional structures of disaster management in the State like State Disaster Management Authority, (SDMA), The State Executive Committee (SEC) and the District Disaster Management Authority (DDMA) are also functioning.

The preparedness and response to various disasters are handled and coordinated with precision by a set up guidelines and executive instructions of the government complied under the nomenclature "Odisha Relief Code". The document which had its origin from the Bihar Odisha famine code has been guiding relief administration in the state for a long time. The document is a living one, continuously incorporating the modifications in the relief parameters, to be rightly known as the Bible of Disaster Management in the state.

The department through its Special Relief branch coordinates with the district administrations and other line departments of the government for smooth management of disasters. The State Emergency Operation Centre (SEOC) set up in the Special Relief part of the department remains in contact with the District Emergency Operation Centres (DEOC) on a 24x7 basis in the calamity seasons for dissemination of early warning and coordination for relief management.
Arrangement for Response to Natural Calamities

Major natural calamities like drought, flood and cyclonic disturbances occur almost every year. Heat wave is also a regular phenomenon. Taking into account the seasonal pattern of these calamities, standing preparedness activities are undertaken by the State Government at different levels to meet the eventualities and minimize the impact of these calamities. During the occurrence of the calamity, activities like rescue, evacuation, sheltering, provision of food, water, first-aid are undertaken followed by various relief measures during post-disaster period. Activities during these 3 phases of disaster for different calamities although identical in some respects are different in other respects.

Flood

The rainy season covers the period from the 15\textsuperscript{th} of June till 15\textsuperscript{th} of October and maximum precipitation is during the months of June to September. The average annual normal rainfall is 1,451.2 mm. The State has 11 major river systems namely the Subarnarekha, the Budhabalang& Jambhira, the Baitarani, the Brahmani, the Mahanadi, the Rushikulya, the Banshadhara, the Nagabali, the Indravati, the Kolab and the Bahuda. These rivers along with their large number of branches and tributaries form the river systems of the State. All these rivers are rain dependent. Heavy precipitation within short period causes flooding as these natural channels can hardly hold the large volume of water which passes through them during the aforesaid period resulting in widespread inundation that calls for effective pre-flood measures, flood relief operations and post-flood arrangements.

Pre-flood arrangements

The following measures are taken well in advance to meet the flood situation in the State.

Inspection of rain-gauges for ensuring correct recording of rainfall:

The disasters like flood and drought being fully dependent on the amount of rainfall, measurement of rainfall plays a vital role in forecasting and management of such disasters. Moreover, rainfall data is very crucial for crop planning.
Rain-gauges have been provided in every Block. Besides, such stations are available in Government Agricultural Farms. Every year after the rainy season, the rain gauge stations are checked by the Officer-in-charge of the Station (Block Development Officer or Tahasildar respectively in respect of the rain-gauge stations located in their premises or in other premises under their control and likewise the concerned Agricultural Officer in respect of the rain-gauge stations located in premises under their control) who submit a report to the Collector and the Director of Agriculture & Food Production, as the case may be, by 31st March 2013 indicating if the station is in complete working order or if it has any defect. The defect, if any is remedied forthwith, at any rate before April every year.

In addition to above, the Sub-Collector inspects all the rain-gauges in his subdivision at least once in every calendar year. Similarly, the District Agriculture Officer inspects all the rain-gauges within his jurisdiction at least once in each calendar year. The Collector / the Additional District Magistrate are required to inspect at least 20 percent of the rain recording stations in each subdivision of his District during each calendar year in course of inspection and visit to such offices. In case any defect is found during such inspection, immediate steps are taken to rectify such defect.

**Recording and transmission of rainfall data:**

The Head Clerk of the office in which the rain-gauge station is located is the Rain Recording Authority in respect of the said station who is responsible for correct recording of rainfall data, transmission to the office of the Special Relief Commissioner and other offices and for proper maintenance of the rain-gauge station as per the provisions under the rules relating to rainfall registration and further instructions issued from time to time. Occurrence of rainfall in any area likely to create a flood situation or pose other serious problems due to water-logging, house damage, etc. are specially reported to the State Emergency Operation Centre.

A Rainfall Monitoring Portal http://ori.nic.in/rainfall has been developed with the help of National Informatics Centre (NIC) with provision of uploading the rainfall data at the Block level. Necessary user ID and password has been provided by NIC to all BDOs through the Collectors. The Officer-in-charge of each rain-gauge station ensures that
rainfall data is uploaded in the said portal everyday irrespective of holidays latest by 11.00 A.M. User ID and password has also been provided to each Collector to access the data in the portal and make necessary correction, if any. Timely uploading of rainfall data in the portal in respect of all rain-gauge stations in the district is monitored at the district level by the District Emergency Officer. In case there is any difficulty in uploading the rainfall data of a particular station or there is any error therein, it is posted or corrected, as the case may be, forthwith at the district level. Extreme care is taken for posting of correct rainfall data keeping in mind that the data in the portal is accessible by the citizen. In case it is not possible to upload the rainfall data of a particular station or stations for some justified reason on a particular day, it is communicated to the office of Special Relief Commissioner forthwith through fax/ phone/ any other means and the portal is updated with such data as soon as possible.

Closure of past breaches in river & canal embankments, identification of weak points and flood protection measures including strengthening and guarding:

Water Resources Department takes timely steps for closure of past breaches in river & canal embankments. It also identifies the weak & vulnerable points and take necessary measures to strengthen such embankments before flood season and pre-position necessary flood fighting materials like sand bags, talais, bamboos, etc., to protect these weak points during high floods. Watch and ward staff are engaged to guard these weak points during high floods. Superintendent of Police in consultation with the Collector of the district provides necessary police help for guarding and protecting these embankments during high floods. The local Executive Engineer, Irrigation contacts the Collector and the Superintendent of Police for such assistance and keeps the Collector informed of every development. Identification of the weak and vulnerable points is completed and the list along with the status of the breach closing and strengthening works submitted to the Collector by the end of April so as to enable the District Level Committee on Natural Calamities discuss on the same in its meeting held in the month of May. The consolidated status of closure of past breaches in river and canal embankments is provided by Water Resources Department to the Special Relief Commissioner along with the list of weak and vulnerable points by 15th of May.
Arrangements for keeping drainage clear for free flow of flood water

The Water Resources Department issues instructions to the concerned Executive Engineers and ensure that blockages of all natural drainage channels leading to river systems are cleared before the onset of monsoon for free flow of flood water.

Activating the Control Room:

State EOC and District EOC

State Emergency Operation Centre (State EOC) is functioning in the office of the Special Relief Commissioner at Rajiv Bhawan, Bhubaneswar on 24x7 basis round the year. Similar Emergency Operation Centres also function in the Collectorates which need to be made operational on 24x7 basis round the year irrespective of occurrence of any the calamity. Similar Control Rooms will be opened/ activated in the offices of Revenue Divisional Commissioners, Sub-Collectors and offices under various Departments having role in flood management during the period from 1st of May to 30th of November under the operational command of a senior officer with adequate personnel and required communication equipment. Necessary arrangement are made to provide basic training on management of control room including operation of communication equipment to the personnel so deployed.

Installation of temporary Police VHF Stations:

All permanent Police WT stations in the State are allowed to transmit the flood and cyclone messages. But certain interior areas, where the telephone/ mobile connectivity is not available for communicating flood related messages, are required to be provided with temporary Police VHF Stations. The Collectors make a realistic assessment of the requirement of such temporary VHF stations in their respective districts, if any, in order of priority (keeping in mind that such temporary stations do not ordinarily exceed twenty in the entire State) and send the list to Special Relief Commissioner by 15th of May. The Special Relief Commissioner communicates the consolidated list of such stations to the Home Department and Superintendent of Police, Signal for installation of temporary VHF stations. These temporary stations function till the end of November i.e. the end of the cyclone season.
Arrangements for keeping telephone and telegraph lines in order:

It is the responsibility of all the officers having a role in flood management to see that their official phones in the office as well as residence remains fully operational during the rainy season. Chief General Manager, BSNL, Odisha is requested by the Special Relief Commissioner before the flood season to make special arrangements for quick restoration of telephone lines/ mobile telephone network, incase those are affected by floods or cyclones.

Dissemination Weather Reports and flood bulletins –

Director, Meteorological Centre, Bhubaneswar issues bulletins for nine catchments of seven rivers i.e. Mahanadi, Subarnarekha, Burhabalanga, Brahmani, Baitarani, Bansadhara& Rushikulya twice daily during monsoon period. In addition to this, heavy rainfall warning and quantitative precipitation forecast in different ranges are issued daily to Chief Secretary, SRC, OSDMA, Collectors, RDCs, Home Department, Revenue & DM Department, Water Resources Department and Central Water Commission through FAX and e-mail. In case of forecast /warnings regarding extreme weather conditions, Director, IMD sends SMS to Chief Secretary, Home Secretary, Revenue Secretary, SRC, RDCs, MD OSDMA, Collectors, Doordarshan and All India Radio. Further, hourly developments are transmitted to the Special Relief Commissioner and the contact officers over telephone when situation so warrants.

The Chief Engineer, Central Water Commission (CWC) provides the gauge readings of some important rivers along with the forecast relating to rising & falling of rivers, crossing of danger levels and likelihood of high floods at some important points to Water Resources Department and Special Relief Commissioner. Water Resources Department issues a daily flood bulletin containing the Gauge readings of different river systems and important reservoirs including inflow and outflow of water from the important reservoirs, etc., which is communicated to the concerned Collectors, Revenue Divisional Commissioners and Special Relief Commissioner and others. Position of Hirakud Reservoir, flood release at important stations including rainfall position is transmitted by Hirakud Dam Authority through SMS every 3 hours to Special Relief Commissioner,
Nodal officers in State EOC and other Senior Officers in the State involved in flood management.

The State EOC on receipt of such messages communicates the substance of all important messages to the concerned Collectors/Revenue Divisional Commissioners/Departments through the quickest means of communication available.

The Collector issues standing orders as to how weather warnings/ flood bulletins received in the District Office / District EOC are to be circulated forthwith by the quickest means of communication available.

Weather reports, flood bulletins, etc. are sent by the Meteorological Centre at Bhubaneswar directly to the All-India Radio, Doordarshan and other electronic & print media for publicity. In case of important forecasts, the All India Radio / Doordarshan/other News Channels are requested by the Special Relief Commissioner to broadcast/telecast the message frequently.

**Storage of food in interior areas and arrangement for dry food stuff and other necessities of life:**

During flood, several parts become inaccessible making it impossible/difficult for transport of food grains and other essential commodities. Keeping this in mind, the Collector prepares a list of strategic places in interior flood-prone areas, where such food stuff and other essential commodities like K. Oil are stocked indicating the quantity thereof and communicates the same to the Food Supplies and Consumer Welfare Department with a copy to Special Relief Commissioner. Such food grains are drawn from the aforesaid depots according to necessity for administration of emergent assistance in case of widespread inundation. This is taken into account while assessing the requirement of food stuff to be stored at each depot or sub-depot.

The Department of Food Supplies and Consumer Welfare Department takes necessary steps for stocking of food stuff and other essential commodities at such places before the onset of the monsoon for efficient working of the public distribution system. The Collector and the Superintendent of Police in mutual consultation make necessary arrangements for the safety of the food stuff at such places.
A list of places where food stuff is stocked, the nature and quantity of such food stuff and other essential commodities along with quantity is made available by the Collector to the Revenue Divisional Commissioner and the Special Relief Commissioner by 30th June. The Revenue Divisional Commissioner and the Special Relief Commissioner reviews the position and send guidelines to the Collectors for follow up action.

Dry food like chuda, mudhi, guda/ sugar, bread, etc. and other necessities of life like candle, match box etc. are arranged for distribution among the marooned people in the event of high floods. Prior arrangement for this is done by the Collectors with chuda mills and stockists of mudhi, bread, etc. The stock may only be lifted if at all needed. The collectors of Cuttack, Puri, Balasore, Sambalpur and Bargarh where most of the chuda mills are installed, will have an additional responsibility for supply of such food stuff to other districts on requisition from the Collectors of such districts. This prior arrangement is completed by 31st of May.

**Deployment of boats:**

The State Port Engineering Organisation under the Special Relief Commissioner maintains a fleet of power boats, a major portion of which is kept in the flood-prone districts in charge of the Block Development Officers/ Tahasildars/ Sub-Collectors / the District Emergency Officers under the control of the Collectors of the concerned Districts. A few number of power boats are kept in the central pool under the charge of State Port Engineer for deployment as when required.

The State Port Engineer is mandated to keep these boats in operational condition. As soon as the rainy season is over, he takes steps to get all the power boats examined by the technical staff at its disposal with a view to finding out their worthiness for deployment during the next flood season and takes necessary steps for repair of the defective ones. In any case, repair/ maintenance is completed and all such boats are kept ready by 30th June for service. Trial run of all the boats is taken up well in advance.

In addition to these power boats of the State Port Engineering Organisations, boats are also available with all ODRAF Units and Fire Stations in the flood-prone areas which are primarily used for rescue purposes. The Collector keeps this information and places
necessary requisition for deployment of boats of ODRAF and Fire Services Units with trained personnel.

Apart from these, since more number of boats may be required during high floods, the Collectors ensure enumeration of all private boats in the District block-wise with name, address and contact numbers, if any, and as far as possible makes a pre-contract for use of such boats on hire for rescue and relief operation during flood. Such list is shared with the Special Relief Commissioner for having a consolidated directory of private boats in the State. State Port Engineer is in charge of preparation and yearly updating of such directory. The Collector also prepares plan and make necessary previous contacts and arrangements for procuring boats on hire from neighboring districts or fishery jetties, etc. for use in rescue and relief in case of requirement of boat is too high.

**Selection of flood shelters and construction of temporary shelters- Evacuation plan with alternative safe routes:**

Many strong cyclone/ flood shelter buildings have been constructed by the State Government and Indian Red Cross Society in the cyclone/flood-prone areas. Moreover, besides the existing school buildings, a number of new school buildings have come up after the super cyclone of 1999 in the 14 affected districts. These cyclone/ flood shelters, school buildings and other suitable buildings belonging to Government, Panchayat Samities, Gram Panchayats, Educational Institutions, Mahila Samitis, Recreation Centres or other Institutions of public nature are identified in advance for providing emergent shelter to the people in case of evacuation from the flood affected areas. Safety of such buildings is checked by the Engineers of the local Block/ DRDA or of the RD/ Works Department. This identification of shelter buildings and safety inspection is completed by 31st May.

In case no such buildings is found, temporary structures with bullahs, bamboos, talais and tarpaulins are raised on high mounds or embankments for such shelters. The Collectors of flood prone districts arrange for quick availability of bamboos, bullahs, ropes, talais, tarpaulins, etc. for construction of such shelters.
Advance planning is made for making drinking water, sanitation and lighting arrangements at such permanent and temporary shelters. Plan for evacuation of people from areas likely to be inundated due to flood is also prepared in advance identifying alternative safe routes along with need for transportation facility including boats.

**Assigning charge of Flood Circles:**

Ordinarily, a Block/ULB constitutes a flood circle and the BDO/ Executive Officer of the ULB is its Flood Circle Officer for the purpose of flood relief operations. However, Municipal Corporations/ large Municipalities or Blocks are divided into more number of flood circles in charge of responsible officers. The Collector furnishes the list of flood Circles Officers thus constituted to the Revenue Divisional Commissioner and the Special Relief Commissioner by the 1st week of June every year.

**Organisation of relief parties and training in flood relief work**

Before the onset of monsoon, steps are taken to organise relief parties at District, Sub-division and Block levels. The team preferably comprises of a young and energetic officer having sound experience in flood relief work as leader. The Leader and the Members need to be conversant with swimming. A power boat or country boat is earmarked to each party considering the area of operation. Dry food and other relief goods of required quantity is carried by the team for distribution among the marooned people if required. Necessary arrangement are made to provide basic training/ orientation to the members of relief parties. The assistance of Home Guards trained in flood relief work is also taken.

Each of the concerned Department/ Head of the Department nominates a Nodal Officer for coordinating with the office of Special Relief Commissioner in the matters of disaster preparedness and response relating to their respective Departments. The Departments also prepare list of their nodal officers at different levels with their telephone / mobile phone numbers and furnish such list to the Special Relief Commissioner.

**Advance arrangements for assistance of defence forces:**

Even as the State has raised the Odisha Disaster Rapid Action Force and also equipped the Fire Service Units for carrying out search and rescue operations, assistance of defence
forces may be required especially for carrying out airdropping operations during high floods and for search & rescue operations in case of widespread calamities. Advance arrangements are made by the Collectors for deployment of defence forces as per protocol. The list of helipads/ airstrips available in the district with their geographical coordinates (Latitude & Longitude) is kept handy by the Collectors for use in case of necessity. The Collectors send their proposal for requisition of defence forces for airdropping operations during high floods or search & rescue operations, as the case may be, to Special Relief Commissioner in crucial calamity situations. Special Relief Commissioner places such proposal before the Government with his views for taking a decision and immediate follow up action is taken as per the decision of the Government. In case of decision for air dropping of food packets etc., immediate arrangements are ensured for procuring the food materials & proper packing materials, preparing food packets of suitable sizes and transportation of food packets to the airport/ helipad. Food & Consumer Welfare Department makes necessary arrangements for supply of food materials of good quality and organizations like ORMAS under the supervision of Panchayati Raj Department normally handle the job of preparing the food packets and forwarding to airport/ helipad for being lifted in helicopters. Home Department looks after liaison with the Central Government and Defence Forces in that matter.

**Annual review of District Disaster Management Plan:**

The District Disaster Management Plan is reviewed and copy of revised plan shared with office of Special Relief Commissioner, concerned Departments, Officers of the Line Departments at district level and other stakeholders. This is completed by 31st May.

**Review of pre-flood arrangements**

The Collector himself looks into the pre-flood arrangements in the district and undertakes a review on the arrangements by the end of June. Any shortcoming noticed during the review is remedied forthwith. A report of such review report is sent to the Special Relief Commissioner and the Revenue Divisional Commissioner by 5th of July. Similar review meetings are also taken by the Revenue Divisional Commissioner in respect of the Division. At the State level, Special Relief Commissioner takes a review meeting with the Nodal Officers of the concerned Departments to check the pre-flood arrangements.
Meeting of the District Level Committee on Natural Calamities:

A meeting of the District Level Committee on Natural Calamities is convened in the month of May to review the various precautionary measures taken or proposed to be taken against the possible floods.

Meeting of the State Level Committee on Natural Calamities:

A meeting of the State Level Committee on Natural Calamities is convened preferably in the month of June to review the various precautionary measures taken against the possible floods.

Action during and immediately after flood

On the first information of a high flood above danger level the following arrangements are immediately made by the concerned Collector and Sub-Collector.

(i) Relief parties for relief and rescue operations are sent out.

(ii) Emergent relief and shelter to the people in distress are provided.

(iii) Requirement of assistance from defence forces is assessed and intimated to Special Relief Commissioner.

(iv) Relief measures by non-Government and voluntary organisations are listed as far as possible.

(v) Daily situation reports are furnished to the Revenue Divisional Commissioner and the Special Relief Commissioner till dangers are over or till discontinued by the Special Relief Commissioner. Special / Additional Reports are also sent from time to time, if required.

Rescue Operation

In case of high floods, where low lying villages are likely to be inundated or there is likelihood of occurrence of breaches in the flood protection embankments or canals or breaches/inundations have occurred, ODRAF/Fire services/Relief teams are sent forthwith to the affected areas and the people in such areas, if they are found still there, are evacuated to take shelter at the nearest identified flood shelter or other safer places. They are provided with transport facilities, at Government cost, if necessary, to move to the
flood shelters. Sub-Collector monitors the rescue operation with the help of concerned Flood Circle Officers.

In case it is noticed that the ODRAF/ Fire services/ Relief teams already sent and the additional standby staff available are inadequate to rescue all the marooned people, the Collector requisitions additional teams immediately and simultaneously contact the Special Relief Commissioner/ Managing Director, OSDMA in that matter over telephone. In extreme cases, where the situation cannot be managed by deployment of more ODRAF/ Fire services teams even diverting the units from other regions, assistance of defence forces is sought for. On requisition of the Collector, the Special Relief Commissioner makes a quick review of the situation and places the matter before the Government for taking a decision regarding requisitioning the services of defence forces.

In the past it has so happened that people were trapped in difficult locations such as small islets inside flooded river and they could not be rescued with the help of available trained manpower and mechanical resources and had to be rescued through airlifting by defence forces. In similar cases, immediate requisition are sent to the Special Relief Commissioner with brief information about the location, number of persons trapped, nearest defence establishment, nearest airport/ airstrip/ helipad, etc. Besides, the Special Relief Commissioner and the State EOC are contacted over phone. Subsequently, geographical coordinates of the nearby places are obtained and be communicated along with name of a contact officer with his contact numbers to facilitate coordination with the rescue team.

**Search and Rescue Teams (SRT):**

Ten units of Odisha Disaster Rapid Action Force (ODRAF) have been set up at Jharsuguda, Koraput, Cuttack, Chhatrapur, Balasore, Bhubaneswar, Paradip, Baripada, Bolangir and Rourkela to assist the administration in search and rescue operation in the event of any natural calamity. These units are well equipped with required machineries, vehicles, mechanized boats and other equipment to meet any eventuality. Inspection and dry run of the equipment including mock exercises are made on regular intervals to ensure that the equipment are in perfect working order.
Biju Patnaik State Police Academy is identified as State Training Institute for training of Search and Rescue Teams.

Besides the ODRAF units, the State Fire service units have also been strengthened. Emergency equipment including power boats have been provided to 100 selected fire stations in the vulnerable areas of the State to allow these units to act as mini ODRAFs for handling emergency situations. Emergency equipment have also been provided to flood prone Blocks and Cyclone Shelters. Search and Rescue training has been imparted to 25 volunteers in each Cyclone Shelter.

**Standard Operating Procedure (SOP) For ODRAF**

Odisha Disaster Rapid Action Force (ODRAF) has been constituted to assist the civil Administration at the time of calamities to clear relief lines, take up search & rescue operations and help in management of disasters. Different State-of-art emergency equipment have been provided to the ODRAF units and the personnel of ODRAF are trained to operate these equipment. The equipment and the personnel are in readiness to respond to the emergency situation without loss of time. The personnel and the equipment follow a set pattern of guidelines during normal times and at the time of calamities.

**Standard Operating Procedure (SOP) For ODRAF During Normal Times**

**Equipment**

i. The equipment are cleaned, maintained and operated as per the maintenance manual prepared by OSDMA or the maintenance guideline provided by the manufacturer of the equipment.

ii. The equipment like vehicles, Cranes, Generators, hydraulic rescue equipment like cutters, combi tools, spreaders, telescopic ram jacks, power shore, R.C.C. cutting equipment and other mechanized equipment are operated at least for 15 to 30 minutes, once in a week or as per the maintenance manual. The weekly operation is to be maintained in a register to be signed by the concerned staff and the supervising officer.
iii. The non-mechanized equipment like ropes, ladders, building rescue tools, tents and all such equipment are kept clean and inspected once in a week. The log book for cleaning and inspection for each equipment is maintained properly and signed by the supervising authority once in a week.

iv. The equipment are kept in their respective containers / sets protected from sun and rain. In case of dearth of covered storage space, the equipment are kept covered by plastic or polythene sheets.

v. The operational difficulty of the equipment is intimated to OSDMA immediately.

vi. A monthly / quarterly status report of the all the equipment with respect to their operability and conditions is sent to OSDMA on 1st week of every month.

Personnel

vii. ODRAF personnel remain physically fit and mentally alert always. They follow a routine regime of daily physical fitness training as decided by the concerned authorities.

viii. Each ODRAF personnel learns to use the maximum types of equipment possible and familiarize themselves with operation and maintenance of the equipment so that the equipment could be used at the time of disaster effectively.

ix. The personnel practise search and rescue drills at their respective bases.

SOP during emergency situation

i. The ODRAF equipment and personnel remain in ever-readiness during the emergency season (Cyclone and Flood) from 1st April to 30th November.

ii. All the Rescue equipment like Cranes, Inflatable Rubber Boats with OBM, Payloaders, Inflatable Tower lights etc. are thoroughly checked / maintained before the emergency seasons, over and above the normal maintenance.

iii. During this period, the personnel check the emergency equipment on a daily basis.

iv. The fuel, lubricants, hydraulic fluid levels are checked on a daily basis to keep the equipment in ever-readiness.
v. The Special Relief Commissioner and Managing Director, OSDMA are authorized to deploy the ODRAF at different locations as per requirement.

vi. The Special D.G. of Police (Administration) is intimated by Telephone, Fax, E-mail, VHF or by any other mode of communication regarding deployment. The ODRAF moves out from their bases within 1 hour of the receipt of the instruction.

vii. In case of receipt of any alert / warning message (cyclone, flood, heavy rain, etc.), the same is communicated to the Authorities for keeping the ODRAF units in alert stage to be pressed into service immediately.

eviii. Since fax messages are not always possible to be sent immediately, deployment instructions given by SRC / MD, OSDMA over telephone or by any other authorized officer of him is taken into account and deployment made accordingly. For the sake of documentation, a written letter is sent latter for record.

ix. The ODRAF personnel and the personnel of the Fire service deployed for disaster management are provided Rs.125/- per person per day as ration allowance during the period of deployment. (provided they are deployed for active disaster management or the similar nature of duty and not kept as standby)

x. The ODRAF personnel deployed for disaster management duty report before the Collector of the concerned district or any other officer authorized by him.

xi. The ODRAF personnel try to stay at the disaster site without depending on the local administration as far as possible. However, all possible assistance is provided to them for their accommodation and smooth operation of activities.

xii. All the ODRAF equipment start from their bases with their fuel tanks and auxiliary fuel tanks filled. However, the additional fuel for running the equipment is provided by the local administration. The ODRAF team in-charge intimates the requirement of fuel to the concerned local authority on their arrival in the District / disaster site. The fuel bills for operation of ODRAF equipment for management of disasters are footed by OSDMA to the concerned Collector.
xiii. During Search & Rescue Operation, if any equipment / machineries go out of order, it is replaced immediately by another one and matter is reported to OSDMA for immediate repair.

xiv. On receipt of the alert message from the SRC / OSDMA, the ODRAF personnel, if deployed for law and order duty, are immediately withdrawn and kept at their respective bases for deployment for emergency duty.

xv. In the event of any difficulty in deployment and operation of the ODRAF units, the joint decision of MD, OSDMA and Special D.G. of Police (Administration) will be followed.

**Administration of Emergent Assistance/ Adhoc food assistance:**

Emergent relief in kind is sanctioned by the authorized officers and provided to the people in distress. As per the present arrangement, the Collector/ Sub-Collector is authorized to grant emergent assistance for a period up to 3 days. In case extension of emergent assistance is necessary, sanction of Revenue Divisional Commissioner to extent it up to 7 days and of the Special Relief Commissioner up to 15 days is sought for. For providing emergent assistance beyond 15 days, previous sanction of the Government is required. Adhoc food assistance is given in case the people are deprived of cooking their food due to inundation and if they are marooned.

**Post flood measures**

After the floods have subsided, steps are taken to bring back the people who were evacuated and placed in flood shelters, to their own houses. Besides, disposal of dead bodies; cleaning of surroundings, disinfection of water sources, preventive and curative measures against health hazards, special feeding programme for supplementing nutrition for children and expectant and nursing mothers, assessment of crop loss and other damages caused by flood; payment of permissible assistances to the affected people to enable them to effect repairs and restoration of their houses and return to their normal avocations, undertaking a programme of restoration of crop damages by adopting a cropping pattern for alternate kharif crop, if any, and a rabi programme, labour intensive works to provide earning to surplus labour are taken up as per requirement by the respective departments.
Action by Revenue & Disaster Management Department:

The officials of Revenue & Disaster Management Department take prompt steps for assessment of damages of private individuals for payment of agriculture input subsidy for damage of crop, assistance for desilting of silt/ sand deposit from agricultural land, assistance for repair/ restoration of damaged houses, assistance towards clothing & utensils, ex-gratia assistance for death/ grievous injury, assistance for replacement of milch/ draught animals & poultry lost, assistance to fishermen and fish farmers, assistance to Artisans in handicrafts in eligible cases etc.

Assessment of damage to Infrastructure:

The Collector undertakes assessment of damage to properties of Revenue and Disaster Management Department and those of other Departments of Government having no District level Officers. In case of Departments of Government having their own field officers, they get the assessment done quickly by such officers. This assessment is done as speedily as possible soon after the abatement of flood in the prescribed formats.

Restoration of Infrastructure

The restoration of damaged infrastructure is taken up in two stages. In the first stage, the repairs immediately necessary to avoid further deterioration and for making the infrastructure worthy for immediate use are taken up. Infrastructure of public importance such as road, power supply, hospital facilities, water and sanitary arrangements are some of the programmes which are taken up on priority. The concerned Departments of Government take up these restoration works of immediate nature out of their budget provision available for repair/ maintenance of such infrastructure and place requisition with Special Relief Commissioner seeking allotment of balance required funds, if any, from SDRF/ NDRF. Special Relief Commissioner allots such funds from SDRF in eligible sectors having regard to the availability of funds after obtaining approval of State Executive Committee.

In the second stage, the infrastructure restoration is taken to bring it to the pre-flood conditions or even to better conditions which can take care of the disaster risks in future. For such programme complete estimates of requirement of funds are framed and provided
for in the budget for immediate implementation. While taking up the restoration works it is ensured that the restored infrastructure meets the desired standard to withstand the future calamities.

In case adequate funds are not available, it is taken up by the administrative department with the Planning and Coordination Department and the Government of India, if necessary, for advance plan assistance.

(2) The Collectors take similar action for repair/ restoration of the infrastructure belonging to the Revenue & Disaster Management Department.

**Reporting:**

The Collectors follow the 4-phase reporting of calamities as indicated below as prescribed under the Odisha Relief Code and executive instructions.

► First Information Report (FIR)

► Daily Situation Report

► Preliminary Damage Report

► Final Damage Report

**First Information Report**

► This report is transmitted by the District Administration to the Special Relief Commissioner (SRC) within 18 hours of occurrence of any disaster.

► SRC transmits the same to National Emergency Operation Centre functioning under the Ministry of Home Affairs, GoI within 24 hours of occurrence of the disaster

To ensure that FIR is sent within 18 hours –

► Tahasildars and BDOs are responsible to track the information regarding occurrence of any disaster in their area of jurisdiction and communicate to the District office expeditiously.
► Tahasildars/ BDOs distribute this responsibility among their Revenue Inspectors/ Revenue Supervisor/ Extension Officers/ Executive Officers of GPs (VLWs) to provide information immediately after occurrence of any disaster.

► For that purpose, Revenue Inspectors/ Revenue Supervisor/ Extension Officers/ Executive Officers of GPs (VLWs) make arrangements to get information from every village.

► Failing in this duty invites disciplinary action.

**Daily Situation Report**

► A format has been prescribed by the Government of India for submission of Daily Situation Report starting from 1st June till 15th October uninterruptedly.

► Nil report has to be sent even if there is no disaster event.

► This report from the Districts has to reach the State Emergency Operation Center by 2.00 pm every day.

► The timing for collection of information for the said report accordingly is fixed at different levels in the Districts.

► Additional information is sought as required.

**Preliminary Damage Report**

► Preliminary Damage Report is to be prepared as accurately as possible as the relief measures are to be based on the merit and statistical data of that report.

► Format has been prescribed under Odisha Relief Code requiring submission of damage information by all relevant Departments.

**Final Damage Report**

► Final Damage Report has to be submitted in the same format as prescribed for preliminary damage report.

► Accidental errors, clerical mistakes and shortcomings, if any noticedis rectified in the final report.
### Timing for submission of preliminary and final flood damage report

<table>
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<tr>
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<th>Timing for submission of final flood damage report</th>
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<tr>
<td>Collectors</td>
<td>RDC &amp; SRC</td>
<td>Immediately after assessment of flood damages</td>
<td>Not later than one month after assessment of flood damages</td>
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<tr>
<td>District level Officers</td>
<td>Their respective Heads of Departments and SRC</td>
<td>-do-</td>
<td>Not later than one month after assessment of flood damages</td>
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<tr>
<td>Heads of the Departments</td>
<td>Administrative Departments &amp; SRC</td>
<td>Not later than two weeks from the date of abatement of flood</td>
<td>Soon after receipt of the reports from the Collectors and Heads of Departments</td>
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### Cyclone and Tidal Disaster

Cyclones generally occur in Odisha before and after the rainy season. October is the most crucial month for the Odisha coast. The other months in which storms affect Odisha coast with lesser frequencies are May, September and November. Cyclones ordinarily bring in their trail heavy rains causing severe floods, tidal disasters and saline inundation. Disasters of this kind cause heavy mortality, untold suffering and damage to private and public properties.

In view of potential the cyclones carry for damage to life and property, it calls for undertaking preventive and preparedness measures to encounter such possible calamity.

### Cyclone prone areas

Taking the super cyclone of 1999 as benchmark, 6 coastal districts namely Balasore, Bhadrak, Kendrapada, Jagatsinghpur, Puri & Ganjam and 8 adjoining districts namely Mayurbhanj (part), Keonjhar (part), Jajpur, Dhenkanal (part), Cuttack, Khordha, Nayagarh (part) & Gajapati (part) are identified as cyclone-prone area.

### Pre-cyclone measures

Most pre-flood arrangements also apply to cyclones. However, some additional preparedness is necessary to encounter the possible disaster due to cyclone.
Pre-cyclone exercise meeting:

A meeting is held under the chairmanship of Chief Secretary in the month of April/May (pre-monsoon period) and another meeting during September/October to review various preparedness measures for the cyclone season. Issues like tracking of cyclones and dissemination of cyclone warning, strengthening communication systems, arrangements for restoration of essential services like communication, power supply, readiness of ODRAF, Fire Services and other organizations for undertaking search & rescue activities, availability of boats, etc. are reviewed in this meeting. Director IMD, Bhubaneswar, Chief General Manager BSNL, Station Director, All India Radio, Director, Doordarshan, officers of electricity Distribution Companies (DISCOM) and others attend the meeting.

Detection and tracking of storms and dissemination of cyclone warning:

Timely dissemination of warning of upcoming cyclone is very important as it enables the targeted population to save their lives & properties. The India Meteorological Department (IMD) is the nodal agency for tracking of cyclones and issue of warnings sufficiently before their occurrence to the concerned authorities, the Press for giving wide publicity and warning to the people against the impending calamity. It also issues warnings about the approaching cyclones to officers of the Fisheries Department in the coastal districts for the marine fishermen and to the Port authorities. Visual storm warning signals I to XI are displayed in ports.

IMD issues 4 stages of cyclone warnings as follows:

“Pre-Cyclone Watch”-containing early information about the development of a cyclonic disturbance in the North Indian Ocean, its likely development into a tropical cyclone and coastal belt likely to experience adverse weather

“Cyclone Alert”- at least 48 hours in advance of the expected commencement of adverse weather over the coastal areas.

“Cyclone Warning”- at least 24 hours in advance. These warnings continue to be issued at 3 hours interval giving the latest position of the cyclone, its intensity (maximum sustained surface wind speed) and likely time and point of landfall together with storm surge height and type of damage expected.
“Post Landfall Scenario” is issued to cover the devastating impacts of the cyclones of inland areas. This commences about 12 hours before landfall and continues till such time, as the cyclone-force winds are expected to prevail in the interior areas. At this stage, the district Collectors of all interior districts besides the coastal areas likely to be affected are included in the bulletin.

“De-warning” After the weakening of the cyclone into a depression stage, a final message on de-warning is issued.

When a depression and a cyclone is excepted to affect a certain area on the coast, the public in the area are warned through the regional All India Radio Stations and Doordarshan which are requested to broadcast and telecast special storm bulletins at frequent intervals. These special Weather bulletins are also shared with the Press by Director, IMD for publicity through other channels and print media.

In addition to circulation through media, the cyclone warnings are disseminated by the administration in the following process.

- IMD → State EOC / District EOC → Block by fax, e-mail, police wireless.
- Block → Gram Panchayat and Village by vehicle mounted public address system, telephone and to PRI members by telephone or messenger.
- Warning message are also communicated from State and District to Cyclone shelters by cell phone / telephone.
- Cyclone Warning Dissemination System (Satellite based Communication System to provide warnings directly to community) installed by IMD at 35 locations along coasts give warnings about upcoming cyclone to the people directly.
- At village level, warning message is disseminated by traditional methods & village gatherings.

For the safety of road transport services and bus depots, the transport organizations are kept appraised of the cyclone warnings by the district authorities. They are instructed not to ply regular transport services to and from the threatened area except when their services are specially requisitioned by the district authorities for evacuation and
other emergency operations. Buses and other transport vans (other than those the services of which are required for evacuation purposes) which happen to be in the area likely to be directly hit by the cyclones are asked to move out of the danger zone quickly. Generally, transportation is prohibited on sections of roads and bridges which run the imminent danger of inundation due to flood water or are direct targets of the cyclone winds.

The Collectors see that dissemination of cyclone warnings to the public is made through the Sub-Collectors, Tahasildars, Block Development Officers, Public Relation Officers, Chairman of Panchayat Samities, Sarpanches and other Government and non-Government agencies in time. As far as possible, the local officers warn the people through beat of drums or sirens or any other technically sophisticated warning system. Simultaneously the people are advised to shift to safer places or to the cyclone shelters already notified by the Collector in advance.

**Cyclone shelters**

After the Super cyclone of 1999, robust cyclone shelters have been constructed by the State Government and the Indian Red Cross Society in the villages located within 10 km from coastline for providing shelter to the people in such highly vulnerable areas during cyclone. In addition to that, some flood shelters have also been constructed. A number of Pucca School buildings have been constructed in the cyclone affected areas by different Government and other agencies. These buildings are used for sheltering the people during a cyclone.

Every year the Collector undertakes a survey of the coastal areas vulnerable to storms, cyclones and tidal inundations prior to the cyclone season and selects suitable buildings for purposes of emergency shelter. In choosing these building in tidal inundation areas, special care is taken to select strong building in elevated places which can withstand both tides and high winds. The multi-purpose cyclone shelters constructed by State Government and Indian Red Cross Society are the first choice for the purpose. However, other buildings of public nature such as school buildings, community buildings, temples, mosques, churches in the vulnerable areas are selected as cyclone shelters. This selection is made by the Collector himself or by his subordinate officers and in the latter case the list is duly approved by him. The safety aspects of these buildings is checked by the local
engineer (not below the rank of Assistant Engineer) of Block, DRDA, RD, Works which is conducted every year before they are approved as cyclone shelters prior to the commencement of cyclone season. While identifying the cyclone shelters, these are earmarked for particular village(s)/hamlet(s) or part thereof and the people of the said village(s)/hamlet(s) or part thereof are made aware of such arrangement through suitable measures. This is also discussed in the concerned Palli Sabha and Gram Sabha meetings.

The Collector prepares a map indicating the location of the emergency shelters and safe buildings with names of the tagged village(s)/hamlet(s) which is widely circulated for information of the people. The list of shelters is also sent to all schools in the area for making the students aware of the arrangement by display of the same in the notice board/discussion with students by their teachers in classes/notice in the diary of the students/suitable other means. The list and map are also circulated among all the public offices in the area for information and display in their notice boards.

Evacuation Plan:

Evacuation of people is required when striking of a strong cyclone is imminent. IMD issues specific advisory for evacuation of people from low lying areas when that stage comes. Besides, where cyclone is likely to generate high tidal surge as per the forecast, evacuation from the entire area likely to be affected by such tidal surge is necessitated. Moreover, there are some very low lying areas especially on the sea-side which are likely to be easily inundated/affected even by a moderate cyclone and as such the people living there are evacuated in advance. Such villages are identified by the District Administration during preparation phase. The people are asked to vacate from low lying/vulnerable areas through radio broadcasts and telecasts through the television channels. Besides, the people are intimated to do so through announcement using loudspeakers. As far as practicable, the local officers such as BDO, Tahsildar, Executive Officer or any other local officer visit/send their staff to the areas likely to be affected to supervise and ensure that all people vulnerable to cyclone actually shift to cyclone shelters. Assistance of police is taken for the purpose. The people also take with them their cattle and other livestock property to take shelter on the ground floor of the shelter building meant for the purpose.

Once the people shift to the cyclone shelters, it is required to provide emergent
assistance in shape of food and other necessities. Prior arrangement remains in place for the same. The BDO/ Tahsildar/ Executive Officer/ any other local officer in charge make this provision. In the initial period, usually dry food stuff like chuda and Guda or sugar, biscuits, etc. are provided as it may not be possible to make cooking arrangement at the moment due to want of space, adverse weather or want of provision. As far as practicable, clothing is also arranged for the affected people, if it is absolutely necessary.

The local Veterinary Officer arranges fodder for the cattle and other livestock shifted by the people to the cyclone shelters, if so necessary.

Prior arrangements for this is made by the concerned officers.

**Other precautionary measures:**

Other precautionary measures before a cyclone occurs includes-

(1) Arrangement of vehicles, boats and organisation of relief parties for evacuation of people undertaking rescue and relief measures on receipt of alert warning from the Meteorological Centre as well as immediately after the disaster.

(2) Arrangement of dry food stuff and other necessaries of life for giving emergent relief.

(3) Provision of drinking water supply.

(4) Arrangements including stocking of disinfectants for disinfecting water sources after the cyclone.

(5) Standby provisions for sinking new wells and tube wells.

(6) Arrangement for disposal of dead bodies and carcasses which could be very large in number.

(7) Precautionary measures against epidemics and other health hazards.

(8) Advance arrangements for assistance of defence forces.

The concerned Departments make these prior arrangements. The Collector of the district must see to the preliminary arrangements done by the Departments and keep his higher authorities informed of the difficulties, if any. The active cooperation of the local
bodies is also taken in this matter. Preliminary arrangements against cyclones and tidal disasters may not be rigid and uniform in respect of all the districts. The Collector uses his discretion in making comprehensive arrangements, to tide over the crisis and to mitigate sufferings.

**Review of pre-cyclone arrangements**

As in the case of a flood, the Collectors as well as the Revenue Divisional Commissioners undertake review of pre-cyclone arrangements in the coastal areas prior to commencement of the cyclone season and furnish their review reports to the Special Relief Commissioner.

**Reporting of occurrence of cyclones, tidal inundation, etc.**

As soon as possible within 24 hours after the occurrence of cyclone/ tidal inundation, the local revenue officer i.e. the Tahasildar or Additional Tahasildar or in their absence the Block Development Officer intimates the Sub-Collector and the Collector by the quickest means of communication available or through special messenger, if needed, about the occurrence of the disaster, giving date and time of occurrence, details about the affected area, crops and other losses sustained etc. as readily available. The Collector on receipt of such information communicates the same to the Revenue Divisional Commissioner and the Special Relief Commissioner as well as to the other concerned authorities, to be followed by a more detailed report.

The Collector of the district then undertakes a quick review of the situation and furnish a detailed report with his suggestions as to the relief measures to be undertaken in the area. The Special Relief Commissioner forthwith places the report before the Government with his recommendations.

**Post-Disaster measures**

On the basis of the report received from the Collector, rescue and relief measures as may be necessary are taken up immediately in the affected areas. The concerned Departments of Government undertake immediate inspection of the affected area to be fully aware of the damage caused by the cyclone and take appropriate restoration measures.
Clearance of roads for the movement of traffic

It is likely that a large number of trees might be uprooted causing obstruction to traffic. The first measure that is taken up is to clear up these roads for movement of vehicles. The Works Department as well as the Rural Development Department lay down standing instructions for this purpose so that the clearance work is undertaken by the lowest executive without waiting for orders from the higher authorities, without waiting for any special instructions. A copy of such standing instructions is made available to the Collectors, the Revenue Divisional Commissioners and Special Relief Commissioner for information. The Collector coordinates and expedites this clearance. ODRAF units are involved for clearance of roads with mechanized tree cutters and other machineries available with them. Mechanized tree cutters provided to the Fire Service Units, Cyclone shelters, District office and others are also utilized for cutting the fallen trees for early clearance of roads. The help of the community members is taken and they are encouraged to clear the roads near their village to restore communication for relief movement. Heavy road clearing machineries available with nearby public/private sector industries and other establishments are also requisitioned and pressed into service for restoration of road connectivity.

Rescue of land relief to marooned people

The Sub-Collector sees that search and rescue parties with necessary boats, food stuff, etc. are immediately deputed to the affected areas both for rescue and relief purposes. Emergent relief in the form of food, clothing and shelter are provided to such people either at the cyclone shelters or in their villages, by arranging improvised materials like tents, tarpaulins, bamboo mats, etc. if necessary.

Disposal of dead bodies and carcasses

Necessary steps are taken for disposal of dead bodies and carcasses. The Collector of the district must see that immediate attention is bestowed to this work.

Requisition for assistance of defence forces:

In case of grave disaster, if the relief and rescue operations undertaken by civil authorities prove to be inadequate, assistance of defence forces is requisitioned. The Special
Relief Commissioner undertakes an immediate review of the situation and submits proposal regarding requisition of defence forces to provide assistance in undertaking relief and rescue operations.

**Restoration of communication**

Restoration of communication is essential for arranging relief measures in the affected areas. All the roads leading to the affected areas are immediately repaired for the purpose of movement of traffic and transport of relief goods.

Similar attention is paid by the central authorities for restoration of telecommunication systems and the railway tracks.

**Arrangement of drinking water**

During a cyclone, the drinking water sources get contaminated due to several factors. Therefore, immediate arrangement are made for supply of portable water in the affected areas. Then steps are taken to disinfect the drinking water tanks, tube wells and wells. Tube wells are also be required to be sunk in problematic areas and in saline inundated areas. Respective Departments take up this on priority.

**Missing of fishermen and fishing crafts**

In spite of the regular warning of cyclone, it is noticed that fishermen and fishing boats go to the sea in the coastal areas disregarding the warnings or being ignorant of the dangers involved. Very often report of their missing is received. The District Administration, Fisheries & ARD Department and the Port Authorities coordinate in forming search and rescue parties to render necessary help to such fishermen and fishing vessels.

In order to facilitate identification and rescue, the fishermen are encouraged to adopt some readily distinguishable coloured dress, like red shirts or turbans or scarves. Such people should also be trained to hoist red flags in marooned villages and boats.

**Restoration of power**

It is necessary to assign priorities for restoration of power. The essential services like hospitals, All India Radio, Doordarshan, water supply, airfields, Meteorological Department are given priority.
Assessment of crop loss, human casualty, loss to live stock and other damage caused by cyclone tidal bore, flood etc.

The areas affected by tidal bore, areas subjected to saline inundation, areas affected by cyclone and flood are carefully assessed. At places where wind speed measurement apparatus are available the Collector tries to collect the figures from such centres and indicates the same in his assessment report in order to authenticate the loss statements.

There may be prospects of retrieval of crops in respect of damages done by normal or usual floods. But damages caused to crops by a cyclone, a high flood or tidal disaster, particularly in the month of October or November, may not be retrieved. Soon after the cyclone, assessment of damages to crops, houses and other properties is made forthwith by the concerned Departments of Government and the Collector in the same manner as prescribed for floods [in Paragraphs 74 and 75 of ORC].

Human casualty by a cyclone or tidal disaster far exceeds such casualty by any other type of natural calamity; The Collector causes to undertake a census of such casualty at the time of collection of damage statistics.

Authentic assessment of loss of cattle and other livestock is equally necessary.

Submission of report to the Government of India

On receipt of the final report on cyclone, etc., damages from the Special Relief Commissioner and the concerned Departments of Government, a report is prepared and submitted by the Revenue and Disaster Management Department to the Government of India, Ministry of Home Affairs and the other concerned Ministries.

Declaration of areas affected by cyclone

Usually the State Government issues a declaration indicating the areas affected by cyclone, etc. in order to enable the Government employees and others to get necessary help permissible under the Rules. This declaration is generally not issued in time due to delay in submission of necessary reports by the field officers. Hence all possible care is taken to avoid such delay by assessing the damages promptly.

Special Relief Commissioner submits a list of cyclone, etc., affected areas, Gram
Panchayat wise, indicating Block and district, along, with the final damage report, for consideration of Government for declaring such areas as affected areas.

**Assistance of Police**

(i) After a damaging cyclone or a tidal bore, the law and order problems may arise incertain spheres, Police, therefore, remains vigilant to the situation.

(ii) For proper conducting of relief operations police help is usefully taken.

(iii) Traffic control arrangements are tightened so that relief parties and trucks get preference in clearance and movement.

(iv) Many buildings in the affected areas might have been collapsed to the ground, while others might be in a state of dangerous inclined position. The broken electrical wires are another source of hidden danger. Such dangerous spots are identified and cordoned off by the police.

(v) Assistance of police is required for enforcing the orders of Public Health authorities.

(vi) Night patrolling in affected areas is enforced and intensified as necessary. Police also takes care of the salvaged and the unclaimed properties.

(vii) Police assistance is needed in enquiring into the causes of death during and after a disaster and in disposing of the dead bodies.

(viii) Police assistance is required for guarding relief articles and in maintaining law and order at the time of distribution of relief.

**Community preparedness programme and long-term measures**

(1) A devastating cyclone is swift, decisive and damaging. In the twinkling of an eye, large number of people become homeless or even lose their lives. Untold miseries are brought about. Community preparedness programmes are necessary and taken to lessen the disastrous impacts and to build up resistance to calamity and to afford necessary emergency protection. Such programmes envisage educating the people and for taking timely action in face of danger.

(2) No advance warnings of cyclones will be effective unless the public are properly
educated about action to be taken on receipt of such warnings and cooperate fully with the evacuation measures arranged by the Government agencies. In order to impact a broad practical background knowledge of the disaster, information pamphlets and brochures are widely distributed. Books on local languages written on natural calamities and relief operations are given to the rural libraries in villages of the calamity prone areas. Audio-visual materials are also shown to the public in convenient gatherings.

(3) Before the beginning of the storm seasons, the Collector organises meetings in April and September each year, by the District Public Relations Officer and staff in the rural areas and explain to the people the procedure for evacuation as well as measures to be taken for the safety of life and property.

(4) The Information & Public Relations Department have prepared documentary films on cyclones. The Oriya version of the films are exhibited widely in the coastal areas prior to and during the cyclone season.

(5) The Information & Public Relations Department also prepares some sample slides giving important information and instructions regarding actions to be taken during cyclones, which are shown in Cinema Houses or by mobile vans in coastal areas. Educative posters are also exhibited.

(6) Before the onset of the storm seasons, there are a series of talks over the All India radio and Doordarshan by the Meteorological and Administrative Officer(s) on natural calamities like cyclones and actions to be taken to face the problems. Conversational talks on cyclone in the rural programmes of the All India Radio Doordarshan are arranged from time to time.

(7) Instructive materials on tropical cyclones and protective measures to be taken are included in the educational syllabus in the school level.

(8) People are discouraged to live in low-lying and vulnerable areas and to shift to safer locations. In doing so, nothing is done to make the people feel panic, or to lose morale.

The Information & Public Relations Department, Education and Youth Services Department, Special Relief Commissioner, Revenue Divisional Commissioner’s and
Collectors bestow necessary attention to make this programme a success.

**Removal of old and dead trees**

During a cyclone many old and dead trees are uprooted and block the traffic. Such trees in cyclone vulnerable areas (i.e. in the coastal strip upto a depth of 60 Km.) are removed every year before the cyclone season. The designated Department looks to this precautionary measure, The Collector reviews this position and indicate the problem, if any, in a report to be submitted to Government prior to the cyclone season preferably in April every year.

**Permanent cyclone shelters**

(1) Keeping in view the need to provide safe shelters to the people to save their lives during strong cyclones, steps have been taken to construct strong buildings as cyclone shelters in the coastal areas. In addition to that all community buildings, schools etc., should be designed in such areas keeping in view that these buildings may also be used as emergency shelters in times of necessity. Departmental and other public sector buildings need to be constructed in these areas may also conform to the specifications of these shelters.

(2) These shelters may be of two types i.e. (a) for the areas vulnerable to tidal inundation and (b) for the other areas prone to storms cyclones and high winds. The area subject to tidal inundation may be the coastal belt of about 15 Km width from the sea coast while the area subject to cyclone may be 15 to 60 Km further inland. The structures in the tidal inundation area must be two storey and may be constructed on competent technical advice.

(3) While constructing new buildings in the tidal inundation area, people should be advised to have high plinths and to construct two storey buildings if possible so as to withstand tidal inundation. Similarly, farmers are advised to raise platform (mounds) to stock the harvested crops to protect them from being washed away by tidal inundation.

**Construction of tidal breakers, Shelter belt plantations and coastal afforestation**

The entire coastal area had large forest growth. With the growth of population these forest growths have been gradually eliminated. As a result of this the coastal belt has been
subjected to the direct impact of the cyclones, storms and tidal surges. The designated Department takes protective and preventive measures for safeguard bandhs and embankments.

Plantation and afforestation programmes are very much necessary in these areas. Agriculture and Forest Departments have launched necessary schemes for the purpose. Departmental as well as private efforts are encouraged in these directions. The available forest covers are scrupulously safeguarded against unwise encroachments. The forest belt may be about one kilometre deep from the coast line to act both as a wind breaker as well a tide breaker.

Some amount of publicity on the good effects of these plantations and afforestation works among the people is necessary to enlist their cooperation in preservation of these assets.

**Reporting**

The Collectors shall follow the standard 4-phase reporting as in case of flood and other calamities.
Water Resources Department

Risk Analysis

An integrated risk analysis looks into both the probabilities and impacts of flooding. Modeling of river floods and/or storm surges forms an important part of the risk analysis. Flood Management Information System (FMIS) cell is functioning in the Water Resources Department, the cell is engaged in data management, information sharing, research, flood modeling. Considering the annual flood havocs, the basin wise vulnerable points have been identified and necessary precautionary measures have been taken. A list of vulnerable points as assessed during 2013 has given along with the map of the basin (Table 2).

List of vulnerable locations of all the basins

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Location</th>
<th>Irrigation Division</th>
<th>Name of The River</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rathapurusottampur</td>
<td>Puri Irr.Divn</td>
<td>Bhargavi right</td>
</tr>
<tr>
<td>2</td>
<td>Sunapada</td>
<td>Puri Irr.Divn</td>
<td>Bhargavi right</td>
</tr>
<tr>
<td>3</td>
<td>Kantisal</td>
<td>Prachi Irr.Divn</td>
<td>Devi right</td>
</tr>
<tr>
<td>4</td>
<td>Tainsal</td>
<td>Prachi Irr.Divn</td>
<td>Kandal left</td>
</tr>
<tr>
<td>5</td>
<td>Bauriakana</td>
<td>Nimapara Irr.Divn.</td>
<td>Devi right</td>
</tr>
<tr>
<td>6</td>
<td>Asan</td>
<td>Nimapara Irr.Divn.</td>
<td>Devi right</td>
</tr>
<tr>
<td>7</td>
<td>Dighala Kudhasahi</td>
<td>Nimapara Irr.Divn.</td>
<td>Kushabhadra left</td>
</tr>
<tr>
<td>8</td>
<td>Gauligaon</td>
<td>Aul Embankment Divn.</td>
<td>Baitarani right near Gualigaon</td>
</tr>
<tr>
<td>9</td>
<td>Maharakul</td>
<td>Aul Embankment Divn.</td>
<td>Gobindpur, Hadua, Madhuban TRE on Kharasuan right</td>
</tr>
<tr>
<td>10</td>
<td>Jharamal</td>
<td>Aul Embankment Divn.</td>
<td>Garadpur Iswarpur OAE on 'Brahmani Left'</td>
</tr>
<tr>
<td>11</td>
<td>Bhatapada</td>
<td>Aul Embankment Divn.</td>
<td>Keradagada Alatanga S/E on Hansua right</td>
</tr>
<tr>
<td>12</td>
<td>Gopalpur</td>
<td>Aul Embankment Divn.</td>
<td>Keradagada Alatanga S/E on Hansua right</td>
</tr>
<tr>
<td>13</td>
<td>Jagannathpur</td>
<td>Aul Embankment Divn.</td>
<td>Keradagada Alatanga S/E on Hansua right</td>
</tr>
<tr>
<td>14</td>
<td>Barkot</td>
<td>Aul Embankment Divn.</td>
<td>Keradagada Alatanga S/E on Hansua right</td>
</tr>
<tr>
<td>15</td>
<td>Koilipur</td>
<td>Aul Embankment Divn.</td>
<td>Keradagada Alatanga S/E on Hansua right</td>
</tr>
<tr>
<td>16</td>
<td>Pentha</td>
<td>Aul Embankment Divn.</td>
<td>Rajnagar Gopalpur S/E on Sea facing</td>
</tr>
<tr>
<td>17</td>
<td>Banaghat</td>
<td>Mahanadi North Divn.</td>
<td>Birupa left</td>
</tr>
<tr>
<td>18</td>
<td>Ganeshghat</td>
<td>Mahanadi North Divn.</td>
<td>Birupa left</td>
</tr>
<tr>
<td>19</td>
<td>Mula Basanta</td>
<td>Mahanadi North Divn.</td>
<td>Birupa left</td>
</tr>
<tr>
<td>20</td>
<td>Balipadia</td>
<td>Mahanadi North Divn.</td>
<td>Birupa left</td>
</tr>
<tr>
<td>21</td>
<td>Mandia Gherry</td>
<td>Mahanadi North Divn.</td>
<td>Chitrotpalla left</td>
</tr>
<tr>
<td>22</td>
<td>Orisha</td>
<td>Mahanadi North Divn.</td>
<td>Chitrotpalla left</td>
</tr>
<tr>
<td>23</td>
<td>Narasinghpur</td>
<td>Mahanadi North Divn.</td>
<td>Chitrotpalla left</td>
</tr>
<tr>
<td>24</td>
<td>Akhua</td>
<td>Mahanadi North Divn.</td>
<td>Chitrotpalla left</td>
</tr>
<tr>
<td>25</td>
<td>Khurusia</td>
<td>Kendrapara Irr. Divn.</td>
<td>Mahanadi left (Kodakana gherry at RD1.40Km)</td>
</tr>
<tr>
<td>26</td>
<td>Danpur to Kalapada</td>
<td>Kendrapara Irr. Divn.</td>
<td>Luna left</td>
</tr>
<tr>
<td>27</td>
<td>Musadiha</td>
<td>Mahanadi South Divn.</td>
<td>Mahanadi right</td>
</tr>
<tr>
<td>28</td>
<td>Itatikiri</td>
<td>Mahanadi South Divn.</td>
<td>C.E.No.62 B on Mahanadi right</td>
</tr>
<tr>
<td>29</td>
<td>Kula Samantrapur</td>
<td>Mahanadi South Divn.</td>
<td>Paika left (Sherapur OAE)</td>
</tr>
<tr>
<td>30</td>
<td>Sherapur</td>
<td>Jarka Irr. Divn.</td>
<td>Brahmani left (Sherapur OAE)</td>
</tr>
<tr>
<td>31</td>
<td>Saranga Sahi</td>
<td>Jarka Irr. Divn.</td>
<td>Tantighai right (Bhanra TRE)</td>
</tr>
<tr>
<td>32</td>
<td>Radhadharpur</td>
<td>Jarka Irr. Divn.</td>
<td>Kelua (Rahapada Mohanpur TRE)</td>
</tr>
<tr>
<td>33</td>
<td>Kochila mouth near Daspur</td>
<td>Jajpur Irr. Divn.</td>
<td>Kochila mouth on Baitarani left embankment</td>
</tr>
<tr>
<td>34</td>
<td>Mohammadpur</td>
<td>Jajpur Irr. Divn.</td>
<td>Kharsuan right</td>
</tr>
<tr>
<td>35</td>
<td>Tala Astar</td>
<td>Jajpur Irr. Divn.</td>
<td>Baitarani left</td>
</tr>
<tr>
<td>36</td>
<td>Balarampur</td>
<td>Jajpur Irr. Divn.</td>
<td>Baitarani right</td>
</tr>
<tr>
<td>37</td>
<td>Dasandhikula</td>
<td>Jajpur Irr. Divn.</td>
<td>Baitarani left</td>
</tr>
<tr>
<td>38</td>
<td>Mugupur</td>
<td>Baitarani Divn.</td>
<td>Baitarani left embankment</td>
</tr>
<tr>
<td>39</td>
<td>Govindpur</td>
<td>Baitarani Divn.</td>
<td>Baitarani left embankment</td>
</tr>
<tr>
<td>40</td>
<td>Mankidia</td>
<td>Balasore Irr. Divn.</td>
<td>Subarnarekha right</td>
</tr>
<tr>
<td>41</td>
<td>At RD 2.85 to 2.93Km near village Kuli</td>
<td>Salandi Canal Divn.</td>
<td>Baitarani left</td>
</tr>
<tr>
<td>42</td>
<td>Hindula to Munisipentha</td>
<td>Berhampur Irr. Divn.</td>
<td>Rushikulya right</td>
</tr>
<tr>
<td>43</td>
<td>Allipur</td>
<td>Bhanjanagar Irr. Divn.</td>
<td>Badanadi left</td>
</tr>
<tr>
<td>44</td>
<td>Kinigaon</td>
<td>Chikiti Irr.Divn.</td>
<td>Vamsadhara left</td>
</tr>
<tr>
<td>45</td>
<td>Gudari Near PWD rest Shed</td>
<td>Chikiti Irr.Divn.</td>
<td>Vamsadhara left</td>
</tr>
</tbody>
</table>
Field officers of Water Resources Department will remain alert for watch and ward of the embankments constantly at vulnerable locations and patrolling will be done at other places once the danger level is touched. Special attention is required to be given to new embankments and also to old embankments where breaches occurred in the past. The flood contingent materials like sand, empty cement bags, bamboos, bullahssshould be kept ready at all strategic locations for meeting eventuality like breach / overtopping of embankments. The details of activities to be undertaken for flood watching, before and during floods are listed below.

- Repair of rain cuts are to be made.
- Scoured points are to be covered with sand bags with bullah piling, if necessary, before flood situation arises to avoid further damage. Geotextile or simple polythene sheets may be spread below sandbags if the soil is of less rigidity in
order to arrest further scour.

- Round the clock watch and ward arrangement at vulnerable points will be made once flood water touches the embankment and the water level shows a rising trend. Patrolling for this purpose will continue till water finally recedes from the embankment.
- The rivers are to be carefully watched for scouring and erosion of banks for taking necessary precautionary measures.
- Special vigilance is necessary in the countryside to detect any formation of boils due to seepage. This is to be immediately attended to by providing loading berm to counter balance exit gradient. A suitable filter material may be placed around boiling point below the loading berm to arrest fines in seepage water.
- Seepage under embankment through the sand stratum may be seen emerging on the countryside in the form of bubbling springs. As a protective measure, embankment of earth filled sacks may be built around them for ponding the water and thus a head on the countryside is created sufficient to stop the flow of silt by minimizing the effective head of water.
- Overtopping and washing out of a portion of embankment will have to be prevented by providing dowels at the riverside top of the embankment with sand / earth filled bags. The bags are to be filled to half only so that they remain closely against each other.
- In case of emergency, earth may be taken from the back slope of levee much above the hydraulic gradient line with respect to maximum flood level.
- If scouring is noticed, the point of scour would be immediately attended to reduce the rate of scouring during flood. Bamboo grids may be lowered at the scouring point attached with mats and tightened rigidly to remain undisturbed. The place in between bamboo grid and the eroded embankment surface may be filled up with brushwood. This point would be immediately restored before next flood in the same season.
- The Breaches, if occurred, will also be temporarily closed keeping in view possible further flood attack.
- Community participation will be encouraged for flood watching and flood fighting
activities/ measures.

- Co-operation of NGOs will be sought.
- The canals running parallel to the river embankments should be charged with full supply during high flood situation in order to counter the river side water pressure on the embankment.

**Pre-flood measures**

A Junior Engineer is responsible for efficient flood management within his jurisdiction. A high level of alertness and resourcefulness are expected from the Junior Engineer for the above purpose. He should essentially be faithful to the Government and get thoroughly involved in all activities and discharge his duties sincerely.

He is entrusted with the following responsibilities

- Identification of vulnerable points, weak embankments and other problematic areas.
- Survey, investigation and preparation of estimates for raising and strengthening of embankments to design section, treatment of all piping points noticed during previous floods as per records maintained in the register, all flood protection works, procurement of flood fighting materials required for the embankments in his charge by 20th April.
- He will see that all departmental vehicles, boats, lunches are in working condition. He will also arrange all tools and equipment like torch, hurricane lamps, spades, etc. by 15th May.
- His duty comprises timely and efficient execution and completion of temporary / permanent flood protection works, repair of embankments to design section, breach closing works, treatment of gauge posts by painting, greasing etc. and collection of flood fighting materials at site by 1st week of June.
- The gates of all major, medium and minor dams, drainage sluice and canals are be checked, repaired if necessary by 1st week of June.
- The Junior Engineer has to certify in the log book of gates maintained by his section office that the maintenance and repair have already been done and all the gates are operational.
• Measurement of all the permanent / temporary flood protection works must be recorded before the monsoon flow starts in the river or by 15th June whichever is earlier with due acceptance of the executing agency.

• A Junior Engineer has to carefully record the level and slope of all the front and loop embankments after the year’s maintenance raising is completed and keep the record in his custody.

• He is responsible for the proper custody of the monsoon period materials stacked at strategic locations. Accordingly he is to arrange necessary watch & ward for the purpose till their utilization during flood watching.

• He has to display the notice boards containing the nature of vulnerability at all the strategic locations like previous breach points, piping points, scouring points etc. for public awareness.

**Measures during flood**

• Junior Engineer concerned with his field staff will keep a sharp watch on the embankments during flood.

• He will prepare a duty chart for each embankment under his jurisdiction.

• He is required to see that all leaks, wave-wash action and wetting of embankments are properly attended to and that the entire establishment is doing the work allotted to them.

• He will observe the gauge readings, velocity of river flow by current meter or floats at critical and important points along the embankment and will also note the direction of flow during flood.

• He always remain in touch with the Assistant Engineer during flood watching and apprise him of the situation.

• In case of any emergent situation like piping, overtopping, scour of embankment or any other threat, he has to take appropriate steps to attend to the need in the absence of higher authorities with intimation to the Assistant Engineer.

• The J.E is to keep contact with the local bodies and NGOs for flood management in their respective jurisdictions.
• He has to keep his mobile phone in operative mode during high flood for instant communication.

• He has to record all the piping points in the register for permanent repair before the monsoon of the next year.

• He has to mark the high flood level of the year and keep record of its for reference.

**Post-flood measures**

• As soon as the flood record, the Junior Engineer concerned has to open the sluice gates for release of drain water.

• He has to assess the damages due to flood immediately through personnel verification, prepare the flood damage report and submit the same to the Assistant Engineer as promptly as possible, not later than one week in any case.

**General**

The Junior Engineer concerned has to take the levels of river bed at 3 year intervals or if any change is noticed in order to find out any change in river bed or in its course, measure the scour lines of the river bank and incorporate the same in the scour line map maintained at his section and report to his next higher authority.

**Role of Assistant Engineer**

An Assistant Engineer will remain in charge of the embankments and will be responsible for everything that occurs in his jurisdiction. The duties and responsibilities of the Assistant Engineer in flood management are as follows:

**Pre-flood measures**

• The Assistant Engineer concerned will inspect the embankments in his jurisdiction to suggest to the Junior Engineer, the nature and type of flood protection or flood fighting works to be taken up before monsoon and check at least 50% levels or measurements taken by the Junior Engineer for preparation of all the flood preparatory estimates. He shall ensure that the above estimates are prepared and submitted to the Executive Engineer by 30th April.

• His responsibility is to see that all the river embankments are repaired to designed section, breaches are closed, gauge posts are painted before 1st week of June.
• He will see that all the ongoing temporary / permanent flood protection works are completed by 1st week of June.

• He will check measure all the ongoing or completed flood protection works positively before arrival of monsoon flow in the river or latest by 15th June.

• He will ensure that the required flood fighting materials are collected and stacked at strategic locations by 15th June and check at least 50% of materials. He will make arrangement for procurement of more materials in case of exigency.

• He will ensure that all the gates are made functional and the drains are cleared of silt and vegetation by 1st week of June.

• The Assistant Engineer will certify in the log book of gates maintained by the Section Officer that the maintenance and repair have already been done all the gates are operational and submit the copy to the Executive Engineer.

• He will check at least 50% of the free board statement prepared by the Junior Engineer and give a certificate that he has satisfied himself with regard to the correctness of the level of the top and of all flood embankments and submit the copy to the Executive Engineer.

**Measures during Flood**

• The Assistant Engineer concerned will remain in touch with the local bodies, N.G.Os for community participation during flood fighting.

• His establishment during flood watching consists of Junior Engineers, Work Mistries, Work Sarkars, Mates and Khalais.

• He will arrange proper distribution of patrol establishment for due discharge of duties keeping in view to various needs at different points.

• He will remain in contact with his Junior Engineers and keep himself in touch with up-to-date conditions of the embankments and river in his charge.

• During high floods the Assistant Engineer will visit the embankments continuously so that he can keep watch on the patrolling staff and find out the problems for taking immediate measures.

• Apart from engaging of patrols, he will keep one or two teams reserved at convenient place for employment when emergency arises.
• It is the duty of the Assistant Engineer to inform about the situation to the Executive Engineer everyday and to make suggestions for the efficient management of flood.

• The Assistant Engineer will encourage the participation of N.G.Os and local bodies for watch & ward and flood fighting during flood.

• In case of occurrence of any breach or overtopping, the Assistant Engineer will at once inform the Executive Engineer, Superintending Engineer, Chief Engineer and local/district administration for taking immediate precautionary measure for the safety of the lives and property of the local people.

• During the entire flood period, the Assistant Engineer will have to keep his mobile phone in operative mode for direct communication.

**Post-Flood Measures**

• The Asst. Engineer has to verify and consolidates the flood damage reports submitted by the JEs and submit the same to the Executive Engineer immediately.

**General**

The Assistant Engineer will check the levels and measurement of river bed and the scour lines of the river bank after the flood situation is over and incorporate the same in the scour line map and report to the Executive Engineer.

**Role of Executive Engineer**

An Executive Engineer is the officer, fully responsible for smooth flood management of his jurisdiction. The duties and responsibilities of the Executive Engineer during flood are as follows.

**Pre-Flood Measures**

• The Executive Engineer concerned will inspect all embankments, sluices, gauge stations, flood protection works and cross check the flood fighting materials kept in readiness by the end of 15\(^{th}\) June. He will satisfy himself about the arrangement and report to the Superintending Engineer.

• He will check some of the gates randomly and countersign on the certificate of the log book and submit copies of the same to the S.E. before 1\(^{st}\) week of June.
• He will countersign the certificate of free board statement of all embankments with a minimum check of 10% and submit the copy of the Superintending Engineer for record.

• He should be vigilant and keep track of flood situation at all the vulnerable points under his jurisdiction.

• During high floods the Executive Engineer has to make contact with S.E./C.E. & District Administration and inform them about the flood situation at different locations at regular intervals. The interval is to be reduced depending on the seriousness of the situation.

• The Executive Engineer concerned will have to take immediate steps for flood fighting measures, when he suspects that an abnormal condition may occur and intimate the District Administration and Superintending Engineer.

• For anticipated inundation of the low lying area, the Executive Engineer has to inform the local/district administration for immediate evacuation of the people to safe places in advance.

**Measures during Floods**

• In case of occurrence of any breach or overtopping, the Executive Engineer will immediately inform the district Collector to provide immediate relief and undertake rescue operation for the affected population with intimation to the Superintending Engineer and Chief Engineer. If possible, the Executive Engineer will take steps for temporary closing of the breach.

• He will always be available for ready communication through his mobile phone.

• Post-Flood Measures

• Damage reports will be consolidated and communicated to S.E. and Collector concerned for necessary action.

**General**

After the flood season, the Executive Engineer will submit a detailed report to the Superintending Engineer about the change of river course, if any, and the village map marked with scour line with his counter signature for record.
Role of Superintending Engineer

The Superintending Engineer concerned is the controlling officer for repair and maintenance of the flood embankments. He will monitor the watch and ward of the entire length of embankments of his circle and will remain responsible for all occurrences.

- He will inspect some of the flood protection works, all vulnerable points, all breach closing works and repair works of embankments at random positively by end of 15th June and will issue instructions to the field staff for any remedial measures and furnish a report to the Chief Engineer mentioning the overall flood preparedness relating to his circle.

- He will keep record of free board statement of all embankments under his control. A graph would be drawn to compare the actual top level and the ground level with the highest flood level of the previous year and the other flood years as the interval of one kilometer.

- He will make additional arrangement for flood watching wherever needed by deputing technical staff from other places within his circle.

- He may place requisition for additional technical staff to the Chief Engineer for smooth flood management if he feels serious shortage of staff.

- He will not leave the head quarters during high flood. In such a situation if he wants to leave the head quarters due to any unavoidable reason, he will take prior permission of the Chief Engineer before leaving the head quarters.

- The Superintending Engineer concerned will be in touch with the Chief Engineer at hourly intervals and apprise him of the latest developments after receiving message from the Executive Engineers.

- After receiving message of any abnormal incident, which has occurred or about to occur from the Executive Engineer, he has to rush to the site and suggest appropriate measures to manage it efficiently with intimation to the Chief Engineer.

- He will always make himself available during the high flood through his mobile phone.

- Immediately after recession of each flood, the Superintending Engineer will submit a detailed report to the Chief Engineer about the extent of damage and the approximate cost of their restoration after consultation with the Executive Engineers concerned.
Role of Chief Engineer / Chief Engineer and Basin Manager

The Chief Engineer & Basin Manager, LMB is the reporting officer in the flood situation for the entire state and is directly responsible to the Government. The field Chief Engineers / CE & BMs are the reporting officers for the area under their jurisdiction.

- The Chief Engineer will make random visit to vulnerable points in order of importance basing on the report of the Superintending Engineers and furnish a brief report on flood preparedness to the D.O.W.R/S.R.C/CE&BM, LMB.
- He may depute some Executive Engineers, Assistant Engineers of Junior Engineers working in the unaffected areas with no flood duty to the divisions having important and dangerous vulnerable points to serve as additional hand during high flood after getting requisition from the Superintending Engineers.
- The Chief Engineer will always be in touch with Government during flood watching and intimate the developments to the Government.
- During flood in any river, the Chief Engineer will be in constant touch with the CWC & IMD and directly monitor the situation.
- He will keep in constant touch with the field officers on flood duty and control the system from the control room.
- He will collect information on the status of reservoirs within the State and those of other States for interstate rivers.
- In case of any abnormal incident which has either occurred or is about to occur, the Chief Engineer will jointly inspect the site with the concerned S.E. and suggest immediate measures to manage it efficiently.
- Immediately after receipt of message about occurrence of any breach or submergence of the embankment, the Chief Engineer will intimate to the D.O.W.R./S.R.C with details of the location, the time of occurrence, nature of damage for starting relief and rescue operation.
- After each flood, the Chief Engineer will submit a detailed report to the Govt. mentioning the cause of the flood, the extent of damage and the approximate cost of their restoration as early as possible.
# Action Plan

## Physical action to be taken by officials

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Designated Officer</th>
<th>Responsibility</th>
<th>Stipulated date</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Junior Engineer</td>
<td>Responsible for efficient flood management, alert, resourceful, faithful to Govt, and needs to thoroughly involve in all activities.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Pre- flood measure</td>
<td>Identification of vulnerable points</td>
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<td></td>
<td>Survey, Investigation, Estimates of all raising of embankments</td>
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<td>Checking working condition of vehicles, boats, launches. Arranging torch light, petromax, lanterns, candles, spades</td>
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<td></td>
<td>Completion of execution of all temporary/ Permanent flood protection works, Repair of embankments, breach closing, Treatment of gauging sites, Collection of flood fighting materials at site</td>
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<td>Repair of gates of all major, medium, minor dams, drainage sluices, canals. JE to certify the log books of all gates as operational</td>
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<td>Measurement of all flood protection works temporary or permanent with acceptance of executants</td>
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<td></td>
<td>Certifying all level books Proper custody of monsoon materials Displaying and maintaining notice boards at strategic locations</td>
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<td></td>
<td></td>
<td>During flood</td>
<td>JE and his field staff watch embankment</td>
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<td>JE to prepare duty chart</td>
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<td>Check leakage, wave wash, embankment related, keep record of all piping points</td>
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<td>Apprise to the Asst Engineer about the situation Keep coordination with local bodies</td>
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<td>Mobile phone on operative mode</td>
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<td></td>
<td>Post flood</td>
<td>Opening sluices for draining flood water</td>
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<td>Prepare Flood Damage Report and submit to AE</td>
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<td></td>
<td></td>
<td>General duty</td>
<td>River bed level measurement</td>
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<td></td>
<td><strong>Assistant Engineer</strong></td>
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<td></td>
<td><strong>In-charge of embankments and responsible for happenings under his jurisdiction.</strong></td>
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<td>2</td>
<td><strong>Pre- flood measure</strong></td>
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<td></td>
<td>Inspect the embankment and suggest JE about the type of flood protection needed</td>
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<td></td>
<td>Verify all breaching closed, gauge posts painted</td>
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<td></td>
<td>Ensure functioning of all gates and certify the log books to next higher authority (EE)</td>
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<td></td>
<td>Check measurement complete of all flood protection works</td>
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<td></td>
<td>Ensure collection of all flood fighting materials</td>
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<td></td>
<td>Check measure 50% of all flood embankments</td>
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<td><strong>30&lt;sup&gt;th&lt;/sup&gt; April</strong></td>
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<td>1&lt;sup&gt;st&lt;/sup&gt; week of June</td>
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<td>15&lt;sup&gt;th&lt;/sup&gt; June</td>
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<td></td>
<td><strong>During flood</strong></td>
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<td></td>
<td>Remain in touch with local bodies, NGOs and other bodies.</td>
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<td></td>
<td>Arrange and distribute patrol establishments and reserve team for any exigencies.</td>
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<td>Contact with JE and other staffs.</td>
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<td>Updating higher officer</td>
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<td></td>
<td>Mobile phone on alert mode</td>
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<td><strong>Post flood</strong></td>
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<td></td>
<td>Verify FDR and submit to EE</td>
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<td></td>
<td><strong>General duty</strong></td>
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<tr>
<td></td>
<td>Check levels of river bed, scour line, top bank</td>
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<td></td>
<td><strong>Executive Engineer</strong></td>
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<td></td>
<td>Fully responsible for smooth management of flood</td>
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<td>3</td>
<td><strong>Pre- flood measure</strong></td>
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<td></td>
<td>Inspect embankments, breaches, all flood protection works, gauges and report to SE.1</td>
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<td>Randomly checking gates and signing log book</td>
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<td></td>
<td>Countersign all free board statements of embankments (check measure 10%) and report to SE</td>
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<td>Remain vigilant and report to next higher authority.</td>
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<td>Capable of taking immediate steps</td>
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<td></td>
<td>For anticipating inundated area inform to local or district administration</td>
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<td><strong>15&lt;sup&gt;th&lt;/sup&gt; June</strong></td>
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<td></td>
<td>1&lt;sup&gt;st&lt;/sup&gt; week of June</td>
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| **During flood** | In case of breaching inform district administration for relief Can take step for breach closing immediately. In relation with all top and bottom officers and mobile on active mode. |
| **Post flood** | FDR to be sent to SE and Collector |
| **General duty** | Submit a detailed report after flood to SE |

### 4 Superintending Engineer

Controlling officer for repair and maintenance of flood embankments.

| **Pre- flood measure** | Inspect embankments and vulnerable points Instructing to field and reporting to CE Keep record of free board statement Keep additional arrangement of flood watching May arrange additional technical staff. |
| **During flood** | Not to leave HQ without permission of CE Inform CE hourly latest updates after receiving the same from EE, Available on mobile phone |
| **Post flood** | Submit a detailed flood report to CE |

### 5 Chief Engineer

Reporting officer on flood situation, responsible to state.

| **Pre- flood measure** | Inspect random vulnerable points and report to DOWR/SRC/CEBM,LMB. May depute Engineers of other to flooding areas. |
| **During flood** | Updating flood situation to Govt. Constant touch with CWC, IMD., field officer, control room Collect information on status of reservoir and that of other states, For any abnormal happenings joint verification with SE and suggest for immediate measure. Immediately informing breach details to DOWR/ SRC during a breach. |
| **Post flood** | Submit a detailed flood report to Govt. mentioning cause, damage, breaching. |
## Long term actions and responsibility

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Infrastructure</th>
<th>Risk Expected</th>
<th>Proposed Strategic Outlay</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dam</td>
<td>• Dam Break;</td>
<td>• Mathematical dam break model will be prepared; • Corresponding risk map for dam break along with evacuation route and Safe shelter location will be finalized; • Pre-depletion of the reservoir in conformity with rule curve and downstream conditions; • Dredging of the reservoir, silt clearance through excluder; • Raising dam and embankment heights; • Catchment treatment.</td>
<td>EIC Water Resources in co-ordination with CWC</td>
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<td></td>
<td></td>
<td>• Excess Inflow;</td>
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<td>• Reduction in Storage Space.</td>
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<tr>
<td>2</td>
<td>Embankment</td>
<td>• Over Topping;</td>
<td>• Dredging the river bed; • Raising embankment heights; • Consolidation of the embankment; • Identification of weaker location and necessary measure (slope protection, toe wall, spur, stone pitching and vegetative coverage; • Awareness among people for protection of embankment.</td>
<td>EIC Water Resources along with concerned division and local community</td>
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<td></td>
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<td>• Seepage;</td>
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<td>• Breach &amp; Cutting;</td>
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<td></td>
<td></td>
<td>• Erosion.</td>
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<tr>
<td>3</td>
<td>Canal</td>
<td>• Breach &amp; Cutting;</td>
<td>• Awareness among farmers and Water User Association for the protection and maintenance of Canal.</td>
<td>EIC Water Resources along with Water User Association.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Blockage of canal passage.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Health and Family Welfare Department

The Health and Family Welfare Department takes up preparedness measures for addressing different disasters like heat wave, floods and post disaster outbreak of epidemics before the onset of the seasons. State preparedness for flood starts in the month of April each year ahead of monsoon on the basis of the risk analysis mentioned below.

**Risk analysis**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Hazards/Disaster</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Flood /Cyclone/ Thunderstorm/ Flash-flood</td>
<td>High due to loss of life, injury, disability, waterborne &amp; vector-borne disease outbreaks, psychosomatic disorders. Damage to health facilities, equipments, instruments, essential drugs &amp; logistics</td>
</tr>
<tr>
<td>2.</td>
<td>Heat wave&amp; Drought</td>
<td>High Public Health Importance due to climate change&lt;br&gt; Sudden rise of temperature, heat regulatory system of human unable to maintain body temperature around 37°C. Heat Stress disorders are common following high environmental temperature&lt;br&gt; Food &amp; water shortage during Drought&lt;br&gt; Nutritional deficiency disorders &amp; Water borne disease outbreaks due to water scarcity.</td>
</tr>
<tr>
<td>3.</td>
<td>Infectious disease outbreaks</td>
<td>High due to public health importance. If not contained it may lead to high mortality &amp; morbidity in a short time.</td>
</tr>
<tr>
<td>4.</td>
<td>Chemical poisoning/earthquake/Tsunami/Accidents/Others</td>
<td>High as Mass Casualty may occur. Department does not have adequate capacity to handle such disaster. This requires a multidisciplinary approach &amp; hospital preparedness</td>
</tr>
</tbody>
</table>

Teams at different levels have been constituted to coordinate the response activities to tackle disaster situations.

**Role of State Rapid Response Team:**

- Coordinate with Government of India, State Government and other related Departments from time to time as per demand of the situation for resources, assistance, information sharing, logistic support, Apex laboratory- support.
• Rapidly assess the magnitude of the problem, population at risk, source of infection, vehicle of transmission, probable cause of the disaster from the data available from the field and share the information with control room at state & districts.
• Assess & train the staff, provide technical support to the field functionaries as & when required as per situation
• Ensure availability of funds at District and block level to meet contingency expenses.
• Plan & ensure availability of Drugs/logistic/equipments/instruments/mobility support to the district RRTs and other health service providers for response measures.
• Ensure deployment or reallocation of manpower in the affected areas of disaster as situation demands.
• Daily Update state database about the cases & Deaths occurring during the disaster
• Develop the media messages & up to date status of disaster mitigation and response work to the control room.
• Maintain an inventory of all related guidelines, procedures, action plans, district maps and Contact numbers, financial records
• Document the lessons learnt from the disaster and share with higher stake holders

**Role of District Rapid Response Team:**

• Coordinate with Directorate, State RRT and District Authority for needful action & instructions from time to time as per situation.
• To activate the chain of commands for disaster response plan in accordance to the protocol & guidelines available in response to early warning sign
• Rapidly assess the magnitude of the problem, population at risk, source of infection, vehicle of transmission, probable cause of the disaster and share the information with control room at district, state and CHC.
• Rapidly prepare a health aid plan and procure required resources
• Management of overall response activities and providing hand holding support in the field
• To develop the media messages on field updates & share it with State Control room/district control room spokesperson
• To mobilise resources for response measures (Manpower /Mobility support/drugs/logistics/funds/others)
• To collect and store disaster related information for post incident analysis

Monitoring & Supervision:
• Regular monitoring and supervision are undertaken by the State and District Officials of the different IDSP Components implemented in the field level.
• State Nodal Officers are identified for all the 30 districts to monitor and supervise the ongoing preventative measures for diarrhoea in the district.
• Principal Secretary Health & FW conducts review of Water borne & Vector Borne Disease each month to assess the implemented programme components further plan for future months

Prepositioning of supplies

Drug procurement, storage & distribution are managed by State Drug Management Unit. There are 36 warehouses in the State i.e., Central Drug Store (CDS)-1, District HQ Hospital-32 and 3 Govt. Medical College & Hospital. Buffer stock of essential drug & disinfectants are maintained at CDS, Bhubaneswar. Besides the stock & store at the field, stock position is monitored daily and supplies are sent to different district warehouses sufficiently ahead of monsoon. Besides this 20% of drug budget is placed with Chief District Medical Officers to procure essential item as per the requirement. District Authorities are instructed to preposition supplies from ASHA onwards up to health institutions sufficiently ahead particularly in areas likely to be partially / completely marooned.
Mass Casulity Incident

Management at Health facility Level:

During Disaster

- As soon as any intimation is received regarding disaster, the CDMO immediately convenes a meeting of Disaster Committee members to discuss the different modalities of operation for the mass casualty incident.
- CDMO himself becomes the Incident Commander and coordinates all the activity from the control room located at ADMO (PH) Office. ADMO (PH) is second in command or the operation chief in charge supported by a team who are assigned different roles and responsibilities- transportation, store – in charge, liasioning Officer, logistic chief, planning chief etc. during any disaster with mass casualty.
- Immediately an ambulance with a team of MOs, Pharmacist, Attendant/Staff Nurse is dispatched to the site of Occurrence. Information is also sent to the nearby CHC/SDH/DHH from within or outside district to reach the spot.
- A control room is opened in the office of ADMO (Med) for all the necessary communication, case management, referral & coordination with other related deptts. (Blood bank, Radiology, Pathology)
- Control room has telephone, computer, printer, e-mail for transmission of information to the higher level and other related deptt. The list of contact numbers of Medical Officers & Paramedics of the hospital along with Police, Fire services, water, Electricity, Blood Bank, NGOs, Private Physicians are available with ADMO (Med).
- Immediately Inter Sectoral coordination is established with other related deptt. like Police, fire services Red Cross, Corporate & private hospital, ambulance services, NGOs, Voluntary Organization, Water, Electricity, Sanitation Deptt., Civil Defense, ESI, Railways, transport, etc to seek their assistance
- ADMO (Med) alerts ADMO (Med)/Specialists in Surgery /Orthopedics /Anesthesia /other ancillary staffs for the emergency
- Verification of prepositioning of drugs/logistics/other supplies, deployment of MOs & Paramedics, status of basic life support equipment, readiness of Operation Theater.
**On Site:**

- The cases are triaged by the attending doctor on the site. The cases are screened, minor injuries are given first aid, and prioritized cases are given preliminary treatment and then referred to nearby DHQ hospital/secondary/tertiary care. This depends upon the number of casualty and site of occurrence. After further resuscitation and stabilization of the cases they are further referred to nearby accredited hospital if required.

- When the number of mass casualty are overwhelming, one Medical Relief Center is opened in a Govt PHC/ CHC/ /School/Panchyat Office for immediate management.

- Mobile Medical Units with advanced life support systems & team of Doctors are sent to the site.

- Ambulances, 108 ambulances, other mode of transports are used for transportation of cases to & fro & to nearby hospitals after triage at the site camp.

- The nearby CHC/SDH/DHH of parent district or neighbor district supports in triaging & transport of cases to nearby hospital for resuscitation and stabilization.

**At Hospital:**

- When the disaster patient arrives doctor on duty at casualty receives and attends to them. After examination the case is re triaged and sent to the ward or given treatment for minor injuries and discharged or else referred to the next higher health facility if required.

- The OPD/IPD Deptt. is alerted regarding the incident and more MOs are pulled from other wards to manage the ongoing situation.

- Separate wards/beds are arranged on priority basis to address the surge of casualty.

- If the Mass casualties extend beyond 24 hours, MOs are deployed from other areas within and outside the district.

- Reception area with registration facility and help desks are opened nearer to the casualty.

- Patient Resuscitation area is located in the casualty where priority 1 patients are treated and stabilized immediately.

- Patient Observation area is located in the casualty where priority 2 patients are kept for sometime before getting definitive management.

- Minor Treatment area: This area is the dressing room located near the casualty where the priority 3 (walking wounded) can be managed and discharged.
- **Operation Theatre**: When disaster is declared, all the elective cases are deferred and OT is prepared for emergency victims.

- **Organization of Wards**: To vacate some Emergency ward, Surgery ward & Orthopedic ward will be required vacate some beds of elective patients by temporarily discharging them. In case some other beds are vacant, these patients can be taken up those beds.

- **Organization of the Mortuary**: The ADMO (Med)/Med Supt along with the mortuary services organizer will arrange for the preservation of the dead bodies.

- **Organization of Patient Transfer after stabilization**: Patient who cannot be further be treated are transferred to higher secondary/tertiary care hospital/accredited hospital by 108 ambulances for further treatment.

**Use of Hospital during Mass Casualty Incident:**
Disaster Committee formed and further strengthened at all the Three Medical Colleges & Hospital, Capital hospital, RGH, Sundargarh and all the DHQs to review, assess and further plan for other activities quarterly.

1. **State Disaster Response Steering Committee**
   - Principal secretary to Health & FW, Govt. of Odisha- Chairperson
   - MD, NRHM- Executive member
   - Additional Secretary –Executive member
   - Director Health Services - Executive member
   - Director Public Health – Nodal Officer
   - Director, Medical Education & Technology - Executive member
   - Dir. SIHFW - Executive member
   - Dir. Nursing - Executive member
   - Managing Director, Drugs Corporation (SDMU) - Executive member
   - Joint Director Public Health – Member
   - Deputy Director (IDSP)- Member
   - DGM- OSDMA- Advisor
   - Addl. Secretary (Scheme)- Member

2. **Disaster Response Committee at Medical College & Hospitals:**
   - Director/Dean/Medical Superintendent - Chairman
   - Medical Superintendent - Member
   - Head of Deptts.( Surgery, Medicine, Orthopedic, Anesthesia, Neurosurgeon )
   - Head of Ancillary Deptts. ( Radiology, Blood Bank, Laboratory)
   - Public Relation Officer
   - Officer I/C Medical Store
   - Nursing Superintendent
   - Engineer CPWD ( CIVIL)- Member
   - Engineer CPWD (Elect.)- Member
   - Blood bank Officer - Member
   - Chief Medical Officer I/C Casualty & Transport – Member secretary

3. **Disaster Response Committee at District Head Quarters Hospital**
   - Asst District Medical Officer (Medical)/ Medical Superintendent
- Casualty Medical Officer
- Surgery Specialist
- Orthopedics Specialist
- Anesthetist
- Medicine Specialist
- Pediatrician
- Blood bank Officer
- Radiologist
- Nursing Superintendant
- Store Officer, Radiographer, Account Officer
- Hospital Manager

- Control Room functioning in ADMO (PH) Office / Casualty for Epidemics/flood/Cyclones
- While Control room functions in the Office of ADMO (PH) during Mass Casualties.
- Emergency care services for mass casualty are provided :24X7
- SOPs and Guidelines are followed
- 30 DHQs, 27 SDHs, 3 Govt. Medical Colleges & Hospital, one Capital Hospital & One RGH are providing casualty services in the state 24X7.No. of functioning Casualty bed - 35 with 1304 beds.
- Drugs & Logistic management for additional mass casualties for which Buffer stocks of medicine is made available at district level.
- 108 Ambulances are deployed at strategic places in 15 districts
- Additional makeshift beds are arranged at all levels of hospital to accommodate the surge of casualty.
- Inter-sectoral coordination established with other related deptt. like Police, Civil Defence, armed forces, Red Cross, Railway, Corporate & private hospital, ambulance services, NGOs, Voluntary Organization, RD, H&UD, PRI Deptt. Water, Electricity, Sanitation Deptt., during emergency.
Accredited Hospitals/Accredited Laboratories are in place for case management and laboratory diagnosis.

**Operational Planning:**

<table>
<thead>
<tr>
<th>Area</th>
<th>Person responsible / logistics</th>
<th>Work assigned</th>
</tr>
</thead>
</table>
| 1. Registration area/ Triage Area | - Registration Officer on desk  
- Triage Doctors/Nurses  
- Adequate # MOs in Emergency room  
- Adequate trolleys/stretchers/wheel chairs  
- Hospital attendants                  | - Registration of case  
- Screening by Triage Criteria (1,2,3)                                                |
| 2. Emergency Deptt                | - Casualty MO/Doctor in Charge  
- Oxygen, IV Fluids, life saving drugs                                                      | Emergency case management                        |
<p>| 3. Definitive Care (O T s, WARDS) | Surg Spl/Ortho Spl/Neuro Surg/Cardiac Surg/other clinicians                                  | Case management                                  |
| 4. Intensive Treatment area Activation(ICUs) | Head of Anesthesiology/Critical Care/Medicine                                                  | Case management                                  |
| 5. Minor Treatment                | Nurses, attendants familiar with First Aid                                                      |                                                 |</p>
<table>
<thead>
<tr>
<th>Areas</th>
<th>first aid, splinting &amp; dressing</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Holding areas for relatives/Non injured</td>
<td>Social service providers/NGOs/CBOs</td>
</tr>
<tr>
<td>7. Decontamination Area</td>
<td>If needed as per Protocol</td>
</tr>
<tr>
<td>8. Essential ancillary services (Lab, Radiology, Pharmacy, radiology services, blood bank)</td>
<td>-Deployment or reallocation of radiographer Lab Tech, Pharmacist/nursing staff from Other non affected areas</td>
</tr>
<tr>
<td>9. Mortuary Service</td>
<td>Mortuary In Charge, &amp; a forensic Personnel</td>
</tr>
<tr>
<td>10. Hospital Dietary System</td>
<td>Kitchen staff</td>
</tr>
<tr>
<td>11. Sanitation Services</td>
<td>Ward attendants/Sweepers</td>
</tr>
<tr>
<td>12. Hospital Laundry &amp; Sterile Supply</td>
<td>Laundry in charge</td>
</tr>
<tr>
<td>14 Staff education &amp; trg.</td>
<td>MOS, ADMO PH, State Health officials</td>
</tr>
<tr>
<td>15. Disaster drills</td>
<td></td>
</tr>
</tbody>
</table>

**Emergency Response in first 24 hours:**

<table>
<thead>
<tr>
<th>Immediate (0-2 hrs)</th>
<th>Intermediate Response (2-6 hrs) Rapid Assessment</th>
<th>Intermediate Response (6-12 hrs)</th>
<th>Extended Response (12-24 hrs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State technical task force meeting</td>
<td>Health surveillance systems</td>
<td>Collect ion and analysis of information available though health surveillance and laboratory systems</td>
<td>Address mental and behavioral health support needs</td>
</tr>
<tr>
<td>Assessing the magnitude of impact</td>
<td>Laboratory functionality</td>
<td>Prepare and update information for shift change and executive briefings</td>
<td>Prepare for transition to extended operations or response</td>
</tr>
</tbody>
</table>

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### Action Plan to combat Flood / Cyclone

During flood / cyclone and its aftermath, water borne diseases commonly occurred in the community. To address such disasters, health functionaries located at state, district, block & villages need to make the following arrangements in advance.

1. **Functioning of Control Rooms:-**
   - From 15th June, the control Room will be operational 24X7 at the State, District & Block Head Quarter level.
   - During normal time control room should monitor the preparedness activities during pre-disaster, disaster & post disaster, dissemination of early warning on flood situation received from Revenue Authorities.
   - Ensuring initiation of implementation of public health measures, monitoring trend of diseases and cope with any situation arising out of disaster.
   - The line list of district RRT & block RRT with mobile No. of key nodal persons in the cut of areas should be available at district level.

2. **Identification of Flood / Cyclone Prone areas (Hazard Mapping) & Formation of Zones:-**
- The district authorities should identify flood / cyclone prone areas of the district (Block, G.P & Village wise with population) and the list of the affected health institutions based on the last flood / cyclone.

- While hazard mapping, the areas completely submerged / marooned during the last flood / cyclone should be mentioned.

- The districts may be divided into suitable zones keeping in view the operational aspects & each zone is to be assigned to an officer of the rank of ADMO/SDMO for supervision and monitoring and to ensure inter – departmental coordination for smooth implementation of activities.

- Coordination with revenue division needs to be done for identification of marooned/partially marooned areas, shelter homes, high land & low land areas.

3. **Casualty Services & Contingency Plan for Medical Relief Centre:-**

- During disasters arrangements should be made to provide casualty services 24X7 at all health institutions.

- Contingency plan to open medical relief centers (MRC) at strategic places to be planned in advance. Those centers should be located at strategic places, so that they can render services to disadvantaged population where existing infrastructures are likely to be ineffective.

- State experiences disasters/ flood/cyclone/epidemic each year, the contingency planning should be made in such a way that we need not do the same plan each year & people should be made aware about the plan.

- Mobile Medical team should render the services regularly to displaced persons at their place of shelter and in marooned villages.

- Steps may be taken to make the people aware about the availability of services of 108 ambulances in the districts where ever it is available.

4. **Contingency Plan for Mobile Health Team & Deployment of staff:-**

- Mobile health teams consisting of one M.O & one Paramedic are to be mobilized from DHH, SDH and non affected blocks within the districts. The teams should be kept in readiness for deployment in the flood / cyclone affected areas.
At State HQ contingency plan is in force for deployment of medical teams from medical colleges and other non flood / cyclone prone districts within a short notice. Keeping in mind the manpower required during the previous flood, the districts may intimate about the requirement of personnel from outside the district, in case of high flood.

5. **Supply of Drugs, logistics & Disinfectants:**

Taking into account the available stock & store position and utilization of drugs during the last flood / cyclone, the anticipated requirements of stock & store can be estimated. Accordingly the District Authorities should take necessary steps to procure medicine & disinfectants etc. from SDMU and ensure that adequate life saving drugs / disinfectants are available with all the health institutions and paramedical workers under their control. Ensure that stock & store are pre positioned sufficiently ahead in the areas likely to be marooned.

- Ensure availability of a minimum of five injection ASV vials (Anti Snake Venom) at PHC (N) and 10 injection ASV vials at Block PHC / CHC. The patient may be administered Inj. ASV as per the need without any ceiling.

- Make available ORS sachets at SC, PHC (N) and Block PHC/CHC of the district. A minimum of 100 sachets with Health Worker at Sub Centre level, 400 sachets at PHC (N) and 1500 sachets at Block PHC/CHC level. ASHAs to be provided with ORS sachets wherever stock is exhausted a minimum of 25 packets may be provided and stocks need to be replenished.

- Halazone tablets may be stored, 1000 tabs at each SC, 3000 tabs at PHC (N) and 5000 tabs at Block PHC/CHC level.

- In each PHC (N) at least 1 bag (25 kg) and at Block PHC/CHC, 3 bags of bleaching powder need to be stored to disinfect the source of drinking water.

- In case of health institutions likely to be affected and the areas likely to be cutoff, bleaching powder as per requirement need to be stocked at identified/alternate sites.

- Stock & store need to be replenished at all levels as & when required.
6. Ambulance Services:-

- All the Ambulances of different health institutions of the districts should be kept in readiness.
- Simultaneously, other vehicles have got to be repaired & kept in road worthiness as far as practicable so that they can be pressed in to service during emergency situation.
- In case of non availability of institutional ambulances, the ambulances may be hired using Untied/ RKS fund of NRHM.
- Where ever 108 ambulance services are available it must be utilised for referral of cases.

7. Disinfection of Drinking Water Sources:-

- Ensuring safe drinking water is of paramount importance to prevent out break of water borne diseases.
- Disinfection of all drinking water sources by bleaching powder must be undertaken routinely and frequently.
- Water quality analysis of different sources and distribution points is another important activity to be pursued, with the help of other departments like RD & RWSS etc.
- Tube wells/dyfunct tube wells can be made functional and disinfected.
- Adequate measures may be taken to distribute Halazone tabs and make people conversant about its use.
- Disinfectant (Bleaching power bag) should also be stored in cutoff areas in advance that are likely to be completely or partially marooned in flood.

8. Disease Surveillance (IDSP):-

- During emergency weekly surveillance system should adapt itself to a daily mode.
- Please ensure daily flow of information from different health institutions of the districts.
• The epidemiological situation of communicable diseases, flood/cyclone should be analysed daily at Block, District and State level to take immediate effective containment measures.

• Compliance reports of news items (morbidity & mortality) published in the daily news papers should be immediately sent to State HQ through fax / e. mail, after undertaking proper investigation.

9. Health Education:-

• District Mass Media organization (electronic, print, outdoor display), health service providers like M.O., AYUSHs, PHEIOs, MPHS (M & F), MPHW (M & F) should propagate the messages relating to personal hygiene, hand washing, safe drinking water, use of ORS, Halazone & Bleaching Power, Food Hygiene & Environmental sanitation to AWWs/ASHAs/SHGs/Villagers.

• The IEC campaign can be made successful & effective with the active participation of local NGOs, CBOs, FBOs & elected panchayat members and private sector units.

10. Additional Safety Measures:-

• In case of requirement of motor boats by the district for Medical Relief Operations, CDMOs to place requisition for motorboats from respective revenue authorities in advance.

• The life jackets supplied to the districts earlier should be utilized by Health personnel while rendering services in the flood / cyclone affected areas.

11. Inter Sectoral Coordination:-

• District natural calamity committee meeting to be conducted in the districts in the month of May to ascertain the requirement of boats, life jackets and other local requirements if any.

• Please keep liaison with District Magistrate – cum – Collector, officials of related line departments & NGOs for smooth management of medical relief operation.

12. Daily Reporting:-

• The days report in the prescribed format need to be sent to State HQ through E.Mail & Fax by 3 P.M of the next day.
Nature, frequency and intensity of disaster

Odisha is vulnerable to a large number of natural as well as man-made disasters, out of which flood and cyclone are very frequent. In the context of human vulnerability to disasters, the small, medium and economically weaker sections are the ones that are more seriously affected. They mostly keep livestock for subsistence income. Therefore livestock sub sector get affected as a consequence to disaster.

### Frequency and Intensity of Disasters

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Nature of Disaster</th>
<th>Frequency</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flood</td>
<td>Regular feature</td>
<td>High</td>
</tr>
<tr>
<td>2</td>
<td>Cyclone</td>
<td>Rare</td>
<td>Moderate to high</td>
</tr>
<tr>
<td>3</td>
<td>Drought</td>
<td>Every 3 – 5 years</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Disease Epidemic</td>
<td>Any time</td>
<td>High</td>
</tr>
<tr>
<td>5</td>
<td>Tsunami</td>
<td>Rare</td>
<td>High</td>
</tr>
<tr>
<td>6</td>
<td>Toranado/Heat wave/Earthquake</td>
<td>Less</td>
<td>Low</td>
</tr>
<tr>
<td>7</td>
<td>Industrial toxicity</td>
<td>Less</td>
<td>Low</td>
</tr>
</tbody>
</table>

### Causes of losses/damages

As elaborated earlier the impact of cyclone and floods to the livestock sector ranges from death of animal to many other complications leading to production loss and there by huge economic loss incurred by the owners. The possible losses have been analyzed and given below:
### Causes & Consequences or loss due to Floods and Cyclone in Livestock sector

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Causes of losses</th>
<th>Consequences/Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Water logging(During flood &amp; Cyclone)</td>
<td>Parasitic infestation, Contagious disease outbreak</td>
</tr>
<tr>
<td>2</td>
<td>Water surge due to flood</td>
<td>Animal die from hypothermia and drowning</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collapse of departmental buildings, damage to equipments and records</td>
</tr>
<tr>
<td>3</td>
<td>Damage of feed &amp; fodder</td>
<td>Feed shortage</td>
</tr>
<tr>
<td>4</td>
<td>Shed damage</td>
<td>Injury to animals</td>
</tr>
<tr>
<td>5</td>
<td>Water scarcity</td>
<td>Affect general health condition</td>
</tr>
<tr>
<td>6</td>
<td>Crop loss and non availability of Paddy straw and other byproducts for Cattle feeding In case of drought</td>
<td>Production loss, Distress sale</td>
</tr>
</tbody>
</table>

The impact of a disaster can be categorized as direct, indirect or tertiary. Apart from the public health consequences of disasters, such as zoonotic diseases and the threat to the food supply, disasters also have negative economic consequences. Livestock provide milk, meat, traction power for farming and transport, dung, hides, etc., animals also provide a relatively safe investment option and give the owner social importance. Disasters affecting livestock is therefore have a negative impact on the livelihood of the people by reducing an important source of income in rural areas.

When animals are affected by disaster, the following problems occur:

a. Zoonoses
b. Animal bites
c. Impact on public mental health due to the emotional involvement of the owners with the animals
d. Reduced dairy and livestock production, due to the scarcity of feed and water, high livestock mortality rates
e. Spread of diseases and loss to domestic and wild animals
Hazard analysis based on spread, and its effect by various hazards

As livestock sector is vulnerable to all sorts of disasters an attempt is made to find the outcome for each type of hazard which is compiled in Table-11.

Table-11 Types of disaster, its entity, stimulus and possible outcome

<table>
<thead>
<tr>
<th>Nature</th>
<th>Entity</th>
<th>Stimulus</th>
<th>Outcome</th>
</tr>
</thead>
</table>
| Flood           | Flood prone areas       | Increased frequency and intensity of rainfall | Livestock loss
|                 |                         |                                               | Damage to shed                                                        |
|                 |                         |                                               | Disruption to road transport affects milk procurement by OMFED         |
|                 |                         |                                               | Drop in milk yield                                                     |
|                 |                         |                                               | Water borne disease                                                   |
|                 |                         |                                               | Damage to Institute buildings                                         |
| Cyclone         | Coastal Areas           | Storm                                         | Injury and loss of animals                                            |
|                 |                         |                                               | Stress to animal                                                      |
|                 |                         |                                               | Damage to Institute buildings                                         |
| Earth Quake     | Seismic zones           |                                               | Extreme damage to life & property                                     |
| Tsunami         | Coastal belt            | High tides                                    | Loss of livestock, fodder crop, grazing land                           |
| Drought         | Southern and Western Odisha | Less rainfall and water shortage            | Distress sale due to shortage of feed and fodder                      |
|                 |                         |                                               | Production loss due to less availability of fodder and agr. byproduct  |
| Heat wave       | Primarily Western Odisha | High rise of environment temperature          | Heat stress and production loss                                       |
| Disease Epidemics | Anywhere in the State | Bird flu infection Anthrax, Brucella infection | Zoonotic – Can be transmitted to human beings                         |
| Chemical poisoning | Industrial areas     | Ash pond leakage Industrial waste poisoning | Flurosis
|                 |                         |                                               | Skin diseases                                                         |
|                 |                         |                                               | Production loss                                                        |
Risk analysis

Various risks involved in the livestock sector when exposed to different types of disaster are given following table:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Hazards/Disaster</th>
<th>Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flood and Cyclone</td>
<td>High due to loss of livestock, diseases in animal, shed damage, Injury to animals Disruption in milk procurement, damage to departmental buildings, equipments, disruption in breeding services (Artificial Insemination)</td>
</tr>
<tr>
<td>2</td>
<td>Drought/ Heat wave</td>
<td>Risk is moderate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Production loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Feed and water scarcity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Distress sale</td>
</tr>
<tr>
<td>3</td>
<td>Disease epidemic (Avian Influenza, Brucellosis, Anthrax)</td>
<td>Risk is high</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Public health importance</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Department does not have adequate capacity to handle such disaster. This requires a multidisciplinary approach.</td>
</tr>
<tr>
<td>4</td>
<td>Chemical poisoning/ Tsunami/ Earthquake</td>
<td>Low risk as the prevalence is less.</td>
</tr>
</tbody>
</table>

The Hazard and risk vulnerability analysis has been prepared based on the available data and past experiences.

Standard Operating Procedure for Disaster Management Animal Resources Development Sector

Roles and Responsibility of the Department

i. Awareness of people on precautionary measures

ii. Provision of Veterinary measures (both preventive and curative)

iii. Liaison with SRC/District authority for relief operation such as provision of fodder and cattle feed

iv. Disease surveillance and Mobile Veterinary Unit services

Preparedness and Preventive Measures

i. Declaration of disaster zone:

Among the 30 districts of Odisha District / Sub-division / Block / G.P. / Villages those are prone for various disasters are demarcated as (a) Flood prone (b) Drought Prone
(c) Cyclone prone   (d) Multi-disaster Prone area. Basing on the type of disaster the local Livestock Inspector (LI) makes a preliminary assessment of livestock population every year in the prescribed format.

ii. **Pre-flood Vaccination:**

During Disaster, stress becomes an incriminating factor for precipitation of diseases in livestock and poultry. Mass vaccination and de-worming of livestock and poultry are done against economically important contagious disease by May 15th of every year or prior to monsoon in flood prone areas with a view to covering 80% of livestock population in order to achieve herd immunity. Detailed Inoculation Register is maintained. Pro-active steps are taken by concerned Livestock Inspector, Veterinary Assistant Surgeon to indent the vaccine requirement after actual assessment of the stock to Chief District Veterinary Officer (CDVO) through Sub-Divisional Veterinary Officer (SDVO). The CDVO and SDVO ensure procurement of vaccine and de-worming medicine from the Directorate/ OBPI and supply required doses of vaccines/medicine to the field institutions. A detailed list of vaccines used for different species of animals & birds against contagious diseases is furnished below

**List of Vaccines**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Animals / Species</th>
<th>Vaccines to be given for immunization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cattle &amp; Buffalo</td>
<td>HSV, BQV, FMD &amp; Anthrax Vaccine as per endemicy</td>
</tr>
<tr>
<td>2</td>
<td>Sheep &amp; Goat</td>
<td>PPR, Goat Pox Vaccine as per endemicy</td>
</tr>
<tr>
<td>5</td>
<td>Poultry</td>
<td>RDV</td>
</tr>
</tbody>
</table>

iii. **Stocking of Medicine:**

All Districts earmark an inventory of required medicines (10 % of Annual supply) to treat the affected livestock and poultry in case of eventualities till supply of medicines by the Directorate of AH & VS after availing funds from SRC. At the district level stock piling of surgical packets is done. Equipment and drugs which are likely to be most needed during and after disaster are stored beforehand. Department vehicles with fuel are kept in readiness.
iv. **Information, Education and Communication activity:**

IEC materials are prepared and distributed to public regarding measures to be taken in case of disaster. The community volunteers are trained regarding carcass disposal. Awareness meeting are organized in disaster prone villages by the Gomitras/ LI/ AVAS/ VAS/ Pasu-sahayak / NGO /CBO and other animal welfare organisations to discuss the steps to be taken in case of disaster with the livestock keepers and others. The livestock holders of large animals, small animals and poultry are trained regarding shifting of animals/ birds before disaster. The farmers are instructed to let loose their animals instead of tying before disaster. For shifting of poultry birds to safer places, the farmers are educated to arrange bamboo baskets. Awareness Programme through Advertisement in leading local Newspapers (twice in a week for two months), Radio spot, Broadcasting of Door Darshan Spot are conducted for prevention and preparedness of disaster.

v. **Feed and Fodder arrangement**

Sufficient care is taken to sensitize the farmers to protect their feed and fodder much ahead of onset of monsoon. The small ruminants' holders are educated/ informed to collect sufficient amount of green leaves from edible plants for use during the period of submergence at the earliest, after receipt of disaster warning. The sources for procurement of feed / rice bran (Kunda) within the district and nearest locations are identified, and the suppliers kept informed about the emergency situation. At the time of requirement they will supply to the identified areas within the shortest possible time. Pre arrangement for tie up with fodder supply units are done.

vi. **Water facility**

During drought as most of the affected animals are subject to scarcity of water, tube wells along with water vats are constructed at V.D. & L.ACs campus devoid of such facilities and at common public places.

vii. **Shifting of equipment:**

Essential medicines, vaccines and equipment like Cryocans are shifted from VDs and LACs located in such areas to safer places much before the rush of Flood water. Even the VDs and LACs coming under identified low lying areas with a past history of flooding are instructed to evacuate their institutional belongings, mentioned earlier. Diesel generator sets are arranged for storage depots of vaccines for backup power supply.
viii. **Preparatory meeting**

The preparatory meeting are organised by CDVO with the help of Veterinary Officers of the disaster prone villages and assess the situation. Various reports relating to disaster such as Daily Report, Loss and damage report, Cattle Feed Supply, Animal Health Camp report and other reports as per the format prescribed will be discussed. All the field staffs are oriented accordingly in this regard to avoid difficulty of reporting. A telephone directory will be maintained at the District level by collecting the telephone nos. of Vets, Para-Vets, PRI members, NGOs / youth clubs / societies, volunteers etc. to collect feedback and plan the activities during the emergency. Similarly Block VAS will convene a meeting by involving all the field staff. If required BDO, RI, OIC Police station and other agencies will be invited to attend for better convergence. The proceeding of all the meetings will be submitted to District Magistrate, Superintendent of Police and Directorate of AH&VS.

CDVO attends the preparatory meeting organized by District Disaster Management Authority and appraise the situation of Veterinary measures. He will also seek the assistance needed from the district authority for effective response to disaster.

ix. **Training:**

One day training programme for management of different species of animals and birds during disaster are organized at the district level for capacity building of departmental staff. Training of village volunteers and local SHG members for carcass disposal is to be made along with evacuation methods.

x. **Constitution of Incident Response Team (IRT):**

Incidence Response Team are constituted at State and district level to tackle any disaster event.

**Role of the District team are:-**

i. To coordinate with Directorate and District Authority

ii. To activate disaster plan

iii. Manage the overall response activities in the field

iv. Deploy adequate staff for the response and monitor effectiveness
v. To develop the media messages regarding up to date status of disaster mitigation and response work

vi. To arrange necessary equipments/medicine/vaccine necessary for response measures

vii. Collect and maintain documentation on all disaster information

**Role of the State team are:-**

i. To coordinate with State Government, Central Government and other line Department

ii. To facilitate execution of orders for declaring the disaster

iii. To prepare a status report regarding the disaster

iv. Visit the spot and assist the District Response Team for pre disaster planning

v. Assess the staff and other logistic requirement for field operation and monitor effectiveness

vi. To ensure availability of funds at District and block level to meet contingency expenses

vii. To develop the media messages regarding up to date status of disaster mitigation and response work

viii. To arrange necessary equipments/medicine/vaccine necessary for response measures

ix. To monitor and guide the district response team

x. To maintain an inventory of all related guidelines, procedures, action plans, district maps and Contact numbers.

**IRT at State level**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Post</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Joint Director</td>
<td>Chairman</td>
</tr>
<tr>
<td>2</td>
<td>Project Coordinator, Animal Disease research Institute</td>
<td>Convenor</td>
</tr>
<tr>
<td>3</td>
<td>Deputy Director, Planning</td>
<td>Member</td>
</tr>
<tr>
<td>4</td>
<td>Vety Information Officer</td>
<td>Member</td>
</tr>
<tr>
<td>5</td>
<td>Research Assistant, OBPI</td>
<td>Member</td>
</tr>
</tbody>
</table>

IRT at State level shall meet at least twice in a year
1\textsuperscript{st} meeting: 2\textsuperscript{nd} week of December
2\textsuperscript{nd} meeting: 2\textsuperscript{nd} week of May
In case of any disaster, meeting will be convened immediately

IRT at each District level

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Post</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chief District Veterinary Officer</td>
<td>Chairman</td>
</tr>
<tr>
<td>2</td>
<td>Additional District Veterinary Officer, Disease Control</td>
<td>Convenor</td>
</tr>
<tr>
<td>3</td>
<td>Sub-Divisional Veterinary Officer (Hqrs)</td>
<td>Member</td>
</tr>
<tr>
<td>4</td>
<td>Officer – in – Charge, District Diagnostic Laboratory</td>
<td>Member</td>
</tr>
</tbody>
</table>

Similarly IRT at District level shall meet at least twice in a year after getting proceedings of meetings/ instructions/ guidelines from State IRT State level.

1\textsuperscript{st} meeting: 1\textsuperscript{st} week of January
2\textsuperscript{nd} meeting: 1\textsuperscript{st} week of June
In case of any disaster, meeting will be convened immediately.

Response Measures during Disaster

i. Activities on Receipt of Warning

Immediately after receipt of forecast information on the occurrence of disaster like cyclone, flood etc Chief District Veterinary Officer will alert the field functionaries to take necessary steps. Mass media like TV, Radio, Press warning can also be considered for the purpose. Within the affected District/Sub-division/Block all available personnel will be informed to remain in readiness.

ii. Control Room functioning:

The Control room functions both at State and District level for proper monitoring of Disaster related activities. The state level Control room shall function at the Directorate & the Deputy Director Disease Control will be the Nodal Officer in the state Control Room.

The function of the Control Room is

- To collect, collate and transmit information relating to the natural calamities.
• To keep up to date data on relief operations undertaken
• To process and communicate all such data to concerned quarters
• To maintain the Station Dairy Register at Control Room
• To maintain detail of telephone calls received along with messages and actions taken thereof.
• To ensure running of Control room 24 hours with required roster arrangement

The Control room shall furnish a daily report to the head of office on the important messages received and actions taken thereon. The State control room will furnish compiled information to Government every day.

The state control room shall appraise the status report with the state level IRT team of the department and seek advice on important issues and communicate it back to district control rooms/ district level IRTs.

iii. **Assessment of situation:**

Assess the situation and review the response mechanism in vulnerable pockets. The District Incident Response Team (IRT) will ensure availability of veterinary staff in disaster affected area. If required IRT will seek assistance from State control room for deployment of staff from nearby areas.

iv. **Cattle Feed and Fodder arrangement:**

The Chief District Veterinary Officer will collect and compile feed/ fodder requirement as per the CRF norms and discuss with District Collector for bringing to the notice of the SRC/ Directorate. District Collector will be appraised by CDVO about the amount of Cattle Feed to be procured from OMFED/ other sources for distribution to different Disaster affected areas as per CRF norms.

v. **Formation of Mobile Teams:**

A number of mobile veterinary teams are formed consisting of dedicated and experienced technical workers with allotment of area of operation. The teams are kept in readiness having required stock of medicines and equipment to work in any adverse situation. A telephone directory is maintained at the District level by collecting the telephone nos. of Vets, Para-Vets, etc. of each mobile team to collect feedback. The District Collector will be requested to provide the required number of vehicles for the movement of mobile teams.

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vi. **Staff Management:**

During disaster, no staff is normally be allowed to proceed on leave. All the staff are sensitized and oriented perfectly to manage Disaster situations successfully. Officers & staff who are deployed from other stations to work in disaster prone area on relief duty work for a maximum 7 days. Therefore, IRT at the State level make advance planning and ensure replacement of staff accordingly.

vii. **Rescue of livestock:**

Much before the rush of flood water to flood prone areas, the livestock holders of cattle, buffalo, sheep, goat, pig etc are educated/ informed to let loose their domesticated animals and birds instead tying/ caging at a particular point. In spite of that, if animals are not shifted, necessary arrangements are to be made in consultation with the District Collector for provision of life saving boats for rescue of marooned animals, transportation of feed, medicine and vaccine. In case of any untoward situation, the matter is to be brought to the notice of BDO/ Tahasildars/ Sub Collectors/ District Collectors seeking immediate assistance by the LI/ VAS/ AVAS/ SDVO/ CDVO. Sincere efforts are to be made in this regard by the department through NGOs, CBOs and animal welfare organisations to save the lives of the livestock and poultry. The small ruminants like sheep and goat are carefully shifted to temporary sheds located in higher elevations. Similarly, the poultry birds are shifted with the help of bamboo cages to temporary pen.

viii. **Shelter of the livestock:**

Temporary sheds are arranged with the help of District Collectors/ NGOs/ SPCA/ Animal Welfare Organizations working on disaster management for housing of destitute animals. Separate arrangements are made to house cattle, buffalo, sheep, goat, pig and poultry in order to maintain peck order and to avoid unnecessary competition for survival. Planning for these activities should take place on a regular basis every year prior to flood season at village level.

ix. **Provision/ distribution of Feed & Fodder:**

During Disaster, the affected livestock and poultry are fed with feed and fodder either from the established bank stated earlier or from the relief source. In order to bring down the losses of lives arising due to non-availability of feed, a proper distribution schedule is prepared and followed as per the need of the situation. Much attention is paid
for proper and timely distribution of feed and fodder to the needy animals. Sufficient amount of fodder and green leaves are arranged for feeding sheep and goat. The backyard poultry birds are supplemented with crushed maize, rice bran & wheat bran. The stray dogs are to be fed with bread and biscuits. A good coordination with block relief team is solicited for transport of animal and poultry feeds along with relief material of revenue department. The distribution of animal and poultry feed is made jointly by staff of Panchyat Raj department and veterinary department.

x. **Arrangement for drinking water for animals:**

All the affected livestock and poultry should have an access to clean drinking water. Arrangements are required to be made in this regard with the help of concerned Government functionaries of the Districts. The available water may be chlorinated if required with help of Halogen Tablet prior to drinking by livestock and poultry.

xi. **Maintenance of Sanitation:**

Adequate attention is paid to disinfect the premises of temporary sheds with the help of bleaching powder, phenol, carbolic acid etc. In no case the carcass/ cadaver should come in contact with healthy animals rehabilitated in sheds. Arrangements should be made accordingly.

**Post Disaster:**

i. **De-worming:**
Immediately after disaster, the animals like cattle, buffalo, sheep, goat, pig, dog and poultry are de-wormed with suitable broad spectrum anthelmentics. This enables the animals to regain proper health.

ii. **Treatment of sick animals:**

The affected injured / sick animals and birds are treated as immediately as possible as per the requirement. The existing inventory of medicines is utilised. Once flood recedes, the field staff/veterinary teams formed visit all the approachable villages and take up treatment of injured and ailing animals. The veterinary teams conduct preventive vaccinations against contagious diseases in the area.

iii. **Disease Surveillance:**
The Disease Surveillance Team comprising of experts from ADRI, CIL, SVL and DDL visit regularly to the Disaster affected areas to make active surveillance about any disease occurrence. The Disease Surveillance Team will be responsible for collection of sample in war footed basis, laboratory confirmation of samples and take steps for prompt disease diagnosis to minimise the spread of infection.

iv. **Disposal of Carcass:**

Municipalities/Gram Panchayats/BDOs take steps for removing animal carcasses likely to become health hazards. Necessary arrangement are made for prompt and easy disposal of carcasses during the Disaster and Post-Disaster period. The veterinary teams advise the local administration i.e. PanchayatRaj bodies and revenue officials to take up prompt disposal of carcasses to prevent epidemics. The local LI should keep all the records of dead livestock if any in his/her jurisdiction with all relevant information (age, colour, sex, and preferably owners name & address) before burial. Under no circumstances, Carcass Disposal Team (CDT) engaged either by the revenue authorities, NGO or by Urban body should bury or dispose the dead livestock without the consent of local LI to facilitate compensation measures if Govt. Desires.

v. **Loss and Damage Assessment:**

A joint verification by R.I., L.I. and Local Sarpanch will assess the real loss of livestock / shed / pen etc. Local Tahasildar will distribute the compensation as per S.R.C. code. The local LI may come across some complaints regarding loss of livestock may be due to heavy water current and therefore, the carcass may not be traceable. In such cases a missing/lost profile may be maintained and a committee headed by local LI with two of the following members should certify such incidents and forward it to proper quarters for consideration of Ex-gratia compensation if any.

1. Local PRI member
2. Revenue Inspector
3. Village Level Workers
4. MPCS Secretary.

The Livestock Inspector will accompany the local damage assessment committee for assessment of loss of livestock and birds. The livestock inspector will also report the
damage to the departmental infrastructure due to disaster. The concerned VAS will compile the information and send to SDVO. The compiled information will be sent to CDVO and the District wise compiled report will be sent to Directorate.

vi. Preparation of Contingent Plan:

The CDVO will prepare a contingent plan for their district for reconstruction and rehabilitation.

Relief

a. Preparation of contingency action plan covering immediate/permanent relief to the affected shall be taken up by the district administration.

b. Consult the district Agriculture Department to propose fodder yielding /fodder crops in their alternate contingency plans.

c. Advise the PR Bodies to provide safe drinking water to the livestock of affected areas by way of constructing water troughs

Veterinary Services:

a. Exemption of User Fees for vaccination, treatment of animals at least for one month in the affected area in case of Disaster notified by the State (Flood, Cyclone, Drought etc. and exemption of user fees for 7 days for the Disaster notified by District.

b. Common veterinary medicine (List is given in annexure) will be provided at VD and LACs for 1 month post disaster.

c. Animal Health Camps every month in a cluster for 3 months (5-6 villages and maxm. 3000 animals in one cluster)

Infrastructure

It includes veterinary dispensary, Livestock Aid Centre, District Diagnostic Laboratory, Poultry hatcheries and Livestock breeding farms. There are chances of damage during disaster such as Flood, Cyclone, earthquake etc. Damaged buildings should be assessed and the report is to be sent to SRC for adequate funding needed for repair and
construction of Veterinary institutions (Veterinary Dispensary, Livestock Aid Centres, Milk Producer’s Cooperative Societies, milk processing plants etc.) for quick recovery and restoration of veterinary services in rural area. The equipments which are coming under the category of lost/damaged may be replaced to restore uninterrupted service.

**Compensation disbursement**

After proper assessment about loss/death of livestock the compensation as per the CRF norms need to be disbursed promptly to the farmers.

**Livelihood activities**

In the event of a disaster, Livestock population is reduced through death, distress sales, and lost. Due to stress, abortion, lamb & kid mortality and reduction in breeding capacity is observed. Back yard poultry and small poultry farms are also affected. Both standing crops and stores of livestock feed were also destroyed and grazing land is affected.

Animal Husbandry based livelihood programs are a priority in some areas. Livelihood assistance as per the need of the people should be provided for small scale dairy/goat/poultry farming. Participation of people in decision making in recovery programme is important. Access to capital for people to start small and medium businesses is necessary as most of the population survives on extremely limited cash flow. The bank loan at a low rate of interest with flexible borrowing terms and conditions to stimulate small businesses is required.

Farmers in rural areas establish small livestock unit farms with the assistance of bank loan under different schemes such as DEDS, KSK, PMRY etc. If such farms get affected due to impact of disaster, the families get trapped in the vicious cycle of poverty. Loan waiving measures or moratorium period for repayment could act as a safety net to stop further descending down, rather ease the farmers from the disasters and inculcate courage to cope up.
Fishery Sector

The fishery sector is vulnerable to different natural as well as man-made hazards. The damage to the fishery sector during the recent disasters given below indicates the vulnerability of the sector to disasters.

Vulnerability and Risk Assessment

<table>
<thead>
<tr>
<th>Year</th>
<th>Type of calamity</th>
<th>No. of district affected</th>
<th>Boat and net damaged (No.)</th>
<th>Fish crop loss (No.)</th>
<th>Amount received from SRC (in crores Rs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-00</td>
<td>Super cyclone</td>
<td>16</td>
<td>76970</td>
<td></td>
<td>15.5373</td>
</tr>
<tr>
<td>2005-06</td>
<td>Cyclone</td>
<td>1</td>
<td>430</td>
<td>-</td>
<td>0.0435</td>
</tr>
<tr>
<td>2006-07</td>
<td>Flood</td>
<td>7</td>
<td>-</td>
<td>Yes</td>
<td>0.2657</td>
</tr>
<tr>
<td>2009-10</td>
<td>Heavy cyclonic Rain</td>
<td>3 (Chilka Fishermen)</td>
<td>22642</td>
<td>-</td>
<td>3.26</td>
</tr>
<tr>
<td>2011-12</td>
<td>Flood due to heavy rain</td>
<td>19</td>
<td>8544 1FLC</td>
<td>9523</td>
<td>5.2620 0.9806</td>
</tr>
</tbody>
</table>

Droughts

The drought is condition arising out of scarce rain fall. Drought is a normal recurrent feature of the State. The prolonged drought situation reduces the water level in tanks and ponds which in turn affects the growth rate of fish and seed production.

Fires

Most of the fishermen villages in our state are thickly populated. The houses are also made of straw, palm leaves and bamboos which are very much prone to fire. It has been noticed in the past years even the entire fishermen villages were burned on fire causing widely spread loss of property and other domestic assets. Sometimes, the mechanized fishing vessels are also set on fire due to electrical short circuit and burst of Gas cylinder which causes much financial loss and loss of life of the crew members.
**Industrial Hazards**

Generally most of the industries of our state are located near the river or sea. Apart from discharging a large quantum of industrial effluents these industries release lethal gases to the air and water bodies due to accident or normal process. It causes a serious health hazards on the lives of the fisher folk living near the shore areas as well as on the live of fishes. Due to industrial hazards the fish population in the State is gradually declining and especially the Hilsa fishery has been seriously affected. The fertilizer and oil refineries at Paradi, Chemical Industries at Ganja, Nalco Steel Plants and other Small and big industries are causing great loss to the environment as well aquatic animals.

**Tsunami**

The Tsunami is a rare phenomenon of the state. It results displacement of large volume of water due to volcanic eruption in the sea. The fishermen communities are likely to be more vulnerable to this occurrence since they dwell near the sea shore and depend on sea for their livelihood.

**Capacity of the Department to deal with the identified disasters- Institutional, organizational and infrastructural.**

Fisheries is having well developed network for providing fisheries services in the field. But during natural calamity like flood and cyclone which is more prevalent, the institutional networks get disrupted. With limited technical staff in the field it is very difficult in the field to create awareness and render proper services to the affected fish farmers and fishermen during disaster time. The department needs to be strengthen with adequate staff to meet any emergencies services during disaster.

The Fisheries Department is having a Natural Calamity Section at Directorate level which is running with insufficient man power, lack of funds and essential equipments, NC section should be strengthen to look after the different calamities occurring in different times.

**Standard Operating Procedure for Disaster Management Fisheries Sector**

**Roles and Responsibility of the Department**

a. Awareness of people on precautionary measures

b. Provision of Fisheries measures (both preventive and curative)
c. Liaison with SRC / District authority for relief operation such as provision of input, medicine, fish feed etc.

d. Disease surveillance in fish pond/ tank and Mobile fisheries services

**Preparedness and Preventive Measures**

Among the 30 districts of Odisha District / Sub-division / Block / G.P./ Village those are prone for various disasters will be demarcated as (a) Flood prone (b) Drought Prone (c) Cyclone prone (d) Multi-disaster prone area. Basing on the type of disaster the block level JFTA / SFTA / AFO will make a preliminary assessment of fisheries resources / fishing equipment / boat & net etc every year in the prescribed format.

**Pre-disaster Planning**

Pre-disaster planning is crucial for ensuring an efficient response at the time of a disaster. A well planned and well rehearsed response system can deal with exigencies of calamities and also put up a resilient coping mechanism, optimal utilization of scarce resources for rescue relief and rehabilitation during time of crisis is possible only with detailed planning and preparation.

- Fishes are affected with various diseases due to flood. Therefore necessary medicines like CIFAX and lime are to be assessed before flood with the concerned District Fisheries Officers of flood prone areas, List of suppliers of medicines and lime should be available with the Department.

- Fish seed and feed scarcity is seen during flood. District fisheries officers should ensure to supply the same from non affected district. If required the same may be provided from outside State. Necessary collaboration should be made with District Administration for transportation and distribution of fish seed, medicines, lime and feed to the affected fish farmers.

**Information, Education & Communication Activities**

IEC materials are to be prepared and distributed to public regarding measures to be taken in case of disaster. The community volunteers will be trained regarding carcass disposal. Awareness meeting will be organized in disaster prone villages by the JFTA / SFTA / AFO / NGOs / CBOs and PFCS to discuss the steps to be taken in case of disaster
with the fisheries activities. The fish farmers are instructed to strengthen their pond embankment and liming of ponds for prevention of diseases. The fishermen are advised to shift their fishing equipments to a safer place.

**During Flood**

- Assessment of loss/ damage
- Rescue of fish farmers/ fishermen
- Memorandum will be prepared for submission to Special Relief Commissioner
- The influx of flood water which is rich in nutrients and organic matter make the pond water either acidic or alkaline
- The entry of heavy suspended solid along with pollutant make pond water unsuitable for pisciculture and invite disease problem
- Entry of flood water causes the pond water in hospitable for survival and growth of fish biomass
- Entry of flood water brings many unwanted weed fishes as well as predatory fishes which affect fish growth
- The natural calamity some time breached out the pond dyke and wash away the entire fish stock which creates severe loss to fish farmers
- Natural calamity sometimes take the life of those are residing near the farm side and sea shore and especially the Marine fishermen
- The compensation amount should be disbursed
- Matshya credit card holder should get loan
- Loss and damaged to infrastructure should be restored
- Less ion learnt will be documented introspection
- Reconstruction Action Plan will be prepared for rehabilitation of fishermen

**Lime/ medicine/Fish seed/ Fish feed for fish farmers and Boat and Net for Fishermen**

- State level committee CRF will sanction
- NCCF will sanction for Central Committee
Constitution of the Incident response Teams (IRT's)

Composition of Committee

- Chairman : Director
- Vice Chairman : Addl. Director(P&T)
- Convenor : Dy. Director(Marine)
- Member : Addl.Director (Admn.), All Jt. Directors, Dy.Directors, & D.F.O’s

Major Task

- The committee meeting to be convened at 3 times a year
  1st meeting in the month of December
  2nd meeting in the month of April
  3rd meeting in the month of June
- Committee shall meet on Disaster related meeting with D.F.O’s as and when necessary
- Interaction with D.F.O’s to update information and develop plan for any eventuality
- Send early warning signals to the vulnerable districts if Disaster is forecasted in advance
- In the event of any Disaster in a District, staff from neighboring District Fisheries Office will send staff up to 30% of total strength to the affected area in consultation with Chairman and Director or Nodal Officer from Head office. These staff will be changed/replaced in every 7 days.
- During Disaster the IRT’s deployed in affected area should get their daily allowances promptly by the DFO’s of the affected District.
- Delegation of Financial Power to Nodal officer at District Level up to 1,00,000/ for any Disaster
- Reporting procedures and formats
- Role of NGO’s and Voluntary section and coordination thereof
• Identification of suppliers for departmental supplies and pre-contracting for supply in case of emergencies

**Post Disaster**

• Role of PFCS’s/ NGO’s/SHG’s/ Voluntary Sector and coordination thereof
  a) Community mobilization
  b) Awareness Programme
  c) Caracas disposal
  d) Distribution relief

• System assessing the damage from any disaster by statistical enumerator/Junior fisheries technical Assistant/SFTA/ AFO and Revenue Officials etc.

• Roles and responsibilities and coordination mechanism for the department
  a) Establishment of control room from 1st June at Zonal level/ District level
  b) Designated mobile, telephone, fax cum Xerox machine, all stationery, computer with internet facility

**Role and Responsibility of JFTA/SFTA/AFO for Disaster Management**

**Pre-Disaster Phase**

• Update village wise survey to ascertain fisheries resources, and fishermen population

• Advice the fish farmers to manure the ponds/tanks with lime against prevention of diseases by 15th June for each year in the flood prone area.

• Keep the list of active fishermen/ fish farmers/ Volunters/ NGO’s with mobile Nos.

• Develop route chart with main land mark of each village in the jurisdiction.

• Forecast requirement of contingencies

• Resource/Enterpriser mapping

**During Disaster Phase**

• Advised to take safe shelter in his/ her working place as per advice of Superiors

• Must be accessible on mobile

• Act sharply and intelligently as and when required during disaster
Post Disaster Phase

a. The JFTA/SFTA/AFO generates quick eye estimation preliminary information on the extent of damage/loss and send the report to concerned DFO
b. Visit all the affected fish farmers / fishermen assess their loss/ damage etc.
c. Render services like advice as practicable to the affected fish farmers/ fishermen
d. He/ she should prepare and send daily report as per the prescribed format
e. The JFTA/SFTA/AFO may come across some complaints regarding loss of boats and nets due to heavy water current may not be traceable, in such cases missing/lost profile may be maintained and a committee headed by block JFTA/SFTA & AFO with two of the following members should certify such incident and forward it to proper quarters for consideration of Ex-gratia compensation if any.
   a. Local PRI member
   b. Revenue Inspector
   c. Village Level Worker
   d. PFCS Secretary

The JFTA / SFTA will accompany the local damage assessment committee for assessment of loss / damage of boat and net, fish seed, tanks & ponds. The DFO will also report the damage to the departmental infrastructure due to disaster. The concerned AFO will compile the information and send to DFO. The compiled information will be sent to zonal DDF and the district wise compiled report will sent to the Directorate by the zonal DDF.

Preparation of Contingent Plan

The District Fisheries Officer prepares a contingent plan for their district for reconstruction and rehabilitation. He prepares a contingency action plan covering immediate / permanent relief to the affected fish farmers and fishermen to be taken up by the district administration as per Calamity Relief Fund norms.
Home Department

Home Department takes special care to look after the law & order situation in the event of a disaster as during such times of crisis the anti social elements become active taking advantage of the vulnerability of the large sections of the populace. The Department has developed a range of SOPS for handling different disaster situations.

Standard Operating Procedure For Dealing With Disaster Situations

1. Purpose:

   The purpose of this SOP is to develop and maintain a standard operating procedure for dealing with Natural Disasters.

   The natural disaster may be caused due to natural a reason which is of a bigger scale and affecting human beings and their settlements to a large extent.

2. Potential Disasters:

   - Cyclone
   - Flood
   - Earthquakes
   - Major Fire incident

3. Action Plan:

   As soon as there is indication of an impending disaster is received except an earthquake or fire, a quick assessment to this effect is made by the district S.P. The information is passed on to the higher quarters of the districts and state level and their advice / guidance be sought as to the line of action to be taken. Dist. Crisis Management Committee so constituted handles the situation; liaise with the State Crisis Management Committee for any advice and guidance. The format for reporting is as follows.

   Whenever there is slightest information regarding probability of an impounding disaster, more information should be collected on the following characteristics of the disaster:

   (i) Type of disaster
   (ii) Severity of disaster
   (iii) Probable date & time of strike of the disaster
Data is updated on a continuous basis on the following points.

- For flood: continuous recording of rain fall at different stations, mostly in the upper reaches of the stream
- For Cyclone: Track of the cyclone.
- Past history of any such disaster should be collected. In advent of absence of any physical data the personal experience of an old serving person or that of a civism can be collected.
- Probable police station areas likely to be affected by the disaster should be chalked out
- Ask the police status to keep their VHF control room open should the clock.
- Collect information from all the sources ie. Through TV, Radio, Internet, Wireless, telephone
- Collect information both from the state head quarter and also from the police station levels.
- Keep the TV, Radio, Computer, VHF-HF, HAM Fax M/c Telephone, Mobile phones in working order for collection and dissemination of information
- Pin point the vulnerable areas, vulnerable population, which is likely to be affected more by the disaster
- Chalk out the inaccessible/ remote areas, which cannot be reached in the post disaster period
- Coordinate with the revenue officials regarding their preparedness as regards to the relief supplies, relief stocks, medical care and sanitation
- Collect information regarding probable failure of electricity and water supply
- Water supply can be continued with tube wells, Three phase generator sets are required to run pumps for water supply
- electricity supply can be continued with generator sets, keep enough fuel oil stock
- Keep information regarding weak bridges, culverts, Railway lines vulnerable to be washed away by heavy flood water.

Further Information regarding connectivity be collected on the following points:

**Road Communication**

- Status and condition of life line roads - connecting district head quarter to state head
quarter and block headquarters and weak points (links) there off

**Railway communication**

- Railway bridges likely to be washed away
- Vulnerable water reservoirs: Heavy rain can breach small and big reservoirs. Precaution should be taken to open and close the sluice gates to prevent dam bursts.
- Vulnerable Irrigation canals and river embankments week embankments should be repaired well in advance (DM, collector to take note of it)
- Take care of valuable police station buildings, asbestos roofed, dilapidated and low plinth buildings likely to succumb to high flood & cyclone.

**Early warning**

The early warning is flashed immediately. The check list for the early warnings is the followings:

- Early warning to be given both by revenue department and police department.
- Early warning to be given at right time, well in advance so that people get a chance to prepare themselves for the disaster.
- Early warning must not be vague, it should be clear and specific regarding the threat of the disaster, type of disaster, probable time of disaster strike, severity etc.
- Early warning also instructs public regarding their future plan of action.
- Early warning is not to create panic amongst the public. As far as possible early warning be given during the day time apart from exigencies where nights cannot be avoided.
- Police stations and outposts are to give early warning in their respective jurisdiction areas.
- Early warning should reach every area and to each individual.
- Specific care is taken to warn remote and inaccessible areas and more vulnerable pockets.
- Every mode of communication is utilized to make the early warnings. Radio, Television, Newspapers, sirens, public address systems, even beating the drums should be utilized to warn the public.
- Keep in mind that in remote areas people do not have electricity to watch television, do
not read newspapers and also poor people do not have a radio set.

- Home Guards, Gram Rakhis, Chowkidars are briefed to disseminate the warning though cascade effect.
- Weekly markets can be utilized to give wide publicity for early warning.

The following equipment are kept ready for the early warning dissemination.

- Public address systems mounted on a vehicle, Megaphones, Sirens.
- Vehicles - Jeep, Medium vehicle, tractors, Motorcycles, three wheelers even cycles.
- Even drums, crackers to alert public.
- One can hire vehicles, public address system, batteries from outside for the purpose.
- Tape recorders for playing prerecorded messages

The supervision of the early warning is carried out by the SP. Local station house officer is made responsible for proper early warning. SDPOs take charge of their own areas to ensure proper early warning is disseminated to each and every corner and to each and every individual. The officers should keep in mind the following points.

- SP sends special officers in the rank of DSP or Inspectors from the headquarters to supervise the early warning.
- Police Jeeps of supervisory officers carry public address system and warn the public
- All supervising officers are advised to carry their own ration, water, clothing, weapon, fuel for the vehicle to work independently.
- The supervising officers are instructed to remain well informed with the impounding disaster.
- Talk to people as much as possible and convince them not to underestimate the disaster.
- Take the help of revenue officials, local NGOs NCC groups, teachers, local representatives to give wide publicity and regarding necessary precautions.
- District Headquarters to collect time to time information from police station regarding progress in early warning, areas covered, mode of early warning, number
of times warning given.

- Supervising officers to report regarding their observation and satisfaction regarding early warning operation.
- Field police station to ask for necessary help for vehicle, public address System and logistic support for effective early warning.
- Early warning should be made on a continued basis.
- No time should be wasted in drafting the message to be announced to the public. The principle followed should be “sooner the better”.

**Evacuation**

It is always wiser to move away from the path of the disaster than to face the disaster. The evacuation can be the most difficult of response operation in the disaster affected areas. Evacuation could be of two types:

1. Precautionary (in most cases undertaken prior to impact to protect disaster threatened persons from the full effect of the disaster).
2. Post impact (in order to move persons from a disaster stricken area into a safer surrounding and conditions).

The following points need to be considered for the right evacuation:

- Better the evacuation lesser is the casualties.
- Priority be given to inaccessible, remote and Vulnerable areas.
- Evacuate first the women and children
- Evacuate during the day time and don’t wait for the night.
- Identify typical shelters for typical disasters.
- Rain and flood conditions require raised mounds
- Cyclonic conditions require cyclone shelters and RCC buildings

Police supervision is carried out during the evacuation process. The following points are adhered to during the evacuation process.

- Keep track of the evacuees and intimate that accordingly to the Head quarters.
- Guard the shelters
- Regulate traffic during the evacuation
- Requisition local buses, trucks and available mechanical modes of transportation
for faster evacuation.

- Introduce if practicable paroling in the evacuated residential areas against theft and mischief.
- Ensure food, water, sanitation for ladies, light at the shelters.
- Setup communication facilities at the shelters VHF sets, walkie talkies, HAM Radio etc, mobile phone.
- There may be a need to run a free kitchen at the shelters.
- Mobilize local youths, volunteers, able bodied persons, leaders for community help.
- Brief them on the need for evacuation.
- Keep a team ready for local search and rescue.
- Interact as much as possible with the community for their safety.
- Government officers to keep duty before self.
- Evacuees should carry their valuable, cash essential items, food, water clothes, utensils, lanterns, Kerosene oil, some implements, medicine with them for week.
- Take care of valuable group, pregnant women, disabled persons, old and sick, infants
- A doctor or a first aid team should be in the shelter.
- Brief the evacuees on the steps to be taken during the impact of the disaster and not to panic.
- Look for any left outs in the villages and not evacuated.
- Intimate the HQ regarding progress of evacuation.
- Work in tandem with other govt. officials for logistic support like vehicles, manpower, money and for moral support.
- Evacuation to continue until the disaster strikes.
- Always keep in mind alternate routes and alternate shelter sites to face any eventualities.
- Keep in mind availability of fuel, driver and vehicle for evacuation, boats for inaccessible pockets.
- In case of need don’t hesitate to use face to evacuate people. After all safety of the citizens in the responsibility of the administration.
SP monitors the progress of evacuation from time to time and the District control room should be open round the clock to collect the following information:

(a) Location of shelters
(b) Villages evacuated
(c) No of people evacuated
(d) Time of start of evacuation
(e) Mode of evacuation
(f) Officers responsible for and supervising evacuation
(g) Special need or constraints

Force Deployment should be carried out as a preparation for the disaster handling. The following points be adhered to while deploying the force:

- Make a detail police arrangements for force deployment
- As much a possible attach senior level officer to lead the group.
- Select leaders- those are resourceful, enterprising communicative energetic and committed.
- Force should be self sufficient for one week, Ration, fuel / wood / water, tentage, equipment and implements, proper clothing, cooking utensils.
- Force should be utilized for search and resume, as well as law level/order maintenance.
- They should carry communication equipment and the vehicle.
- Force can take extra material of food, water clothing keeping relief distribution to the distressed in mind. Force should not need relief but be able to provide relief.
- Take all such precautions that the force doesn’t become victims themselves.
- Select their shelter / camping places to be safe.
- A safe place to park the vehicle. The garate should not collapse or the vehicle is not left in the open or under the free to get damaged.
- Send the force well in advance to help the local PS officer in early warning evaluation traffic control, patrolling
- Ensure strict force dispelling no one to abscond while deputed.
- SP to control force departure, arrival and their activities
- Control room to keep track of
The Briefing is carried out to the force on their duties and responsibility as regards evacuation, search and rescue

- They are to be Self-sufficient in protecting themselves and equipment
- Deploy force for guarding Banks, food godowns, commercial places, bazaars. On the highways to stop post disaster looting. Keep in view that roads may get breached, blocked by uprooted trees, electric polls
- Deploy the force with motor cycle and cycle for post disaster mobility.
- Keep in view protection of the force from the disaster
- Self sufficiency of the force
- Arrangement for mobility
- Lead by in officer
- Requisition special trained forces for disaster search and rescue
- Requisition equipment like earth movers – to clear the life line roads
- Mark the roads – dotted with heavy plantations.
- Mark the roads with susceptible culverts and bridges, weak approach roads, hilly streams
- Keep boats inside hangers.
- Make a skeletal force deployment chart for tentative deployment, since force arrival multiples after the disaster
- Ensure strict force discipline. There is a chance of misbehavior, molestation, harassment and theft by the force.
- Undisciplined force be asked to depart immediately
Coordination with other Organisations

The initial Response to a disaster is usually provided by the various “Emergency Services” supported by number of other local authorities /agencies. Emergency Services maintain a state of readiness so that they can provide a rapid response and alert local authorities and services as soon as possible. There is a need to coordinate with other organizations, who have to play an active role in handling the disaster along with the police forces. There are two types of coordination i.e.

1. Vertical

This is the Coordination with the higher levels of authorities, e.g. in police organizations, DIGs, IGs, DG of Police and in revenue administration with Secretaries, State Relief Commissioners, Ministers as well as Chief Ministers so also with some international agencies.

2. Horizontal

- The fire services
- The ambulance / Hospital services
- The para-military forces
- The Military, Navy, Air forces
- The coast guard agencies
- The civil defence
- District magistrate and revenue officials
- The voluntary organizations
- The nearby Industrial / Commercial organizations etc.

Impact Phase

Points to be remembered for the impact phase are the followings.

- Protect self, police personnel, police families
- Citizens taken shelter in the police station
- Protect – equipment – Communication
- Batteries charged
- Alternate VHF masts kept ready
- Vehicle -Fuel tank full
- -Driver be kept on standby
Keep a generator set, solar light, lamps kerosene oil Aston, utensils items
Don’t keep detenues in the hazats, forward them to court or bail them out
Take shelter in window less rooms
Away from flying glass panes
Keep implements ready
Keep a tractor – very useful for cross connive mobility road clearance
Trigger the system with telecommunication, VHF, HAM, any means of communication for quick search and rescue and to get outside assistance.

**Damage assessment / death enumeration**

The immediate damage and death assessment is made and a report be sent to the higher quarters. SP should do the need analysis for the relief. Also take steps for identification of the victim.

**Search and Rescue (SAR)**

The search and rescue operation are carried out as soon as possible after the disaster is passed. The first 72 hours is called the golden hours. All efforts are made to rescue the victims. The following point should be kept in my mind while carrying out the search and rescue operation.

- Deploy SAR team for saving lives.
- Work in tandem with other emergency services (fire services)
- Coordinate with the emergency services and other organizations.
- Provide maps and guides to SAR teams
- Ensure/facility for deployment of SAR team at the disaster site.
- Identify and demarcate reception point for survivor
- Provide shelter to the survivors
- Create temporary mortuary for victims
- Carry out identification of the victims
- Carry out search by boats
- Carry out search by helicopters
- Carry out search by dogs & electric equipment for victim in side debris, house collapse.
- First principle – Quick response
- Second principle – Better late than never
Traffic regulation

Traffic control is important in a rescue and relief operation. It can facilitate quick movement of relief and prevent accidental deaths. Instructions are issued to follow the following norms for traffic regulation.

- Regulate traffic of relief trucks, visitors, govt. officials into the affected areas.
- Restrict movement of onlookers into the disaster area.
- Put up barricades to prevent unnecessary movements
- Demarcate prohibited areas for onlookers.
- No one should enter the disaster area with vehicles with empty fuel tanks. (To prevent stretching of local resources)
- No one to enter the area empty hand (To prevent stretching of local resources)
- Polite heave relief trucks to prevent fatal accidents, which do occur due to increased traffic movements.
- Have a separate traffic VHF channel to control traffic movements
- Keep life line roads clear for movement of essential items.
- Remove roadblocks caused by accidents, bad roads and traffic jam.
- Take care of the VVIP movements
- Plan one ways, or phase the timing of traffic in flows and out flows.
- Put up traffic pickets as the life line roads and at important crossing.
- Introduce, Highway patrols, life line road patrols
- Keep liaison with PWD to repair and maintain the roads wheel get damaged due to heavy flaw of loaded relief tracks.
- Control traffic at patrol pump where relief trunks get refueled by the govt. authorities and at Block Hqrs. Ware houses, where they load and unload relief items.

Active stage

The Dist. Crisis Management Committee be formed consisting of the following members.

1) D.M Chairman
2) S.P. Member
3) C.D.M.O Member
4) Senior Most Officer of BSNL Member
5) Chairperson of the Civic Bodies  Member
6) Chief of fire service in the dist.  Member
7) Chief of Civil Defence  Member
8) Chief of Red Cross  Member
9) Executive Engineer (PWD & R&B)  Member
10) Executive Engineer (electrical)  Member

Thereafter, the Dist. Crisis Management Committee continues to monitor the developments at all stages, decide on the course of action and ensure implementation of the same, while keeping the State Crisis Management Committee informed at regular intervals about the developments and taking follow up steps on the guidance/instruction received from State Crisis Management Committee/ Higher Authorities.

At the same time special control room are set up at the Dist. Police Hqrs. to function under charge of an Inspector. The special control room shall be provided with a Fax Machine, Computer, telephone and wireless Communication system, a jeep with driver and motor cycle with drivers for delivery of Daks.

The communication system should be properly geared to enable continuous transmission of relevant information.

On receipt of information about the disaster from the Dist. SPs, Range DIG, IGP (L&O), Dir. Int., D.G. of Police shall immediately take stock of the situation, issue preliminary instructions to S.P. and then appraise the Govt. of the situation.

Thereupon, the Home Secretary will immediately convene the State Committee, consisting of the following members, should the situation so warrant.

1) Chief Secretary  Chairman
2) Agriculture Production Commissioner  Member
3) Home Secretary  Member convener
4) D.G. & I.G. of Police  Member
5) Special Relief Commissioner  Member
6) Managing Director, OSDMA  Member
7) Director, Intelligence,  Member
8) Addl. D.G. Crime  Member
9) Deputy Director, SIB, BBSR.  Member
On being convened, the State Crisis Management Committee will discuss the situation and formulate guidelines and instructions to be issued. The Home Secretary will convey such guidelines and instructions to the Crisis Management Committee for immediate implementation.

Simultaneously, two separate special control rooms will be set up at the State Police Headquarters and in the Home Department. (State Secretariat) for constantly monitoring developments at the State level and conveying the same promptly to concerned quarters.

The State Crisis Management Committee should meet daily or more frequently if the situation so warrants, to review the situation, issue necessary instructions/guidelines to the Dist. Crisis Management Committee.

**Liaison with the Central Committee**

The State Crisis Management Committee shall also constantly liaise with Central Crisis Management Committee in the Ministry of Home Affairs, Govt. of India.

**Other assistance sought by the State Govt.**

Food, shelter, health care facilities etc will be provided by the Dist. Administration / or through NGOs and other organizations / agencies at the local level. However, in case intervention of the Union Govt. is needed in extremely serious situations, the Nodal Officer will contact the concerned Ministries / Deptt. of the Union Govt. to provide any other assistance required. It would be the duty of the local Administration (D.M. & S.P.) to lead the Search and Rescue operation.

**Media Management**

i. Once the crisis is identified, the Chief Secretary designates a Nodal Department in the State Government to operationalize the SOP for media facilitation. This will ensure that only one authorized spokesperson shall address the media so as to avoid any confusion / contradiction.

ii. The designated Nodal Department in the State Government shall also address all media issues related to the crisis and facilitate the media to get authentic information.
iii. The concerned Department in the State shall establish a 24 x 7 Control Room to monitor the crisis on a continuous basis with other Agencies / District Administration, etc. A representative of the Press Information Bureau, Government of India shall also be present in the Control Room.

iv. The concerned Ministry in the Central Government shall interact with the Chief Secretary of the State concerned to facilitate accurate information flow between the Centre and State in order to avoid misinformation and misreporting.

v. The concerned Department at the State Level dealing with the media shall coordinate media facilitation in consultation with the identified Nodal Department mentioned at (i) above.

vi. No official / agency other than the authorized spokesperson shall ordinarily interact with media during the crisis period.

vii. District Administration where the crisis has occurred may set up a Media Facilitation Desk near the site of occurrence, on 24 x 7 basis, which may function as a one stop information hub for all Media personnel.

viii. The District Magistrate may ensure the smooth setting up of the Facilitation Desk.

ix. The District Magistrate shall liaise with the designated Nodal Department at the State Level and Regional / Branch office of PIB for addressing urgent media queries.

x. It should also be ensured that information flows between District Centres, State Headquarters and PIB regional offices is smooth.

xi. The Nodal Department at the State level shall issue necessary instructions for effective implementation by designated Media Centres at the district level and site of incident.

xii. The State Government may consider utilizing the services of the local PIB Office, Doordarshan Kendras, AIR Kendras, Private FM and Community Radio stations for information dissemination, release of Press Communiques and public service announcements.
xiii. District Monitoring Committees and State Monitoring Committees under the Chairmanship of the District Magistrate as per the Cable Television Networks (Regulation) Act, 1995 may be activated during the period of crisis.

xiv. The State Government may identity sensitive publications of the area whose views / coverage could influence the public during such events. These publications may be specifically briefed on facts, figures and issues by the designated spokesperson.

xv. Public information on arrangements made by State and District administration regarding Rescue, Evacuation, Transport, First-aid and Emergency health services may be widely disseminated through the Media Facilitation Desk at District level.

xvi. District Administration, in consultation with Nodal Department / Security Agencies / Directorate of Public Relations and Regional Branch Office of Press Information Bureau shall earmark the area for stationing the media persons at the site of incident. This marked area will be monitored on a 24 x 7 basis to avoid media interference.

Reception Centre

A Reception Centre should be established in a secured place in the vicinity of the place of incident. It should receive the victims and also have public enquiry facility. It should have adequate logistic backup in terms of medical facilities including psychologists and other specialists, arrangements for rest and refreshments, child care facilities etc. The reception centre should run 24x7 basis. A designated officer should man the reception centre round the clock.
Agriculture sector is highly vulnerable to natural disasters like flood, cyclone, saline inundation, tsunami, hailstorm and drought etc. The Department of Agriculture makes elaborate plans for management of disasters affecting the sector. The response arrangements are made at State, district and below level under the overall command and control of the Department.

Incident Response Teams (IRT) are to be formed and function at different levels which shall be in coordination for implementation of disaster related Plans.

<table>
<thead>
<tr>
<th>Level</th>
<th>Name of the Head of the IRT</th>
<th>Team members of IRT</th>
<th>Role / Responsibility</th>
</tr>
</thead>
</table>
| State | Director of Agriculture and Food Production, Odisha. | 1. ADA (Extension)  
2. JDA (Farm & Seeds)  
3. JDA (Information)  
4. JDA (Engineering)  
5. Chief Statistician  
6. ADA-II  
7. FA-cum-CAO | 1. Coordinate with State Government and other line Departments.  
2. Ensure Reporting of the affected area and assess damage thereof.  
3. Assess the staff and other logistic requirement for operation.  
4. Ensure availability of funds at District and block level to meet contingency expenses.  
5. Plan and arrange necessary inputs for response measures  
6. Manage the fund and maintain financial records  
7. Maintain an inventory of all related guidelines, procedures, action plans, district maps and contact numbers.  
8. Develop the media messages with up to date status of disaster mitigation and response work  
<table>
<thead>
<tr>
<th>Level</th>
<th>Name of the Head of the IRT</th>
<th>Team members of IRT</th>
<th>Role / Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>District</td>
<td>DDA</td>
<td>1. DAO(s)</td>
<td>10. Circulate printing material on Contingent and DM Plans.</td>
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<td></td>
<td></td>
<td>2. Agronomist</td>
<td>11. Capacity Building</td>
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<td>3. PPO</td>
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<td></td>
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<td>4. ADA (Input)</td>
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<td>5. Scientist KVK/Other ICAR institution</td>
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<td>6. Head Clerk (as representative for Accounts)</td>
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<td></td>
<td>1. Coordinate with Directorate, District Authorities and line departments at District level.</td>
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<td>2. Prepare and activate district disaster plan</td>
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<td>3. Manage the overall response activities in the field</td>
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<td>4. Develop the media messages.</td>
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<td>5. Mobilise resources for response measures</td>
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<td>6. Collect and store disaster related information for post incident analysis.</td>
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<td>7. Capacity Building</td>
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<tr>
<td>Block</td>
<td>AAO</td>
<td>1. AHO</td>
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<td>2. BTM</td>
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<td>3. 2 nos. AO/VAW</td>
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<td>4. Revenue representative</td>
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<td>5. Others (from FIAC)</td>
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<td></td>
<td>1. Supervise collection of disaster related information and report to the District IRT.</td>
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<td>2. Prepare and activate disaster plan at block level</td>
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<td></td>
<td>3. Coordinate with District Authority, AHO and Tahasildar/ BDO, PRI members, etc</td>
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<td>4. Implement the plan</td>
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<td>5. Ensure availability of resources for response measures</td>
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<td></td>
<td>6. Capacity Building</td>
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</tbody>
</table>
Roles and responsibilities and coordination mechanism for the department;

The extension machinery is kept vigilant to report any such emergency at once to the respective district and state headquarters. The Directorate closely monitors the aftermath of a disaster and supervises supply of critical inputs like seeds, fertilizers, pesticides, Contingent crop management etc.

<table>
<thead>
<tr>
<th>Sl</th>
<th>Name of the agency</th>
<th>Regular duty</th>
<th>Role during disaster situation</th>
<th>Role supposed to be played during emergency response</th>
<th>Relief and recovery</th>
<th>Prevention</th>
<th>Mitigation</th>
<th>Prepared-ness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Directorate of Agriculture</td>
<td>Implement different programmes for Agriculture Development</td>
<td>Provide technical support on implementing the contingent plan. Organise restorative measures. Extend input assistance</td>
<td>Assess area affected and report. Assess the damage and put forth requirement of critical inputs.</td>
<td>Provide technical support on implementing the contingent plan. Organise restorative measures. Extend input assistance. Coordinate with sister departments for such measures.</td>
<td>Provide technical support and organize Capacity Building for all stakeholders. Generate awareness on responding to crop weather predictions.</td>
<td>Provide input assistance, facilitate indemnity payment for crop insured, technical support on overcoming disaster. Conduct crop cutting experiments to assess the quantum of loss in physical and financial terms.</td>
<td>Assist farmers with choosing appropriate preventive way of crop husbandry; choice of tolerant vars, timely agricultural operations, Organise plant protection measures in pest and disease affected regions, Storage of critical inputs at vulnerable locations.</td>
</tr>
<tr>
<td>2</td>
<td>OSSC</td>
<td>Production and distribution of seeds</td>
<td>Proper distribution of seeds with a reserve/ buffer stock earmarked for Disaster</td>
<td>Locate appropriate varieties required to be supplied after disaster. Stock them at suitable locations before the actual restoration measures start.</td>
<td>Ensure supply of appropriate varieties of different seeds.</td>
<td>Ensure production and distribution of appropriate tolerant varities in disaster prone areas. Proper maintenance of godowns and buffer stock.</td>
<td>Ensure supply almost immediately with start of the restoration measures.</td>
<td>Proper maintenance of Godowns and buffer stock.</td>
</tr>
</tbody>
</table>
Disaster Specific Response Plan

Response plan for major disasters such as earthquake, flash flood/cloudburst, snow avalanche, landslide, etc. in which state level response would be needed;

High Floods causing submergence for longer duration, Flash Flood/ cloudburst, Cyclone, Severe Drought, Pest and disease epidemic are some disasters that need state intervention. The / Government/ Department/ SRC provides adequate input assistance, resume immediate supply of required varieties of crop seeds, fertilizers, organize capacity building/ awareness camps and community/ prophylactic pest control, rescheduling crop loan repayment, provision of soft loans, etc.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Natural Calamity</th>
<th>Responsibility</th>
<th>Response Time line</th>
<th>Who is responsible</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flood</td>
<td>Estimate of Area under Submergence/ inundation/ Sand Cast</td>
<td>24 hours</td>
<td>RI /ARI &amp; VAW/AO at GP level Tahasildar &amp; AAO at block level Collector &amp; DDA at District level Director Agriculture Food Production, Agriculture Department, Revenue and DM Department at state level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Assessment of Damage</td>
<td>After 7 days of submergence/ receding of flood</td>
<td>-Do-</td>
</tr>
<tr>
<td>2</td>
<td>Drought/ Moisture Stress</td>
<td>Area under moisture stress</td>
<td>At regular intervals during the cropping season</td>
<td>-Do-</td>
</tr>
<tr>
<td>3</td>
<td>Cyclone/ Hailstorm/ Tidal waves</td>
<td>Area affected by submergence/ saline inundation/ sand cast/ lodging of crops etc</td>
<td>Immediate after occurrence</td>
<td>-Do-</td>
</tr>
<tr>
<td>4</td>
<td>Pest &amp; Disease attack</td>
<td>Area affected</td>
<td>24 hours in case of emergencies/ as Monitored through e-pest surveillance On a weekly basis.</td>
<td>VAW/AO at GP level AAO at block level DDA/PPO at District level DDA (Plant Protection) at State Level</td>
</tr>
</tbody>
</table>
Identification of suppliers for departmental supplies and pre-contracting for supplies in case of emergencies

Odisha State Seeds Corporation is the official seed supplier and is directed to keep seed stock standby for such emergencies. Besides, Odisha Agro Industries Corporation also would be a key agent during a disaster management programme for supply and distribution of critical inputs. Fertiliser and pesticides are monitored for prepositioning by the manufacturers/ CF Agents in buffer godowns/ wholesalers/dealers to meet such eventualities. The National Seed Corporation is also taken help of for supply of some non-paddy seeds.

Horticulture Sector

Constitution of the Incident Response Teams (IRTs) at all levels with provision of delegation of authority;

The IRTs at various levels are as follows.

<table>
<thead>
<tr>
<th>Level</th>
<th>Name of the Head of the IRT</th>
<th>Role / Responsibility</th>
</tr>
</thead>
</table>
| State   | Joint Director of Horticulture              | 1. Coordinate with State Government, Central Government and other line Department  
2. Assess the staff and other logistic requirement for operation  
3. Ensure availability of funds at District and block level to meet contingency expenses  
4. Develop the media messages with up to date status of disaster mitigation and response work  
5. Plan and arrange necessary inputs necessary for response measures  
6. To manage the fund and maintain financial records  
7. Maintain an inventory of all related guidelines, procedures, action plans, district maps and Contact numbers.  
8. Document the lessons learnt |
| District | DDH/ADH of the concerned district            | 7. Coordinate with Directorate and District Authority and Deputy Director of Agriculture at District level.  
8. Prepare and activate district disaster plan  
9. Manage the overall response activities in the field  
10. Develop the media messages  
11. Mobilise resources for response measures |
12. Collect and store disaster related information for post incident analysis

<table>
<thead>
<tr>
<th>Block</th>
<th>AHO of the concerned block</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.</td>
<td>Coordinate with District Authority, AAO and Tahasildar / BDO</td>
</tr>
<tr>
<td>7.</td>
<td>Prepare and activate disaster plan at block level</td>
</tr>
<tr>
<td>8.</td>
<td>Implement the plan</td>
</tr>
<tr>
<td>9.</td>
<td>Ensure availability of resources for response measures</td>
</tr>
<tr>
<td>10.</td>
<td>Collect and report disaster related information</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard / Disaster</th>
<th>Vulnerable locations</th>
<th>State Level Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood</td>
<td>Flood prone areas</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Arrangement for supply of critical inputs such as seeds, planting materials to the districts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Arrangement of resources for reconstruction / repair of departmental buildings and farms and protected structures.</td>
</tr>
<tr>
<td>Drought</td>
<td>Southern and Western Odisha</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Arrangement for supply of critical inputs such seeds, planting materials to the districts.</td>
</tr>
<tr>
<td>Cyclone</td>
<td>Coastal Areas</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Arrangement for supply of critical inputs such seeds, planting materials to the districts.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Arrangement of resources for reconstruction / repair of departmental buildings and farms and protected structures.</td>
</tr>
<tr>
<td>Earthquake</td>
<td>Seismic zones</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Arrangement of resources for reconstruction / repair of departmental buildings and farms and protected structures.</td>
</tr>
<tr>
<td>Heat wave</td>
<td>Western Odisha</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td>Hail storm</td>
<td>Anywhere in the State</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td>Fire</td>
<td>Anywhere in the State</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td>Tsunami</td>
<td>Coastal belt</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td>Disease</td>
<td>Anywhere in the State</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Supply of critical preventive chemicals</td>
</tr>
<tr>
<td>Insect, pest</td>
<td>Anywhere in the State</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Supply of critical preventive pesticides</td>
</tr>
<tr>
<td>Chemical Poisoning</td>
<td>Industrial areas</td>
<td>1. Arrangements for assessment of damage and crop loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Advice regarding specific soil amendments in the affected areas</td>
</tr>
</tbody>
</table>
Relief, Rehabilitation and Reconstruction

Norms of relief, if applicable.

Input assistance extended as per SDRF/NDRF Norms of the Central Government & Ex-gratia by State Govt if decided for any specific calamity.

Minimum Standards of relief.

The minimum entitlement of a farmer is as per CRF norm and Ex-gratia from the State Govt. (as of now the minimum entitlement of a farmer stands at `1000/- (₹250/- from CRF + ₹750/- as Ex-gratia from State Govt.)

Rehabilitation Plan

- Extending input subsidy,
- Compensation as per government norms.
- Facilitating timely payment of indemnity for crop loss,
- Contingent supply of seeds/planting materials, fertilisers, pesticides.
- Restoration assistance for sand-cast areas.
- Reconstruction/repair/restoration of departmental buildings, farms, equipment etc.
Chemical (Industrial) Disaster Management  
(Directorate of Factories and Boilers)

With growing industrialization, the hazard of chemical (industrial) disaster is also looming large. Comprehensive response and mitigation plans are prepared at the State level to tackle such disasters.

**Nature, frequency and intensity of disaster**

Handling large quantities of hazardous chemicals in factories poses the risk of sudden release of such chemicals in the environment. At present there are 24 Major Accident Hazard (MAH) units in Odisha. Such factories handle a large number of chemicals as raw materials in processes, products and wastes with flammable, explosion, corrosive, toxic and noxious properties. Chemical accidents may originate in manufacturing and formulation installation including commissioning, operation, maintenance and disposal.

Chemical disasters in general may result from

A. Fire  
B. Explosion  
C. Toxic gas release  
D. Poison  
E. Combination of the above  
F. Others  
   i) Breach of Ash pond  
   ii) Collapse of heavy structures including chimney

All such natures of Hazards may take place any time due to abuse/in operation malfunctioning the safety devices.

Chemical disasters may occur due to process deviation concerning the chemistry of the process, pressure, temperature with other identified parameters with regard to the state
of substances. In addition, it may also occur due to hardware failure resulting in large scale spills of toxic substances (in any form) due to loss of containment, or an explosion.

Even Boiling Liquid Expanding Vapour Explosion (BLEVE) may also occur due to sparks, shocks or frictional forces on the chemicals. The intensity of such disasters can be further compounded by the micro-meteorology of the area, wind speed and direction, rate of precipitation, toxicity/quantity of chemical release, population in the rich of release the probability of formation of lethal mixtures and other industrial activities being performed in closure vicinity.

**Preparedness plan**

Disaster preparedness involves readiness for taking precautionary measures prior to any imminent threat. It improves the response time to mitigate any disaster by way of effective rescue, relief and assistance.

A critical component of preparedness is education and training of the officials and the population at risk.

The following measures and investment are taken to ensure effective preparedness to respond to any disaster.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particulars</th>
<th>Measures required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Strengthening of Control Rooms</td>
<td>Control Rooms at state level, Divisional level and Zone level shall be equipped with adequate communication facilities like telephone, Fax, Computer, Internet, Printer, Inverter along with required stationeries etc.</td>
</tr>
<tr>
<td>2.</td>
<td>Co-ordination</td>
<td>Mobility of departmental personnel to the affected areas is highly essential. Currently this department has very few vehicles at our disposal. Adequate support for the same is required to be extended.</td>
</tr>
<tr>
<td>3.</td>
<td>Off Site Emergency Plan</td>
<td>All districts shall make vulnerable analysis with regards to the hazards which may lead to a chemical disaster. All Asst. Director of Factories &amp; Boilers shall coordinate in preparation of such plan in consultation with the Dist. Collector.</td>
</tr>
<tr>
<td>4.</td>
<td>Financial preparedness</td>
<td>Delegation of power shall be given to all Asst. Director of Factories &amp; Boilers to spend from the contingency.</td>
</tr>
</tbody>
</table>
Response Plan

Mechanism for early warning and dissemination thereof

After getting information about any chemical accident, the Zonal Asst. Directors of Factories & Boilers shall inform the Divisional Dy. Director of Factories & Boilers and in turn shall intimate to the Director of Factories & Boilers. The State, Divisional and Zonal Control Rooms of the concerned locality shall be activated to function round the clock. The concerned Asst. Director of Factories & Boilers shall be the nodal officers for effective communication to different levels.

The concerned Zonal Asst. Director of Factories & Boilers shall rush to the site, take a stock of the entire situation and shall ensure effective implementation of the On Site Emergency Plan. He will also coordinate with the other mutual aid teams to help in mitigation of the disaster.

All official staff shall be asked to remain at their respective headquarters with necessary preparation as per the standard operating procedure.

The Control Room will collect, collate and transmit information regarding matters related to chemical accidents, rescue measures undertaken and relief thereof extended (if any) for processing and communicating all such data to the concerned quarters. A station diary shall be maintained in the control room to record each and every activity received chronologically. The Zonal Asst. Director of Factories & Boilers shall furnish informations to the Head office on the important messages received as and when and action taken thereof. He shall also appraise the Dist. Administration about such chemical accidents and the measures required to be taken by the management and Dist. Administration.

Constitution of the Incident Response Teams (IRTs) at all level with provision of delegation of authority.

Incident Response Teams will be constituted at state, Division and Zonal level to tackle any disaster.

Role of the Zonal Incident Response Team

- To maintain an inventory of hazardous chemicals stored / handled / used in the factories and a Zonal map of such industries with the important contact numbers of the key members.
- First hand information on the disaster.
To coordinate with Dy. Director of the Division, Director and Dist. Authority.

To activate Disaster Management Plan.

To coordinate the overall response activities in the field.

To coordinate with other mutual partners to extend mutual aid to develop the media messages regarding up to date status of disaster mitigation and response work.

To collect, store and forward disaster related information for post incident analysis.

Role of the Divisional Incident Response Team

To coordinate with Director and other line departments.

To advise the field officer (Nodal officer) for declaring the disaster.

Visit the spot and assess the Zonal Response Team for pre-disaster planning.

Assess the staff and other logistic requirement for monitoring effectiveness.

To ensure availability of funds at Zonal level to meet contingency expenses.

To develop the media messages regarding up to date status of disaster mitigation and response work.

To monitor and guide the Zonal Incident Response Team.

Role of State Incident Response Team

To coordinate with State Govt., Central Govt., and other Line Department.

To facilitate execution of orders for declaring the disaster.

To prepare a status report regarding the disaster.

Visit the spot and assist the Zonal and Divisional Incident Response Teams for pre-disaster planning.

Assess the staff and other logistic requirement for field operation and monitor effectiveness.

To ensure availability of funds at Zonal and Divisional level to meet contingency expenses.

To develop the media messages regarding up to date status of disaster mitigation and response work.

To document the lessons learnt at different stages of disaster management and make suggestions for necessary addition and alternation.
**Members of State Incident Response Team**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Director of Factories &amp; Boilers, Odisha</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Jt. Director of Factories &amp; Boilers, Level-I</td>
<td>Vice-Chairman</td>
</tr>
<tr>
<td>3.</td>
<td>Jt. Director of Factories &amp; Boilers, Level-II</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td>Dy. Director of Factories &amp; Boilers, Safety, Headquarters</td>
<td>Convener</td>
</tr>
<tr>
<td>5.</td>
<td>Asst. Director of Factories &amp; Boilers, Safety</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Asst. Director of Factories &amp; Boilers, Headquarters</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td>Asst. Director of Factories (Medical)</td>
<td>Member</td>
</tr>
<tr>
<td>8.</td>
<td>Establishment Officer</td>
<td>Member</td>
</tr>
</tbody>
</table>

IRTs at State level shall meet at least twice in a year
1\textsuperscript{st} meeting – 3\textsuperscript{rd} week of May
2\textsuperscript{nd} meeting – 3\textsuperscript{rd} week of December

**IRT at Division level**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dy. Director of Factories &amp; Boilers of Division</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Asst. Director of Factories &amp; Boilers</td>
<td>Convener</td>
</tr>
<tr>
<td>3.</td>
<td>Other Asst. Directors of the Division</td>
<td>Member</td>
</tr>
</tbody>
</table>

The IRT at Division level shall meet at least twice in a year on receipt of proceedings of the meetings / instruction / guidelines of the state level.
1\textsuperscript{st} meeting – 3\textsuperscript{rd} week of June
2\textsuperscript{nd} meeting – 3\textsuperscript{rd} week of January

**IRT at Zonal Level**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Asst. Director of Factories &amp; Boilers of Zones</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Other official staff</td>
<td>Member</td>
</tr>
</tbody>
</table>
Similarly IRT at zonal level shall meet at least twice in a year after getting proceedings / instruction / guidelines from IRT of State / Division level.

1st meeting – 3rd week of July
2nd meeting – 3rd week of February
In case of any disaster – immediately

**Reporting procedures and formats**

A Zone is the lowest unit and the Asst. Director of Factories & Boilers in charge of Zone shall be responsible to collect and compile the statutory reports determined by the department for disaster management. The Divisional Dy. Director of Factories & Boilers shall compile the report of all the Zonal officers and shall send the report to Director of Factories & Boilers, Odisha. The first choice of sending the report shall be through E-mail. The following regular reports shall be collected. The other occasional reports shall also be collected (need specific) in case required.

- Pre assessment of factory wise vulnerable areas.
- Probable risks associated
- Mitigation / Rescue / Relief measures taken by the management
- Awareness training programmes for the workers and the general public in the close vicinity.
- Mock drills conducted

**Rescue relief**

This Department does not deal with rescue and relief. However, in case of exigency the Zonal Asst. Director of Factories & Boilers shall associate themselves with the Dist. Administration in finalization and disbursement of relief.
Housing and Urban Development

The Housing & Urban Development Department is the nodal Department for ensuring proper and planned growth of cities and towns with adequate infrastructure and basic amenities. The continuous exodus of rural population to urban areas has contributed to the exponential growth resulting in severe strain on the existing infrastructure and subsequent demand for additional provisions. To keep pace with the growing demands of the urban area, the Department has been taking effective and adequate steps for efficient management & delivery of basic urban services like provision of Safe Drinking Water, Sanitation, Roads, Solid Waste Management, Housing etc.

Further one of the important reforms during 1990s was the 74th Constitutional Amendment Act which empowered the Urban Local Bodies (ULBs) to function as Local Self Government. Thus, the Housing & Urban Development Department has got paramount responsibility to make the ULBs self sufficient and centers for good governance.

The Department strives to bring about both qualitative and quantitative changes in the living standard of the urban people by putting emphasis on the following areas:

Hazard, vulnerability, capacity and risk profile

Odisha is vulnerable to multiple disasters. Due to its sub-tropical littoral location, the state is prone to tropical cyclones, storm surges and tsunamis. Its densely populated coastal plains are the alluvial deposits of its river systems. The rivers in these areas with heavy load of silt have very little carrying capacity, resulting in frequent floods, only to be compounded by breached embankments. Though a large part of the state comes under Earthquake Risk Zone-II (Low Damage Risk Zone), the Brahmani Mahanadi graben and their deltaic areas come under Earthquake Risk Zone-III (Moderate Damage Risk Zone) covering 43 out of the 106 urban local bodies of the state. Besides these natural hazards,
human-induced disasters such as accidents, stampede, fire, etc, vector borne disasters such as epidemics, animal diseases and pest attacks and industrial / chemical disasters add to human suffering.

**Floods in Odisha:**

The 480 km long of coastline of Odisha exposes the State to flood, cyclones and storm surges. Heavy rainfall during monsoon causes floods in the rivers. Flow of water from neighbouring States of Jharkhand and Chattisgarh also contributes to flooding. The flat coastal belts with poor drainage, high degree of siltation of the rivers, soil erosion, breaching of the embankments and spilling of floodwaters over them, cause severe floods in the river basin and delta areas. In Odisha, rivers such as the Mahanadi, Subarnarekha, Brahmani, Baitarani, Rushikulya, Vansadhara and their many tributaries and branches flowing through the State expose vast areas to floods.

In Odisha, damages are caused due to floods mainly in the Mahanadi, the Brahmani, and the Baitarani. These rivers have a common delta where flood waters intermingle, and when in spate simultaneously, wreak considerable havoc. This problem becomes even more acute when floods coincide with high tide. The water level rises due to deposits of silt on the river-bed. Rivers often overflow their banks or water rushes through new channels causing heavy damages. Floods and drainage congestion also affect the lower reaches along the Subarnarekha. The rivers Rusikulya, Vansadhara and Budhabalanga also cause occasional floods.

The entire coastal belt in prone to storm surges. The storms that produce tidal surges are usually accompanied by heavy rain fall making the coastal belt vulnerable to both floods and storm surges. People die; livestock perish; houses are washed away; paddy and other crops are lost and roads and bridges are damaged. The floods of 1980, 1982, 2001 and 2003 in the State were particularly severe; property worth crores of rupees was destroyed in the floods.
### List of Major ULBs prone to Flood

<table>
<thead>
<tr>
<th>Sl</th>
<th>District</th>
<th>ULB</th>
<th>Sl</th>
<th>District</th>
<th>ULB</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Anugul</td>
<td>Athmalick(N)</td>
<td>15</td>
<td>Keonjhar</td>
<td>Anandapur(M)</td>
</tr>
<tr>
<td>2</td>
<td>Balasore</td>
<td>Balasore(M)</td>
<td>16</td>
<td>Keonjhar</td>
<td>Barbil(M)</td>
</tr>
<tr>
<td>3</td>
<td>Bhadrak</td>
<td>Bhadrak(M)</td>
<td>17</td>
<td>Mayurbhanj</td>
<td>Baripada(M)</td>
</tr>
<tr>
<td>4</td>
<td>Boudh</td>
<td>Boudhgarh(N)</td>
<td>18</td>
<td>Nuapada</td>
<td>Khariar Road(N)</td>
</tr>
<tr>
<td>5</td>
<td>Cuttack</td>
<td>Banki(N)</td>
<td>19</td>
<td>Puri</td>
<td>Puri(M)</td>
</tr>
<tr>
<td>6</td>
<td>Cuttack</td>
<td>CMC, Cuttack</td>
<td>20</td>
<td>Puri</td>
<td>Nimapara(N)</td>
</tr>
<tr>
<td>7</td>
<td>Cuttack</td>
<td>Choudwar(M)</td>
<td>21</td>
<td>Sambalpur</td>
<td>Sambalpur(M)</td>
</tr>
<tr>
<td>8</td>
<td>Dhenkanal</td>
<td>Bhuban(N)</td>
<td>22</td>
<td>Sambalpur</td>
<td>Hirakud(N)</td>
</tr>
<tr>
<td>9</td>
<td>Deogarh</td>
<td>Deogarh(M)</td>
<td>23</td>
<td>Sambalpur</td>
<td>Burla(N)</td>
</tr>
<tr>
<td>10</td>
<td>Jharsuguda</td>
<td>Brajarajnagar(M)</td>
<td>24</td>
<td>Subarnapur</td>
<td>Binika(N)</td>
</tr>
<tr>
<td>11</td>
<td>Jajpur</td>
<td>Jajpur(M)</td>
<td>25</td>
<td>Subarnapur</td>
<td>Sonepur(M)</td>
</tr>
<tr>
<td>12</td>
<td>Kendrapara</td>
<td>Pattamundai(N)</td>
<td>26</td>
<td>Subarnapur</td>
<td>Tarava(N)</td>
</tr>
<tr>
<td>13</td>
<td>Khordha</td>
<td>BMC, BBSR</td>
<td>27</td>
<td>Sundargarh</td>
<td>Rourkela(M)</td>
</tr>
<tr>
<td>14</td>
<td>Keonjhar</td>
<td>Joda(M)</td>
<td>28</td>
<td>Dhenkanal</td>
<td>Kamakhyanagar(N)</td>
</tr>
</tbody>
</table>

### Earthquake Zones of Odisha.
A large portion of Odisha comes under earthquake risk zone-II (Low damage risk zone). The Mahanadi and Brahmani graven, Mahanadi delta and parts of Balasore and Mayurbhanj district come under earthquake risk zone –III (moderate damage risk zone). 43 urban centres (Census) come under earthquake risk zone-III with a population of nearly 27 lakh. Out of 9 class-I towns, 5 namely Bhubaneswar, Cuttack, Puri, Sambalpur & Balasore are located in zone-III. Besides, important industrial centres like Angul, Talcher and Paradi also come within the same zone.

### Seismic Hazard
The Bureau of Indian Standards (BIS) updated the seismic hazard map of India in 2007. There are no major changes in the zones in Odisha with the exception of the merging of Zones II and I in the 1984 BIS map. Districts that lie in the valleys of Mahanadi and Brahmani river lie in zone III, and within Odisha this zone stretches from Jharsuguda along the border with Chhatisgarh in a south-easterly direction towards the urban centers.
of Bhubaneswar and Cuttack on the Mahanadi Delta. The maximum intensity expected in these areas would be around MSK VII. Districts in the north and south – west of the state lie in Zone II.

The districts coming under moderate damage risk zone (III) are as follows.

1. Sundargarh (part)
2. Jharsuguda (part)
3. Bargarh (part)
4. Sambalpur (part)
5. Deogarh (part)
6. Angul (part)
7. Dhenkanal
8. Jajpur
9. Cuttack (part)
10. Kendrapada
11. Jagatsinghpur
12. Khordha (part)
13. Puri
14. Bhadrak (part)
15. Balasore (part)
16. Mayurbhanj (Part)

Nature and Impact

Earthquakes have several distinct effects that can damage structures, disrupt and even endanger our lives. An understanding of these natural hazards and how they result in damage can lead to more effective safety planning at the city level, and to better decisions about the uses of individual lots.

- **Ground Shaking** is the most geographically widespread effect of earthquakes, occurring throughout the region.
- **Surface rupture** may occur directly along the fault line.
- **Ground failure** occurs when soil that is saturated with water, is on a slope, is otherwise weak, cannot support structures, or even itself, after being subjected to ground shaking.
• Other hazards that can result from earthquakes include fire and gal leakage.

Possible Damages
In addition to the characteristics of the earthquake and of the site (such as the magnitude, duration, soils type), a structure's characteristics, including structural type, materials, design, and quality of construction and maintenance, will determine how well it will perform. After San Francisco's 1865 earthquake, the front page of a local newspaper observed, "Well-built structures on good ground survived the shaking effects of the earthquake better than structures on made ground". It may be noted that buildings having walls properly secured and lain in cement, with sound foundations, suffer the least damage during earthquakes.

The impact of earthquakes differ for urban and rural areas, primarily because of the nature of infrastructure, quality of housing and occupational differences. In rural areas, it is primarily the housing and physical structures (including irrigation infrastructure) which may suffer extensive damage, without necessarily destroying the crops.

In urban areas, in addition to housing and physical infrastructures, it may also disturb the service infrastructure such as water supply, sewage, telephones, electricity, piped gas supply etc., which are essentially underground installations and hence exposed to a direct impact. The disruption, therefore, in urban areas and consequent investments for rehabilitation becomes a major challenge. So, more emphasis may be given on mitigation and preparedness measures to minimize the disastrous effects of an earthquake.

Earthquakes’ most profound impacts are deaths and serious injuries. Number of casualties largely depends on the number of people in the area at the time and the types of structures that they occupy. Most deaths and injuries are caused by the failure of buildings and structures. The numbers of casualties also depend upon the time of occurrence of the earthquake.

Important variables could substantially reduce the toll. The failure (or lack of failure) of a few high-occupancy or critical facilities such as arenas, theaters, or dams could influence the final casualty count significantly. The degree of water saturation of the ground will influence the occurrence of landslides and the area subject to liquefaction.
Weather conditions, especially wind speed and direction, will affect the spread of fire and the ability of emergency responders to control fires.

**Risk and Vulnerability Assessment for the ULBs**

“Risk is the probability that injury to life or damage to property and the environment will occur. The extent to which risk is either increased or diminished is the result of the interaction of a multitude of causation chains of events.” (Terry Jeggle and Rob Stephenson, Concepts of Hazard and Vulnerability Analysis).

“Vulnerability analysis is a process which results in the understanding of the types and levels of exposure of persons, property and the environment to the effects of identified hazards at a particular time.” (Terry Jeggle and Rob Stephenson, Concepts of Hazard and Vulnerability Analysis)

- Pockets with high rise buildings or ill-designed high-risk areas exist without specific consideration of earthquake resistance.
- Similarly, unplanned settlements with sub standard structures are also prone to heavy damage even in moderate shaking.
- So far as housing is concerned, vulnerability analysis has never been carried out and preliminary estimate of damages is not available for strengthening of structures under normal development improvement schemes.
Natural disasters are common to the climate of Odisha and cause massive losses of life and property. Droughts, flash floods, cyclones, landslides brought on by torrential rains, and Cyclonic-storms are some of the common occurrence and cause human suffering and loss of lives and property. The heavy southwest monsoon rains cause the rivers to distend their banks, often flooding surrounding areas. Almost all of coastal Odisha is flood-prone, and extreme precipitation events, such as flash floods and torrential rains, have become increasingly common in south coastal Odisha over the past several decades, coinciding with rising temperatures.

Though there has been no major incidence of losses due to different natural disasters with respect to the various establishments/offices run by the department; the educational institutions & hostels managed by the department have been affected by different natural calamities and disaster in past like cyclone, heavy rain & flash flood, summer storm etc. The losses or damages in the past were mainly caused to the property of the educational institutions while the students also faced difficult situations caused due to flash floods, cyclone etc.

Further, the educational institutions and hostels run by the department is also prone to the man-made disasters like food-adulteration/poisoning, outbreak of diseases like cholera, malaria, diarrhoea, bird flu etc. either due to negligence on the part of the functionaries entrusted with the responsibility of ensuring the food management at the school/hostels or as after effect of the disasters.
The following table indicates the hazard wise vulnerability to which the department is prone:

<table>
<thead>
<tr>
<th>Types of Hazards</th>
<th>Magnitude of vulnerability</th>
<th>Areas / Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Disaster</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclone</td>
<td>Medium to High</td>
<td>In pockets of coastal areas – mainly affecting the educational institutions in districts like Ganjam, Puri, Khurda, Jagatsinghpur, Cuttuck, Kendrapada, Jajpur, Bhadrak and Baleswar</td>
</tr>
<tr>
<td>Flood/ Flash Flood</td>
<td>Medium to High</td>
<td>In the catchments areas of major rivers flowing in the state as reflected above and in hilly districts like Malkangiri, Kalahandi, Koraput, Balangir, Boudh, Nayagrah, Sambalpur, Keonjhar, Mayurbhanj</td>
</tr>
<tr>
<td>Earthquacke</td>
<td>Low to Medium</td>
<td>In pockets of seismic zone II &amp; III (Low &amp; Moderate damage risk zone) – Bhubaneswar, Cuttack, Angual, Sambalpur, Sundargarh,</td>
</tr>
<tr>
<td>Land slide</td>
<td>Low to Medium</td>
<td>In hilly areas like Malkangiri, Koraput, Kalahandi, Rayagada, Kandhmal, Keonjhar</td>
</tr>
<tr>
<td>Fire</td>
<td>Low to medium</td>
<td>Applicable to both establishments and educational institutions</td>
</tr>
</tbody>
</table>

Man-made disaster

<table>
<thead>
<tr>
<th>Food poisoning/ Adulteration/ Contamination/ Sabotage</th>
<th>Low to Medium</th>
<th>Applicable to educational institutions/ hostels run by the department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outbreak of Epidemic</td>
<td>Low to Medium</td>
<td>Applicable to educational institutions/ hostels run by the department</td>
</tr>
</tbody>
</table>
Capacity of Department to deal with the identified disasters and gaps therein;

The educational institutions of the department are covered under the awareness generation programme on disaster preparedness in collaboration with School & Mass Education. Further, field staffs of the Department particularly the Teaching & Non-Teaching staffs of Educational Institutions, WEOs, ADWOs, S.O.s of ITDAs & Micro Projects, PA, ITDAs, and Staff of Inspection wing etc. deal with various types of disasters when they are confronted with it in the field, while discharging their duties. But they are neither well-equipped nor trained to deal with such circumstances. Similarly, at the state level as well, the awareness and basic understanding on various hazards and what prevention and mitigation steps can be taken at different levels is not there among the officials.

Further, though the field staff assume responsibility in the preparedness and post-disaster rescue & relief operations as part of the existing district and block level mechanism of Revenue department, the mechanism for triggering prevention and mitigation actions within the department levels is not well defined that sometimes create problems relating to timely and effective communication, coordination, timely action at the field level and so on.

<table>
<thead>
<tr>
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<td>Medium to High</td>
<td>In the catchments areas of major rivers flowing in the state as reflected above and in hilly districts like Malkangiri, Kalahandi, Koraput, Balangir, Boudh, Nayagarah,</td>
</tr>
</tbody>
</table>
With regard to preparedness to deal with the man-made disaster arising out of negligence, poor management etc., due guidelines are in place as part of Standard Operating Procedure, especially concerning the management of food at the school and hostel level and management of health issues among the students and boarders of the hostels run by the department. From time to time, detailed circulars/guidelines have been issued by the department in these regards specifying what actions to be taken at different level both as precautionary measures and as an immediate response mechanism if any untoward incident takes place in any educational institutions run by the department. However, there is always scope for improvement and strengthening of the management and monitoring system to avoid any occurrence of man-made disasters.

The following table indicates the hazard wise vulnerability to which the department is prone:

<table>
<thead>
<tr>
<th>Resource Plan</th>
<th>Mechanism for early warning and dissemination:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early warning mechanism is proposed as a two-way process wherein the early warning signs with respect to natural or man-made disasters received either from state level authorities or from the field level functionaries will be recorded and disseminated by designated official/ functionary in a manner as described below:</td>
<td></td>
</tr>
</tbody>
</table>
### Trigger Mechanism for activating response:

At the Department level a **Control Room** is set up headed by two Desk Officers and supported by a four members team (2 ASOs & 2 Group D staff) under the overall supervision of Director (ST). This Control Room will be activated to function round the clock in event of any impending/ sudden disaster. This control room will act as a coordination point between **District Nodal Officer (PA, ITDA in case of TSP areas and**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Level</th>
<th>Designation of the nodal officer/ functionaries</th>
<th>Dissemination of information/ early warnings to</th>
<th>Action to be taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>State</td>
<td>Director (ST)</td>
<td>a) District Collector&lt;br&gt; b) PA/ ITDA&lt;br&gt; c) DWO</td>
<td>The communication to focus on the impending disaster/ warning signs received from State Authorities and instruction to be conveyed to district team for initiation of preparatory measures.</td>
</tr>
<tr>
<td>2</td>
<td>District</td>
<td>a) PA, ITDA&lt;br&gt; b) DWO</td>
<td>a) ADWO/ Special Officer of Micro Project&lt;br&gt; b) WEO&lt;br&gt; c) HM/ Institution heads</td>
<td>Clear instructions to be conveyed on preventive measures to be taken as per the standing operating procedure.</td>
</tr>
<tr>
<td>3</td>
<td>Institution</td>
<td>Head of the institution/&lt;br&gt; Supdt. / Asst Supdt. Of hostels</td>
<td>To the students / inmates</td>
<td>Action to be initiated as per the standing operating procedure and ensuring safety and security of the students/ inmates</td>
</tr>
</tbody>
</table>
**DWO in case on non-TSP areas** to source information from the field and pass on the necessary information to the relevant authorities at the State level for triggering response for prevention, mitigation, rescue and relief operation as the case may be. The Nodal Officer will furnish a daily report to the State Control Room on the important messages received from the field, action taken thereon and any additional support required from the State Control Room.

The Control Room will closely monitor the situation at the ground with the help of district Nodal Officer, categorize the information as per the support requirement, follow up with the Nodal Officer at the district level as well as designated state authorities on the progress with regard to response actions and would prepare a daily update for sharing with the Head of the Department or his nominee. At the Control room level, a Station Diary will be maintained chronologically on all information received from the district and action taken thereon.

**Nodal Officers for Emergency Support Functions:**

The PA, ITDA/ DWO (as the case may be) is the Nodal officer at the District level to perform Emergency Support Functions. The Director (ST) is the Nodal Officer at the State level. The SSD department serves as a support agency for undertaking relief and rescue operations and assists the district administration for assessing the losses and requirements in the affected regions.

**Incident Response Team (IRTs):**

To deal with the specific incident of prospective or occurred disaster; IRTs at different levels are formed. The major responsibilities of the IRTs includes planning, logistic management and implementation of the response actions. These IRTs will be automatically activated after receiving early warning signals of a disaster happening or likely to happen or on receipt of information of an incident. IRTs at the Institution, Block, District and State level will be constituted with the Officers indicated below in the Table, who are also part of the existing teams/ mechanism of the Revenue/ PR department at the district and block levels.
<table>
<thead>
<tr>
<th>Sl. no.</th>
<th>Level</th>
<th>Composition of the IRTs</th>
<th>Major role</th>
</tr>
</thead>
</table>
| 1      | Institution (Schools/hostel HSS/Colleges/Training Institutions) | • Chairman of SMC/SMDC – Chairman  
• Vice-Chairman of SMC/SMDC-Member  
• Supdt./ Asst. Supdt. -Member  
• All teaching and non-teaching staff of the concerned institution -Member  
• Head of the institution – Member Convenor | - Ensuring safety and security of inmates  
- Chalking out plan for emergency evacuation/ rescue, if need arises  
- Ensuring provisioning of food and other essential commodities at the institution level  
- Maintaining close link with block/district teams for sourcing required support (food, medical, others)  
- Providing psycho-social support to the inmates  
- Providing database/information on the necessary support requirement/ impact of disaster for enabling IRTs at block in planning and response actions. |
| 2      | Block /Tahasil level | • BDO /Tahasildar – Chairman  
• ADWO- Member  
• Medical Officer-member  
• AE/JE –Member  
• WEO – member Convenor | - Rapid assessment of the situation based on the inputs on warning signs/ from the Institution level  
- Inventory planning of support required with quantum and probable sources – for preparedness, mitigation, rescue or relief, as the case may be  
- Mobilizing logistics/food/essential commodities/support services for institutions/establishment in the jurisdiction from designated sources  
- Ensuring provisioning of resources/support services to the institution/establishments as per the requirement  
- Act as information link between institutions and district level  
- Supporting plan for emergency evacuation/ rescue, if need arises – at the institution/establishment levels  
- Providing database/information on the necessary support requirement/impact of disaster for enabling IRTs at district/state level in planning and response actions. |
| 3      | District | • Collector/ Nominees of Collector - Chairman | - Consolidation of inventory of resources/support services reflected by the block IRTs – for preparedness, mitigation, |
**Reporting Procedure:**

At the district level, WEO submits an Incident Report to the PA, ITDA/ DWO highlighting the details of the incident (including what, where, kind of impact and how many have been affected/ likely to be affected) through SMS at the earliest. Further, the WEO prepares a written report capturing the above and highlighting the actions already taken at the field level, further action planned and difficulties if any in arrangement of resources or personnel for undertaking response action. This report should be submitted within 24 hours of the occurrence of the incident.
This apart the WEOs submit briefing reports on daily basis highlighting the ongoing response actions, emerging issues and support requirement till the situation normalises.

DWO in turn submits the daily consolidated report of the above to the department/State Control Room on the important messages received from the field, action taken thereon and any additional support required from the state control room in event of the activation.

**Man-Made Disasters**

(i) **Food poisoning/adulteration/contamination/sabotage**

**SOP for Provision of MDM in Schools**

Adhering to SOP is envisaged to achieve uniformity in the operations/ aspects concerning management of the MDM so that possibility of food poisoning, adulteration, sabotage, health hazards like diarrhoea, are substantially minimised if not eliminated:

**Internal control Policy:**

(1) **Dry ration procurement and storage:**

(i) Food Minister of School Cabinet along with the Asst Teacher in charge of Mess management as well as members of Mothers Committee & School Management Committee of the School concerned are to verify the quality part of the stock which is being supplied to the School for MDM purposes.

(ii) Stock entry is made by Asst Teacher with quantities/date of supply /purchases etc. duly countersigned by the HM/Supdt.s

(iii) Storage of dry ration to be made in proper container and adequate precautionary measures needs to be ensured particularly during rainy season so that the food stock does not become inconsumable due to dampness

(iv) Storage room is to be securely locked by the Store-in-Charge and verified for any dampness and is pest free.

(2) **Pre-cooking:**

(i) Daily quality testing including sample testing of various Dry rations by Asst Teacher on rotation basis before cooking and if any deviations found, the same is to be reported immediately to the concerned authorities.

(ii) Smell test of Rice, Dal to detect any foul smell.
(iii) Granularity/Color test to detect any adulteration or presence of pests.

(iv) Smell test of Edible oil to detect any foul smell/ discoloration.

(v) Surprise visits by the concerned WEOs/DWO/ Supervisors of ICDS/ CDPOs/ SEOs /LSEOs / SI of Schools and all other higher supervising Officers of the Block / ULBs in course of their field visits must be made every fortnight and reports submitted. It should be reviewed in the monthly review meeting by the concerned Collector.

(v) Periodic surprise checking by concerned Collector.

(3) **During cooking**

(i) Ensuring cleanliness of the cooking utensils, cooking area by the Food Minister of School Cabinet along with the Asst Teacher in charge of Mess management as well as members of Mothers Committee & School Management Committee of the School concerned. Any issues found to be brought to the notice of the concerned authority at the school level.

(ii) Cooking is done exclusively within the kitchen by CCAs/ Helpers which is supervised by 2 Asst Teachers whole week on rotation basis. A rotation list of Teachers is prepared by the HM/Supdt.s

(iii) Ensuring that no outsiders or stray animals enter the cooking areas during cooking hours.

(5) **Before Serving:**

The Asst Teacher in charge of the day as well as Cook cum Helper will pre-test all the items in presence of HM/Supdt. before half an hour of serving the same to the students. In case of any doubt about the quality of the food cooked, concerned authorities needs to be informed immediately for further course of action in the matter immediately.

(4) **Meal Serving:**

(i) Meal serving within one hour of cooking is mandatory

(ii) Meal is served in the Dining area/appropriate place in a hygienic manner.

(iii) Ensuring the hand-washing practice before and after food among the students with involvement of Food Ministry of the School Cabinet.
Response actions during Man-made disaster

(1) In case students complain of stomach pain after food consumption or vomiting is experienced, the HM/Supdt. and other Asst Teachers should immediately contact the local PHC/MHU/Ambulance for immediate admission and treatment and keep the concerned DWO informed about the incident. Necessary instruction is this regard has been given to the HMs/HMrs of all residential/educational institutions.

(2) Concerned DWO should inform the CDMO/Collector and keep track of treatment procedure.

(3) The concerned DWO/Collector to report the incident to the Incident Response Team (IRT) Chairman, Director (ST) at the State Level

The above SOP is carried out during serving of Breakfast, Lunch, & Dinner in all Hostels of the Department in case of emergency situations.

Outbreak of epidemic

Illness Reporting

(i) In case any student reports about illness, the HM/Supdt.s should immediately shift the student to the nearby PHC/Hospital for treatment and keep close watch over the situation and inform his/her authorities immediately.

Epidemic zones have already been identified and instructions in this regard to HMs/Superintendents of the Institutions has been given.

(ii) Ensuring use of Medicated mosquito-nets those have been supplied to hostel and its boarders. However, in case of any eventuality the HMs/Superintendents of the School/Hostel need to report the matter to the MO of the nearest PHCs.

(iii) One Health Officer/ANM has been identified for each residential school for periodical check-up of the health of the boarders and HMs/WEOs and Dwos to ensure that they are on job and providing the required support to the tagged schools.
Vulnerable points/ areas to be affected during disaster

During preparation of Disaster Management Plan to face the mitigation, the main point is to find out/ identified the vulnerable points/ areas to be affected due to disaster.

As this Department is dealing with, and responsible for construction work and its day to day maintenance for road, bridge, C.D. Works along with all public building works under its control, all the field officials starting for Executive Engineers, Assistant Engineer and Junior Engineers are warned for such identification of structures accordingly.

As the State Odisha is concerned it is highly prone to natural disaster like floods and cyclones. Though disaster like earth quake is concerned and as Odisha is not so very prone to earth quake as it is remaining under earth quake zone like zone I,II & III which are less predominant compare to zone – IV & V, the field officials have spot out such vulnerable public buildings and they have kept its proper watch and actions are initiated for its up-to-date keep up.

Similarly as in the case of vulnerability for buildings, as stated above the road works and bridges have been identified which may get affected during hazards like cyclones and floods. Though cyclone is not a predominant factor of hazard for road and bridge work unless it is a super cyclone which ultimately converts to a flood, but flood is a very dominating factor for hazard towards proper safeguard at road and bridge structures. Because the flood is caused due to inadequate capacity within the banks of rivers to contain high flow brought down from upper catchments due to heavy rain fall. Besides there are also other causes of flood due to deposition and filling up of river bed by heavy siltation of river bed caused due to abnormal deforestation which caused to land slide during rain fall and brought down of that land silt through flood water helping rising of river bed resulting in spreading over the banks and adjacent to road approach and bridges as its course causing submergence of road work and bridges.
As stated causes above the vulnerable points, in anticipation of getting damage during floods and cyclones for bridge and building works have been shown as Annexure separately as given below ---

i. Bridges and road approach under submersible condition – As Annexure “Ax”.

ii. Bridges under poor condition – As Annexure “Ay”.

iii. Public buildings like prestigious building. Heritage buildings and public buildings – As Annexure – “AB”.

**Risk analysis /standard operating procedure**

During study and analysis of Disaster Management Plan, the Risk Analysis comes with reference to vulnerable points for disaster which in turn comes with the factors to be observed such as:

I. Prevention

II. Mitigation and

III. Preparedness.

Which ultimately requires a Standard Operation Procedure (SOP).

Accordingly prevention and mitigation are to identify vulnerable points and its assessment of threat to life and property of both individual and public and its measure to reduce loss threat and its action how to deal with disaster situation with planning and taking decision to stop further propagation. As the factor states the vulnerable stretches have been identified with reference to facts mentioned in vulnerable points as enclosed in annexure line

iv. Bridges and road approach under submersible condition – As Annexure “Ax”.

v. Bridges under poor condition – As Annexure “Ay”.

vi. Public buildings like prestigious building. Heritage buildings and public buildings – As Annexure – AB.

To take up such work a team of personnel (technical) is formed.-------

As it is in the work procedure duties of the personnel’s are -------

1. **Executive Engineer** – As per the work load in all the districts throughout the state, post of Executive Engineers (Division) have been distributed. They are always vigilant

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to their work and remain alert mostly during flood session. Under them Assistant Engineers used to work who are answerable to the Executive Engineer.

2. **Assistant Engineer** – Like Executive Engineer, the work loads of a division the works are used to distributed among Assistant Engineers, who is engaged in construction works under his sub division along with its maintenance and during such maintenance they used to find out such vulnerable factors to be solved to present hazard due to disaster period. He is supported by Junior Engineer as per work load.

3. **Junior Engineers** – As stated above, the Junior Engineer plays the vital role in all the works. He is the person to find out such stretch and intimate to its next higher officer i.e the Assistant Engineers and so as to Executive Engineers as above.

In fact this team consisting Executive Engineer, Assistant Engineer and Junior Engineers combinedly takes the decision and intimate the facts to the Superintending Engineer for verification for onward transmission to the administrative control i.e with the Chief Engineer for finalization of the fact.

During hazards, all the works taken up as per the rules and codal provision. Accordingly they have been already instructed to work immediately the temporary restoration work with intimation to the higher authority for its regularization. And they are also taking up the works immediately as and when required. Besides all the field officials are well equipped with allsorts of communication facilities and they are always kept in contact with head quarter controlling authority at Bhubaneswar.

**Action Plan**

After identification of roads, bridges, building works under the jurisdiction of the Works Department as vulnerable to disaster due to affecting factor like flood as cyclones, action plan along with preparedness have been carried out.

**Personnel’s to Carried out the Action Plan**

Besides higher authorities i.e Engineer-in-Chief cum Secretary, Works and Chief Engineer, Roads / Buildings and Chief Engineer National Highway, who are administrative heads, the field officers comprising respective Superintending Engineers, Executive Engineers, Assistant Engineers and Junior Engineers have been instructed to be remain prepared to tackle the field situations along with temporary restoration materials at the time of flood so that the transportation of relief commodities should not be obstructed. And
accordingly the responses from the field officials have been received toward their preparedness for mitigation to tackle the hazard situations. At the same time all the field officials are made readily available with machineries and materials like earthmovers, dozers, trucks, wooden bullahg, empty cement bags also with river sand for protection works. Besides they have also been advised to remain vigilant for vulnerable stretches.

**Action Plan for Vulnerable Structures**

1. **Bridge Works** :- A list of bridges have been identified for vulnerable to get affected due to disaster (Annexure-). As they are poor and susceptible to further deformation due to disaster factors, extra cares have been carried out with proper renovation work. Out of such list some of the bridges have been improved by replacing new bridges and improvement works for rest are under progress in regular process observing all procedural aspects.

2. **For Submersible Bridge & Road Work Portion** :- Like as stated above, in case of submersible road and bridge portion, the submersible bridges are being replaced with High Level Bridges along with raising up of road embankment work with its approach. However, in case of suitability of site condition the road alignments are being diverted /changed to get rid of said situations.

3. **For Building Work** :- As per the list for buildings attached in Annexure “AB” which are vulnerable for disturbance during, if disaster factors affects them, it is observed that as they were pretty old and prestigious/ heritage buildings, some of the technical aspects could not have considered like earth quake factors. Besides some of them are in poor condition with reference to technical point of aspects. In order to protect all such structures adequate cares have been initiated and the works are in progress under the technical supervision of respective Executive Engineers along with proper vigilant by the higher officials. Besides proper fire protection work are also taken up in large public utility Government buildings. One such example is “Toshali Plaza” at Bhubaneswar.

4. Besides all above statements described, necessary steps have also been taken i.e list of some of the contractors along with their detailed addresses, contact numbers have been kept as ready references. Who can supply machineries, materials to mitigate the hazard situations immediately for the vulnerable areas.
At the same time all field officials have also been intimated to keep touch with the contractors who are equipped with machineries and materials to face the hazard situation and can supply the materials immediately. The proforma for such is enclosed for reference.

**National High Way**

**Nature, frequency and intensity of disaster**

On geographical analysis of Odisha state it is observed that Odisha is highly prone to natural disaster mainly due to flood and cyclone. Flood is a recurrent phenomenon in Odisha and stands as a barrier in progress of the state, where as cyclone though it is not recurrent compare to flood still it is occurring frequently damaging to public life and property especially in the coastal districts namely Ganjam, Puri, Cuttack, Kendrapada, Jagatsinghpur, Bhadrak & Balasore. In this connection the recent Super Cyclone of Odisha in 1999 may be taken as a bright example which caused in a large scale damage to life and property of the country. The cyclonic landfall usually lead to heavy rains accompanied with high speed winds and which eventually converts into flood, as was the case with above super cyclone flood in the Mahanadi delta area in October 1999. Though the several parts of Odisha is not in harmful cyclonic hazard but as mentioned above these seven districts are more vulnerable to cyclonic hazard. In order to withstand such cyclonic hazard and as mainly bridge and culvert works are prone to such hazard necessary "cb'daT" provisions are followed and utilized in practice and care being taken during constructional work of public buildings.

Similarly, though the flood is a predominant factor in creating hazard in the state, the coastal belt districts are highly hazard prone compare to other flood parts of inside Odisha. Generally the flood is caused by the in adequate capacity within the banks of rivers to contain high flow brought down from upper catchments due to heavy rain fall. Besides these are also other causes of flood due to deposition and filling up of river bed by heavy siltation of river bed caused due to abnormal deforestation which caused to land slide during rain fall and brought down of that land silt through flood water helping rising of river bed resulting in reduction of caring capacity of river channel. To protect such
hazard to get rid of flood, care should have taken for deforestation and protection of vegetative growth by the side of river course.

As the department is concerned on constructional work of roads and bridges and building work, cares are being taken as per codal provisions.

As the NH Organization is concerned for surface transportation management, it is emphasized to prepare a plan on close coordination with the National Disaster Management Plan(NDMP) to combat hazards situations with the vital points i.e

1. Assimilating the lessons learnt from past disaster especially floods and cyclones.
2. Bringing together information and knowledge available.

II. Historical/ Past Disasters / Losses in The Department-

On observation of the past records of odisha, flood is a perennial disaster in coastal belt and in the districts of Kendrapada, Jagatsinghpur, Jajpur and Balasore. Besides above districts of Puri, Khordha, Ganjam are also prone to flood and cyclonic hazards.

III. Causes of Losses /Damages

The losses and damages are due to heavy flood and cyclone.

IV. Hazard Wise Vulnerability of the Department to Various Hazards to Which the Department / State is Prone to

As the department is responsible for safeguard of the road transportation along with its bridges and C.D. works and buildings the respective field officials have been warned accordingly to act during disaster cases.

V. Capacity of the Department to Deal With the Identified Disasters- Institutional Organisational And Infrastructural-

The matter relates to the State Disaster Management Authority. Now here it is OSDMA.

VI. Gaps in the Existing Capacity-

Does not arise,

VII. Risk Analysis-

Calculating risk which various hazards/ disaster can came to department keeping in view its vulnerability’ and capacity -
In this regard the respective field officials have been directed to intimate the all situations of risk zones with proper observations of the site conditions.

**Response Plan**

**Trigger Mechanism for Response**-

- The respective field staff in the disaster prone area have been instructed to carryout the worst disaster situation as practicable to some public property and human lives and immediate information to the higher authority for further course of action.
- Response Plan for Responding Effectively And Promptly to Any Threatening Disaster Situation or Disaster in Accordance With the State Plan And in Accordance With the Guidelines or Directions of the National Executive Committee And the Executive Committee And the State Government And the SDA-
- As the steps have been initiated for prevention work, mitigation and preparedness for an ensuring unpredicted disaster, the respective officials of disaster prone area and the controlling office personnel have been kept ready to take care of for alone situations. However the guidelines as provided will be strictly follow up.
- Appointment of Nodal Officers to Perform Emergency Support Functions (ESFs)/ Roles in Emergency in the Formal Already Circulated by the State Government-
- This office has already appointed one such Nodal Officer to perform such assignment.
- Construction of the Incident Response Terms (IRTs) at All Levels With Provision of Delegation of Authority-
- All the field officials have been directed to act accordingly during disaster.
- Reporting Procedure And Formats-
- Reporting procedure and formats as issued by the OSDMA authority will be followed,
- Role of NGOs And Voluntary Sector And Coordination Thereof-
- This may be taken care of at the Government in Revenue Department.
- System of Assessing the Damage from Any Disaster-
• The damage will be assessed due to disaster with proper field verification and on preparation of estimates to this effect with intimation to the disaster authority.

• Roles And Responsibilities And Coordination Mechanism for the Department -

  • All officials and staff of the department are being instructed to keep proper coordination and proper harmony in the interest of public.

• Disaster Specific Response Plan - Response Plan for Major Disaster such as Earthquake, Flash Flood/ Cloud burst, Snow avalanche/ Land slide etc, in Which State Level Response Would be Needed-

  This prime object of Disaster Response Plan (DRP) is to provide safety, minimizing damages to property and protecting public life. The DM Act, 2005 requires that DMP incorporate the result of vulnerability and risk assessment of the area. Hence, the response plan including plans, procedures and identifications of prone areas to be affected to disaster and support functionaries so that they will be responsible for such support function.

  **Earthquake** - According to Seismic zoning of India, the country is divided into five seismic zones based on severity, e.g.- Zone-1, II, III, TV & V. Odisha lies in zone - I and zone - II which are relatively low risk zones. On observing the past history of odisha since nearly 50 years no such occurrences of severe earthquake have been marked, still then extra precautionary measures towards earthquake resistance factor implemented during construction of all public buildings to safe guard from earthquake.

  **Cloud burst, Snow avalanche** - Although these are coming under disaster situations, Odisha is not prone for such disaster.

  **Flash flood** - Most of the city area of Odisha are prone to flash flood. At present the city of Bhubaneswar is 'Verge prone to flash flood situation leading to massive property damages and some human lives.

    As the city is growing along with growth of population, people are constructing building works without any proper guideline and obstructing the natural drainage line unauthorized encroachment resulting submergence of habitant areas resulting to flash flood situation.

    To get rid of such situation a proper strict guideline from the Government should be carried out.
Land slide - The land slide hazard in Odisha is generally confirmed to southern ghats due to encroachment of hilly slopes and denudation of vegetative cover from the slopes are main region of land slide. Besides the operation of granite stone quarries by the private industries is also another cause.

To get rid of such land slide during road construction work, proper slope in hills are maintained with proper drain arrangements. Besides forest departments are also taking care of sliding of land by vegetative growth.

XI. Identification of Suppliers for Departmental Supplies And Pre-Contracting for Supplies in Case of Emergencies -

Although the section mostly coming for rehabilitation to be monitored by the Government in Revenue Department, this department has also taken care of in case of breaching of roads damage of C.D. works (if so), for which they have been advised to keep. E.g. empty sand gunny bags, bull hag, moorums if required for temporary restoration work.
Industry Department

Nature, frequency and intensity of disaster

Handling large quantities of hazardous chemicals in factories poses the risk of sudden release of such chemicals in the environment. At present there are 24 MAH units in Odisha. Such factories handle a large number of chemicals as raw materials in processes, products and wastes with flammable, explosion, corrosive, toxic and noxious properties. Chemical accidents may originate in manufacturing and formulation installation including commissioning, operation, maintenance and disposal.

Chemical disasters in general may result from
b. Fire
c. Explosion
d. Toxic gas release
e. Poison
f. Combination of the above
g. Others
h. Breach of Ash pond
i. Collapse of heavy structures including chimney

All such natures of Hazards may take place any time due to abuse/in operation malfunctioning the safety devices.

Chemical disasters may occur due to process deviation concerning the chemistry of the process, pressure, temperature with other identified parameters with regard to the state of substances. In addition, it may also occur due to hardware failure resulting in large scale spills of toxic substances (in any form) due to loss of containment, or an explosion.

Even Boiling Liquid Expanding Vapour Explosion (BLEVE) may also occur due to sparks, shocks or frictional forces on the chemicals. The intensity of such disasters can be further compounded by the micro-meteorology of the area, wind speed and direction, rate of precipitation, toxicity/quantity of chemical release, population in the rich of release the probability of formation of lethal mixtures and other industrial activities being performed in closure vicinity.
## Historical/past disasters/losses in the department;

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Date of Occurrence</th>
<th>Name of the factory</th>
<th>Type of accident</th>
<th>Details of losses / damages</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>21.09.04</td>
<td>Kusum Power Met (P) Ltd. Keonjhar</td>
<td>Hot dust gushed out from the chute, came in contact with water, splashed and spread over the victims causing burn injuries.</td>
<td><strong>Hot dust explosion</strong> Seven persons died.</td>
</tr>
<tr>
<td>2.</td>
<td>27.02.08</td>
<td>SMC Power Generation Ltd. Jharsuguda</td>
<td>During accretion cutting hot dust gushed inside the rotary kiln and workers sustained burn injuries.</td>
<td><strong>Hot dust explosion</strong> Five persons died.</td>
</tr>
<tr>
<td>3.</td>
<td>31.08.08</td>
<td>Bhushan Power &amp; Steel Lapang, Sambalpur</td>
<td>CO poisoning</td>
<td>Four persons died.</td>
</tr>
<tr>
<td>4.</td>
<td>05.02.09</td>
<td>Singhal Enterprises, Hirma, Jharsuguda</td>
<td>CO poisoning while entered inside the rotary kiln for accretion cutting.</td>
<td>Three persons died.</td>
</tr>
<tr>
<td>5.</td>
<td>22.03.09</td>
<td>Shri Mahavir Ferro Alloys (P) Ltd. Sundargarh</td>
<td>Steam burn due to explosion of the decorator tank.</td>
<td>Two persons died.</td>
</tr>
<tr>
<td>6.</td>
<td>13.10.09</td>
<td>Maithan Ispat Ltd. Kalinga Nagar, Jajpur</td>
<td>Explosion of furnace</td>
<td>Two persons died &amp; four persons seriously injured.</td>
</tr>
<tr>
<td>7.</td>
<td>10.05.10</td>
<td>MSP Metallics Ltd., Marakuta, Jharsuguda</td>
<td>Explosion in Pellet plant causing burn injuries.</td>
<td>Seven persons died.</td>
</tr>
<tr>
<td>8.</td>
<td>23.05.10</td>
<td>Adhunik Metalliks Ltd., Kuarmunda, Sundargarh</td>
<td>Explosion</td>
<td>Two persons died</td>
</tr>
<tr>
<td>9.</td>
<td>25.06.10</td>
<td>Hindustan Cocacola Ltd., I.E., Khordha</td>
<td>Explosion of boiler</td>
<td>Four persons died</td>
</tr>
<tr>
<td>10.</td>
<td>09.04.11</td>
<td>Asiatic Gases Ltd., Vedvyas, Rourkela</td>
<td>Explosion of acetylene cylinder</td>
<td>Three persons died</td>
</tr>
</tbody>
</table>

### Cause of losses / damages;

A number of factors are responsible for chemical disasters which are

**A. Process and safety system failures:**

i. Technical errors - Design defects, fatigue, metal failure, corrosion etc.

ii. Human errors – Neglecting safety instructions, deviating from specified procedures.
iii. Lack of information – Absence of emergency warning procedures, non-disclosure of line of treatment etc.

iv. Organizational errors – Poor emergency planning and coordination, poor communication with public, non-compliance with mock drills/exercises etc., which are required for ensuring a state of quick response and preparedness.

B. Natural Calamities:

Odisha is highly prone to natural disasters, which can also trigger chemical disasters; damage to phosphoric acid sludge containment during the Odisha Super Cyclone in 1999 is one of the recent examples.

C. Terrorist Attacks / Sabotage:

Vulnerability to chemical disasters is further compounded by likely terrorist and warfare activities, which include sabotage and attack on hazardous chemical installations.

Hazard wise Vulnerability:

Vulnerability is the condition determined by physical, social, economic and environmental factors or processes which increase the susceptibility of a community to the impact of hazards. It is determined by aspects of the physical environment such as nature of housing available open spaces etc., as well as aspects in the socio economic domain such as level of income, institutional states, marginalization etc.

Gaps in the existing capacity;

As stated earlier there are 146 nos. of sanctioned strengths in different cadres i.e., Group-A, B, C & D; against which the staff on position as on date is 110. There are 36 posts lying vacant in the department which includes 4 nos. of field officers. The Asst. Director of Factories & Boilers who are posted in the Dist. Headquarters are responsible for immediate address for any kind of disaster. Most of the officers are not equipped with vehicles for which it is becoming practically difficult to immediately assess the extent of damage caused by any disaster. In addition to this, there are also few technical reasons, like

A. Lack of national level risk assessment criteria and acceptable risks for chemical plans viz., failure rate and probability of accidents etc.
B. Procedure of conduct of safety audit and safety report preparation. Lack of technical competent authorities and standardization of reporting mechanisms for the status of implementation of various chemical disaster related activities.

Non-availability of statutes for grant of compensation to chemical accident victim.

Harmonization and incorporation of international laws in chemical management.

The following facilities are missing for effective implementation of the plan.

- Gas disperse modeling software
- Video conferencing facilities
- Manpower

**Risk analysis.**

All industrial houses coming under the MAH & 2(cb) category have made risk analysis for different hazards / disasters.

**Prevention, Mitigation and Preparedness Plan** –

Prevention includes the identification of hazards, the assessment of threats to life / property and initiating measures to reduce such losses. Mitigation measures range from community awareness campaign to increase the knowledge of the departmental officers to deal with the situations leading to disasters viz., planning, decision making and initiation of mitigation measures to reduce adversity to the community.

The following key tasks shall be taken up to reduce the risk in case of a disaster.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Particular Measures required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Capacity building at all level in vulnerable areas (fire, explosion, toxic release, poisoning etc.)</td>
</tr>
</tbody>
</table>

State level – For effective supervision, monitoring and to prevent and mitigate disasters, one day state level training-cum-awareness programme shall be organized. All Jt. Directors, Dy. Directors and Asst. Director of Factories & Boilers in charge of Zones shall attend the programme. This shall be organized at Directorate of Factories & Boilers, Bhubaneswar.

Division level Programme – Dy. Director of Factories & Boilers, Asst. Director of Factories & Boilers and the staff shall be trained to manage the disasters effectively. The programme shall be organized by OSDMA and Directorate of Factories & Boilers, Odisha.

Community level – Different awareness programmes like National Safety Day/Week (4th March / 4th to 10th March), Environment Day (5th March / 22nd April), National Science Day (9th February), etc. shall be organized.
June) and Chemical Disaster Prevention Day (4th December) shall be observed under the direct supervision of field level officers (Asst. Directors of Factories and Boilers of Zones and Dy. Director of Factories & Boilers of Divisions) to create awareness among the employees of the factories along with the public of nearby community.

2. Public awareness

Mass awareness programme shall be done through different audit visual media to sensitize the industrial employees and the general public of the nearby community.

3. Mock drills

Periodical mock drills shall be conducted twice in a year under the direct supervision of the field level officers of this Directorate in all MAH and accident prone factories of the state to review the readiness of the factory managements to handle any disaster.

4. Identification of accident prone factories and deployment of safety officers.

The Directorate has already identified 168 accident prone factories including the MAH factories. Field level officers shall ensure deployment of qualified safety officers to overview the safety aspects of the factory. Safety committee meetings shall be organized in each such factories at least once in a month and defects noticed therein shall be complied to within stipulated time which shall be ensured by our field officers.

5. Off site drills

A district level off site drill involving the factory workers, general public, volunteers and media shall be conducted involving the Dist. Administration to assess the readiness of the management along with Dist. Administration to mitigate a disaster.

Response Plan

Mechanism for early warning and dissemination thereof

After getting information about any chemical accident, the Zonal Asst. Directors of Factories & Boilers shall inform the Divisional Dy. Director of Factories & Boilers and in turn shall intimate to the Director of Factories & Boilers. The State, Divisional and Zonal Control Rooms of the concerned locality shall be activated to function round the clock. The concerned Asst. Director of Factories & Boilers shall be the nodal officers for effective communication to different levels.

The concerned Zonal Asst. Director of Factories & Boilers shall rush to the site, take a stock of the entire situation and shall ensure effective implementation of the On Site Emergency Plan. He will also coordinate with the other mutual aid teams to help in mitigation of the disaster.
All official staff shall be asked to remain at their respective headquarters with necessary preparation as per the standard operating procedure.

The Control Room will collect, collate and transmit information regarding matters related to chemical accidents, rescue measures undertaken and relief thereof extended (if any) for processing and communicating all such data to the concerned quarters. A station diary shall be maintained in the control room to record each and every activity received chronologically. The Zonal Asst. Director of Factories & Boilers shall furnish informations to the Head office on the important messages received as and when and action taken thereof. He shall also appraise the Dist. Administration about such chemical accidents and the measures required to be taken by the management and Dist. Administration.

**Constitution of the Incident Response Teams (IRTs) at all level with provision of delegation of authority.**

Incident Response Teams will be constituted at state, Division and Zonal level to tackle any disaster.

**Role of the Zonal Incident Response Team**

- To maintain an inventory of hazardous chemicals stored / handled / used in the factories and a Zonal map of such industries with the important contact numbers of the key members.
- First hand information on the disaster.
- To coordinate with Dy. Director of the Division, Director and Dist. Authority.
- To activate Disaster Management Plan.
- To coordinate the overall response activities in the field.
- To coordinate with other mutual partners to extend mutual aid to develop the media messages regarding up to date status of disaster mitigation and response work.
- To collect, store and forward disaster related information for post incident analysis.

**Role of the Divisional Incident Response Team**

- To coordinate with Director and other line departments.
- To advise the field officer (Nodal officer) for declaring the disaster.
- Visit the spot and assess the Zonal Response Team for pre-disaster planning.
- Assess the staff and other logistic requirement for monitoring effectiveness.
• To ensure availability of funds at Zonal level to meet contingency expenses.
• To develop the media messages regarding up to date status of disaster mitigation and response work.
• To monitor and guide the Zonal Incident Response Team.

**Role of State Incident Response Team**

• To coordinate with State Govt., Central Govt., and other Line Department.
• To facilitate execution of orders for declaring the disaster.
• To prepare a status report regarding the disaster.
• Visit the spot and assist the Zonal and Divisional Incident Response Teams for pre-disaster planning.
• Assess the staff and other logistic requirement for field operation and monitor effectiveness.
• To ensure availability of funds at Zonal and Divisional level to meet contingency expenses.
• To develop the media messages regarding up to date status of disaster mitigation and response work.
• To document the lessons learnt at different stages of disaster management and make suggestions for necessary addition and alternation.

**Members of State Incident Response Team**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Director of Factories &amp; Boilers, Odisha</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Jt. Director of Factories &amp; Boilers, Level-I</td>
<td>Vice-Chairman</td>
</tr>
<tr>
<td>3.</td>
<td>Jt. Director of Factories &amp; Boilers, Level-II</td>
<td>Member</td>
</tr>
<tr>
<td>4.</td>
<td>Dy. Director of Factories &amp; Boilers, Safety, Headquarters</td>
<td>Convener</td>
</tr>
<tr>
<td>5.</td>
<td>Asst. Director of Factories &amp; Boilers, Safety</td>
<td>Member</td>
</tr>
<tr>
<td>6.</td>
<td>Asst. Director of Factories &amp; Boilers, Headquarters</td>
<td>Member</td>
</tr>
<tr>
<td>7.</td>
<td>Asst. Director of Factories (Medical)</td>
<td>Member</td>
</tr>
<tr>
<td>8.</td>
<td>Establishment Officer</td>
<td>Member</td>
</tr>
</tbody>
</table>
IRTs at State level shall meet at least twice in a year

1\textsuperscript{st} meeting – 3\textsuperscript{rd} week of May
2\textsuperscript{nd} meeting – 3\textsuperscript{rd} week of December

**IRT at Division level**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dy. Director of Factories &amp; Boilers of Division</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Asst. Director of Factories &amp; Boilers</td>
<td>Convener</td>
</tr>
<tr>
<td>3.</td>
<td>Other Asst. Directors of the Division</td>
<td>Member</td>
</tr>
</tbody>
</table>

The IRT at Division level shall meet at least twice in a year on receipt of proceedings of the meetings / instruction / guidelines of the state level.

1\textsuperscript{st} meeting – 3\textsuperscript{rd} week of June
2\textsuperscript{nd} meeting – 3\textsuperscript{rd} week of January

5.2.6 **IRT at Zonal Level**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Officer</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Asst. Director of Factories &amp; Boilers of Zones</td>
<td>Chairman</td>
</tr>
<tr>
<td>2.</td>
<td>Other official staff</td>
<td>Member</td>
</tr>
</tbody>
</table>

Similarly IRT at zonal level shall meet at least twice in a year after getting proceedings / instruction / guidelines from IRT of State / Division level.

1\textsuperscript{st} meeting – 3\textsuperscript{rd} week of July
2\textsuperscript{nd} meeting – 3\textsuperscript{rd} week of February

In case of any disaster – immediately

5.3 **Delegation of financial powers in case of a disaster**

Following financial powers need to be delegated to the Asst. Director of Factories & Boilers to coordinate in mitigation, rescue and relief in case of any disaster. The expenses made during this period shall be reimbursed later after necessary sanction of funds by the Head of Department.
### 5.4 Reporting procedures and formats

A Zone is the lowest unit and the Asst. Director of Factories & Boilers in charge of Zone shall be responsible to collect and compile the statutory reports determined by the department for disaster management. The Divisional Dy. Director of Factories & Boilers shall compile the report of all the Zonal officers and shall send the report to Director of Factories & Boilers, Odisha. The first choice of sending the report shall be through E-mail. The following regular reports shall be collected. The other occasional reports shall also be collected (need specific) in case required.

- Pre assessment of factory wise vulnerable areas.
- Probable risks associated
- Mitigation / Rescue / Relief measures taken by the management
- Awareness training programmes for the workers and the general public in the close vicinity.
- Mock drills conducted

### 5.5 Rescue relief

This Department does not deal with rescue and relief. However, in case of exigency the Zonal Asst. Director of Factories & Boilers shall associate themselves with the Dist. Administration in finalization and disbursement of relief.
Hazard, Vulnerability, Capacity and Risks Profile

(i) Disasters likely to be impacted in future.

- **Cyclone**
  Cyclone originates in the Bay-of-Bengal which is most vulnerable to this type of hazards. It causes damage to port infrastructures, passenger waiting halls, ships, jetties and launches/boats etc.

- **Flood**
  The monsoon rain and sometimes cyclone causes flood in the rivers of the state which causes may create scouring of foundation of water front structures such as jetties, damages approach road.

- **Earthquake**
  It may cause damages/collapses the port infrastructures and jetties & waiting halls according to its severity.

- **Tsunami**
  It damages/collapses port infrastructures, passenger jetties & waiting halls, ships, launches/boats etc.

- **Oil Spill**
  It will pollute the water body which affects aquatic life, birds, animals, coast.

(ii) During Super Cyclone in 1999, there was heavy loss in Gopalpur Port.

Standard Operating Procedure (SOP)

For disaster monitoring system.

Objective

(a) To provide, in a concise and convenient form, a list of major executive actions involved in responding to natural disasters and necessary measures for preparedness, response and relief required to be taken;
(b) To ensure that all concerned know the precise measures required of them at each stage of the process and also to ensure that all actions are closely and continuously coordinated.

The SOP encompasses the following three phases of disaster management for effective and efficient response to natural disasters:

**Pre-Disaster Phase**

i) **Preparedness** – This will include taking all necessary measures for planning, capacity building and other preparedness so as to be in a state of readiness to respond, in the event of a natural disaster. This Stage will also include development of Search and Rescue Teams, mobilization of resources and taking measures in terms of equipping, providing training, conducting mock drills/exercises, etc.

ii) **Early Warning**– This will include all necessary measures to provide timely, qualitative and quantitative warnings to the disaster managers to enable them to take preemptive measures for preventing loss of life and reducing loss/damage to the property. On the occurrence of a natural disaster or imminent threat thereof, all the concerned Agencies will be informed/ notified for initiating immediate necessary follow up action.

**On-Disaster Phase**

i) **Response** – This will include all necessary measures to provide immediate succor to the affected people by undertaking search, rescue and evacuation measures.

**Post-Disaster Phase**

i) **Relief**- This will include all necessary measures to provide immediate relief and succor to the affected people in terms of their essential needs of food, drinking water, health and hygiene, clothing, shelter, etc.

ii) **Restoration** – This will include all necessary measures to stabilize the situation and restore the utilities.
Response Time:
Executive Engineer (Mech) will inform all concerned within 15 Minutes. They will make launches, boats, vehicles ready within 30 Minutes. Power supply will be disconnected immediately stand by will be ready within 1 Hour. Flotilla units will be ready within 1 Hour.

Response Time:
Port Officer will inform all concerned within 15 Minutes. They will make vehicles ready within 30 Minutes. Power supply will be disconnected immediately stand by will be ready within 1 Hour. Lowering the Boom of the Crane within 1 Hour. Flotilla units will be ready within 1 Hour.

Response Time:
Emergency reporting by all concerned within 5 Minutes and action will be taken immediately

Response Time:
All concerned officers will report information on damage assessment within 48 Hours to the Director, Ports & IWT as well Collector & DM.

One Committee is formed at the Directorate of Ports & IWT, Odisha for smooth monitoring of the Standard Operating Procedure (SOP) and carryout the Mock Drills at least two times in a year, once before monsoon tentatively in the month of May and another in the month of November.

**COMMITTEE**

<table>
<thead>
<tr>
<th>Director, Ports &amp; IWT, Odisha (Chairman)</th>
</tr>
</thead>
<tbody>
<tr>
<td>P.A. (Tech) to Director, Ports &amp; IWT, Odisha (Member)</td>
</tr>
<tr>
<td>Estimator, Directorate of Ports &amp; IWT, Odisha</td>
</tr>
<tr>
<td>Establishment Officer, Directorate of Ports &amp; IWT, Odisha (Member Convener)</td>
</tr>
</tbody>
</table>
Conclusion

The Port level Disaster Management Plan and its preparedness for mitigation and restoration if any has to be audited once in a year by OSDMA/ Competent Authorities. Internal auditing twice a year has to be carried out by Directorate of Ports & IWT, Odisha/ Commerce & Transport Department to assess, evaluate and preparedness for the Inland Water Transport Sector. Adequate safety equipments and rescue boats has to be provided to the inland water transport sector. We, as responsible citizens of our state should be a part and parcel of the disaster preparedness drive taken up in the state. **DISASTER PLAN OF**

Transport Department  (Road Sector)

Road Transport Department plays a crucial role in mitigating the hazards of various disasters. One of the greatest challenges before the administration on occurrence of a disaster is to reach the affected area / spot at a minimum possible time. It is also highly essential to provide mobility to the affected people immediately.

Transport Department is required to take steps on the following disaster occurrences (a) Road Accidents /Crashes (b) Natural Calamities and Law & Order

Road Accidents / Crashes

State Transport Authority with the support of Odisha Road Safety Society has taken a number of steps to address the menace of road accident :

**24 hour accident help lines -**

In order to provide instant first-aid to road accident victims and to shift them to the nearest hospital Odisha Road Safety Society has opened nine Accident Help lines in collaboration with NGOs and Truck Owners Associations. On obtaining information of accident, an ambulance equipped with first-aid facilities rushes to the spot to assist the victims. Toll Free Telephone No. -1073 have been connected to the accident help lines. The operational details of the helplines are mentioned in the following table.
<table>
<thead>
<tr>
<th>Area of operation of the helplines</th>
<th>Name of the NGO operating the Help line</th>
<th>Toll Free No -1073</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meramunduli to Rairakhole NH-42</td>
<td>Angul Truck Owner’s Association</td>
<td>1073</td>
</tr>
<tr>
<td>Khalikote to Girisola NH-5</td>
<td>Berhampur Truck Owner’s Association</td>
<td>1073</td>
</tr>
<tr>
<td>Jharsuguda to Sambalpur –NH-6</td>
<td>Rengali Truck Owner’s Association</td>
<td>1073</td>
</tr>
<tr>
<td>Baramunda Bus stand to Khordha – NH-5</td>
<td>NGO - SAHAYA</td>
<td>1073</td>
</tr>
<tr>
<td>Samantray Pur to Pipili</td>
<td>NGO - SAHAYA</td>
<td>1073</td>
</tr>
<tr>
<td>Bargaon to Bhasma</td>
<td>Sundargarh Truck Owner’s Association</td>
<td>Action has been initiated to install telephone no 1073</td>
</tr>
<tr>
<td>Rajagangapur to Bhasma</td>
<td>Rajagangapur Truck Owner’s Association</td>
<td>Action has been initiated to install telephone no 1073</td>
</tr>
<tr>
<td>Bangiriposi to Baripada &amp; Baripada to Baisinga</td>
<td>NGO - VARD</td>
<td>1073</td>
</tr>
<tr>
<td>Khuntuni to Manguli, Khuntuni to Dhenkanal, Khuntuni to Athagarh.</td>
<td>Action has been initiated to install telephone no 1073</td>
<td></td>
</tr>
</tbody>
</table>

ii) **Ambulances Supplied to High way side Fire Stations** – 10 TATA Winger Ambulances have been supplied by the State Transport Authority to State Fire Services which are deployed at the following Fire Stations. These ambulances are used exclusively for providing First-aid to the road accident victims and shifting them to the nearest hospital round the clock. The Telephone number of fire service i.e. **102** is dialed to get the service of Ambulance.
a) Koraput Fire Station
b) Chandikhole Fire Station
c) Angul Fire Station Fire Station
d) Balugaon Fire Station
e) Soro Fire Station
f) Puri Fire Station Fire Station
g) Kalahandi Fire Station
h) Sambalpur Fire Station
i) Jajpur Road Fire Station
j) Rairkhole Fire Station

iii) Deployment of Cranes & Ambulances -

Ministry of Road Transport & Highways, Govt. of India (MoRT&H) has provided 20 Ambulances and 15 Cranes to Govt. of Odisha under National Highways Accident Relief Service Scheme (NHARSS). These cranes and ambulances are deployed on different stretches of National Highways with the support of Truck Owner’s Associations, Bus Owner’s Associations and Police for rescue operation on occurrence of road accidents. A list of such cranes and ambulances is placed at Annexure -A & A.1

Similarly, 6 Cranes have been provided to Commissionarate Police & Puri Police by the State Transport Authority. Out of these 06 cranes

b) Natural Calamities and Law & Order

On occurrence of a disaster like natural calamity and any Law & Order situation it is the greatest challenge before the administration to reach at the spot. Transport Department plays a crucial role in addressing this situation

a) At such a situation the local / district administration requires different types of vehicles for movement of Magistrates, Police, Volunteers, line department people like road engineers, Electrical engineers etc. On requisition from district administration Transport Department provides vehicles to the administration. It is also essential to supply basic necessities to people like food, clothing etc during a disaster. Transport Department also arranges such mobility to the people on requisition from the administration. Regional Transport Officers maintain a list of availability of vehicles at their level.
b) When a road is damaged or washed out it is required to divert the Public Carriers through some other route. Through a notification by the Transport Department this diversion of vehicles is legalized.

c) The District level Emergency Control Room functions as Control Room during such periods.

d) The Regional Transport Officers of concerned districts function as nodal Officer for the purpose.
Energy Department

Causes of Disasters & Crisis In Power Sector

Disaster in power sector can occur due to natural to natural calamities such as:

- Earthquakes
- Floods/cloud burst
- Tsunamis
- Cyclones
- Hurricanes, etc

And crisis situation can arise in power Sector in the event of:

- Terrorist threats / attack & sabotage
- Bomb threats & bomb explosions
- Strike
- Fire etc,
- Cyber attack

There will be three types of response elements involved in this plan

1. **Operational response** to get the disruption under control as quickly as possible so that normal operation is resumed.

2. **Management response** to allocate resources and making critical decisions needed to resolve the situation.

3. **Communication response** to communicate with employees, their families, officials, other agencies and media.

Constitution of *Disaster Management group*

a) State level Disaster management group
b) Principal Secretary / Secretary (Energy) of the State
c) CEOs / CMDs of generating, transmission & distribution companies
d) Representative of health & welfare agencies
e) Chief Fire safety
f) Inspector general Police

Responsibilities

- To mobilize resources for restoration
- To ensure that disaster management plans are in place
- To mobilize financial resources
To facilitate inter-agency support
To coordinate information
To facilitate damage assessment

b) Plant level Emergency Management Group (EMG)
   a) In charge of the installation
   b) Plant safety manager
   c) Chief Plant Operation Administration
   d) Representative of District Administration

Responsibilities
To direct action within the affected area taking into consideration the priorities for safety of plant personnel, minimize damage to plant property and the environment.
To direct fire and security personnel for immediate action.
To ensure that all non-essential workers/staff in the affected area are evacuated to safer places.
Set up communication points.
Report all development and requirements / assistance needed
Preserve all evidences so as to facilitate any inquiry into the cause and circumstances which cause or escalated the emergency
To coordinate with District Administration for necessary finance, medical law & order etc.

EMG shall maintain the following:
1) Safety data pertaining to all hazardous materials likely to cause emergency.
2) Procedure of major and special fire fighting materials likely 10 cause etc.
3) Procedures for tackling harmful gases and other chemical leakages.
4) Emergency call out list of persons drafted for emergency control, key personnel, fire safety, Fire safety, First aid, Medical, Security, police and District Admin. Authorities.
5) Emergency manuals, Blown up area maps, District Public address system. Emergency lights etc.
6) Identification of personnel for Mock drills & training Inter-group relationships in Disaster Management System and an overview of composition of these Groups and their responsibilities are depicted on the subsequent page.
Pre-disaster Actions

This stage occurs when the prior information is available about a situation that may lead to a disaster in near future: Organizing Public Awareness Programmes is very important. The people living around the project can play vital role in event of disaster. For this purpose public Awareness programme should be conducted regularly to make the general public aware about potential hazards likely to occur in project area. Emphasis may be given to the following aspects.

- Pamphlets and booklets constraining details Dos & Don'ts in the event of crisis/emergency situations and hazards associated with electricity generating stations be prepared and be made available to the general public.
- Permanent notice boards be fixed at all the suitable places in the area displaying information maps, escape routes, precautions to be taken and emergency communication details of nodal officers be displayed.
- Help from local youth organizations voluntary organizations educational institutions be sought to conduct educational session to make people aware about the safely measures and rescue operations in the event of a disaster.
- The Emergency' management Group (EMG), depending upon the nature of emergency should be put on high alert. The following actions are required to be taken:

i) Pre-alert Notification:
This type of notification is mainly used for disseminating an important piece of information concerning slowly developing emergencies which can either be rectified or would take some time before they turn into a crisis/disaster.

ii) Alert Notification:
An alert notification implies that although a crisis/ disaster is not imminent, aggravation of the situation could lead to crisis unless condition improve / plant Level EMG and Local Officials should be alerted that an unsafe situation is developing.

iii) Warning Notification
A warning notification implies that a crisis/ disaster is imminent and advance action may be initiated for minimizing the damage / rescue operations. The warning notification indicating the magnitude of crisis/ disaster should be communicated to other power Station in the region and in case of hydropower projects, to the authorities
concerned with the important structures located on the downstream stretches of the river.

iv) Notification Responsibly
In case of developing crisis situation, the project authorities hall be responsible for issuing proper notification to District / state / Central level agencies, depending upon the severity of the crisis / disaster. Advance preparedness For effective preparedness to face the disasters and to avoid last minute arrangements in panic conditions. The following aspects shall be covered as an organizational practice:

1) Well-documented emergency pans.
2) Data on availability of resources and buffer stock of restoration materials
3) Identification of key personnel: with their skills and experience of the disaster management.
4) Allocation of budget for emergencies.
5) "Delegation of power" at various levels for disaster conditions.
6) Mutual assistance agreements signed by all power utilities for sharing men and material resources on demand.

Post disaster Response and Recovery stage:
Following features need to be kept in mind for efficient recovery with clear hierarchy of command system for mobilization of damage assessment teams.

1) Mobilization of teams for establishment of base camps / infrastructure.
2) Officer for communication with the outside environment / press etc.
3) Predefined staff for co-ordination with other agencies on restoration, front.
4) Management of funds and resources at the disaster front.

**Generating Stations**
Odisha has Hydro, Thermal, Solar Power stations which are all prone to various kinds of Disasters & Crisis.

**Thermal Power Stations**
There are all together 39 major Thermal Power Stations operating in the state including Central Govt., State Govt. & private power stations. The capacity of generation is ranging from 8 MW to 3000 MW.

**Areas Prone to Disaster / Crisis in Thermal Power Stations**

a) Coal Handling plant
b) Main plant (Boiler, Turbo Generator, Lube oil Tanks)
c) Water Treatment plant  
d) Hydrogen Generation plant  
e) Switchyard including sub-station and transformers  
f) Fuel oil handling plant  
g) Cable Galleries  
h) Fuel oil handling plant  
i) Store where hazardous, flammable and explosive material are stored  
k) Balancing Reservoir  
j) Ash Dykes  

**Areas Prone to Earthquake, Storm, Floods, Fires Terrorists Threats, Strikes**  

**Earthquake**  
(i) Chimney and other tall structures  
(ii) Boiler & its structures  
(iii) T.G. building, various floors, foundation of various equipments  
(iv) Control room  
(v) Transmission towers & substation Area  
(vi) Coal handling plant crushers, crusher buildings, belt conveyers, Coal bunkers etc.  

**Storm & Floods**  
(i) Any or all the parts of the power station  
(ii) Basement underground facilities  
(iii) Cable trenches  
(iv) Coal handling plant underground conveyers, coal unloading systems  

**Fire**  
a) Boiler furnace, Coal burner, Flue gas duct  
b) Coal Handling Plant and conveyor galleries including Transfer points  
c) Cables in galleries and on trays in all plant sections  
d) Fuel oil handling and oil tanks in Main plant  
e) Transformer oil and lub. oil storage facilities  
f) Burners area in boilers & ESP  
g) Central Stores / Godowns  
h) Control Room  
i) Turbine Hall
j) Any part of the Main Plant
k) Turbine Oil Tanks in Units
I) All Power Transformers & Switch Gear rooms
m) Mill Plant & Milling area

**Terrorist Threats/Bomb Threats**
(i) Boiler house/chimney
(ii) T.G. areal control room etc.,
(iii) Residential complex

**Strike**
Any part of the plant or entire plant

**Explosion Hazard Areas**
a) Hydrogen Plant
b) Turbo Generators where Hydrogen is used for cooling of Generator
c) Transformer (oil cooled)
d) Boiler (Coal/ Oil fired)
e) Coal dust in Mills and boilers

**Bursting of Pipe Lines & Vessels - Areas**
a) Steam pipes due to high pressure / temperature
b) H2 Gas lines and Acid lines
c) Acid / Alkali and tanks
d) H2 Gas Cylinders
e) Compressed air header
f) Compressed air receivers
g) H2 Gas Holder

**Release of Gases / Dust- Areas**
a) Chlorine in Water treatment plant
b) Hydrogen in Turbo Generator area of Main plant and H2 plant
c) Pulverized Coal dust from mills and associated piping and flue gases
d) Coal dust in transfer points of CHP. Crushers, Water tipplers and Mill area
e) Flue gases from the ducts

**Release of Chemicals - Areas**
a) Chemical tanks and Chlorine toners in water treatment plant
b) Acid & Alkali storage tanks in WTP

c) HCL tanks at ETP

d) Fuel oil tanks in fuel oil handling section

e) Control fluid in 500 MW turbine systems

**Hydro Power Stations**

There are all together 9 Hydro Power Stations operating in the state including State Govt. & private small Hydro power stations. The capacity of generation is ranging from 12.5 MW to 600 MW.

**Areas Prone to Disaster / Crisis in Hydro Power Stations**

**Floods / Cloud burst**

(i) Underground structures in the power houses

(ii) Diversion structures like dam, weirs, and barrages

(iii) De-silting facilities / chambers, associated infrastructure e.g. Access Road, bridges

**Landslides**

(i) Water conductor systems, surge shaft, pressure shaft, penstocks

(ii) Surface power houses.

(iii) Diversion structures like dam, barrages, weirs etc.

(iv) Associated infrastructure e.g. Access Roads, bridges

**Fire and Accidents**

(i) Cable galleries

(ii) Switchyard

(iii) Transformer and switchgear rooms.

**Earthquakes**

(i) Structural failures

(ii) Generator alignment

**Terrorist / Bomb Threat / Attack**

(i) Dam

(ii) Power house

(iii) Valve House

(iv) Control room

(v) Residential Complex

(vi) All types of Gates, Access Tunnel
Strikes
Any part of the plant or entire plant

ACTION PLAN FOR GENERATING STATIONS

Thermal Station
Each generating station have slight specific site specific disaster management action plan which inter-alia include:
- Details & contact procedure for key personnel.
- Well defined hierarchy of command & action.
- Identify communication channels and emergency communication system.
- Identify source of disaster and steps to contain the same.
- Isolate remaining plant and keep them in safe condition.
- Organize safe shut down of the plant.
- Organize all support services like fire fighting system etc.
- Emergency maintenance jobs on top priority.
- Arrange required safety equipment.
- Guide authorities on all safety related issues.
- Record the accident details.
- Arrange for evacuation of man and materials from the affected area.
- Arrange for ambulance and emergency first aid.

First Information
The first source of information may be a local operator’s observation or message from state/central government agencies/authorities. The information should immediately reach Emergency Management Group who in turn through chain of command is made known to all personnel such as:

1) Fire Station
2) Security staff
3) Communication System
4) Safety Managers

Key Personnel
Apart from EMG, other works personnel will have key roles to play in providing advice and in implementing the decisions made by the EMG. The key personnel shall include the following:
1) Head of Tech. services
2) Head of internal security
3) Head of safety
4) Chief medical officer
5) Deputy Commandant, Security Services
6) Inspector (Fire)
7) Engineer-in-charge of Transport (Auto Base)

A list of key personnel along with their communication details shall be informed to all concerned. Above personnel shall decide the actions needed to evacuate personnel, carry out emergency engineering works, arrange supplies of equipment, personnel, etc, liaison with police, inform relatives of the victims, etc.

**Essential Staff**

In plants immediately affected or likely to be affected as decided be the EMG, efforts shall be made to shut down the plant and make the process units safe. This work shall be carried out by the plant supervisors and essential operators. It will be the responsibility of the EMG to identify the above essential staff and form a Task force, which reports at defined locations so that they can be readily contacted. It will also be the responsibility of the EMG to remove all non-essential staff to assembly points.

**Responsibilities of Teams**

**Task Force**

Identify source of hazard and try to neutralize / contain it

1) Isolate remaining plant and keep it in safe condition
2) Organize safe shut down of the plant, if necessary
3) Organize all support services like operation of fire water pumps, sprinkler systems, etc.
4) Any other responsibility as decided by Team Leader, looking into the circumstances at the time of the crisis / disaster

**Maintenance Team**

1) Attend to all emergency maintenance jobs on priority basis.
2) Take steps to contain or reduce the level of hazard that can create a crisis / disaster.
3) Organize additional facilities as required.
4) Any other responsibility as decided by Team leader, looking into the circumstances at the time of the crisis / disaster.
Security Team
1) Man all the gates
2) Bar entry of unauthorized persons and non-essential staff
3) Permit with minimum delay the entry all of authorized personnel and outside agencies, vehicles, etc. who have to provide assistance
4) Allow ambulances / evacuation vehicles through without normal checks
5) Any other responsibility as decided by Team leader, looking into the circumstances at the time of the crisis / disaster

Administrative team
1) Rescue casualties on priority basis
2) Transport casualties to first aid post, safe places or medical centers
3) Account for personnel
4) Help in search for missing personnel
5) Pass information to the kith and kin of fatal and injured persons
6) Any other responsibility as decided by Team leader, looking into the circumstances at the disaster.

Safety team
1) Arrange required safety requirement
2) Arrange to measure polluted gas concentration in case of gas leaks at various location.
3) Record location.
4) Collect and preserve evidence in connection with accident, guide authorities on all safety related issues.
5) Any other responsibility as decided by Team Leader, looking into the circumstances at the time related of the disaster.

Medical team
1) Arrange first aid material stretcher and reach accident site quickly
2) Arrange for immediate medical attention
3) Arrange for sending the casualties to various hospitals and nursing homes etc.
4) Ask specific medical assistance from outside including through medical specialists in consultation with the EMM.
5) Any other responsibility as decided by Team Leader looking into the circumstances at the time of the crises / disaster.

Fire Fighting Team
In case fire erupts and emergency is due to fire, the fire Team shall be responsible to:
1) Rush to the fire spot to extinguish the fire
2) Seek help from external fire fighting agencies
3) Evacuate persons affected due to whatsoever reasons
4) Any other responsibility as decided by Team leader looking into the circumstances at the time of disaster.

Auto Base Team
1) Make the whole auto base vehicles ready to proceed for evacuation or other duties when asked for
2) Send at least one mechanic to site of incidence where he may help in attending minor defects in ambulance, fire renders or other vehicles
3) Arrange petrol I diesel supply
4) Make all arrangements regarding transportation
5) Any other responsibility as decided by Team leader, looking into the circumstance at the time of disaster.

Communication Team
1) Maintain the communication network in working condition
2) Attend urgently repairs in the communication system, if required
3) Any other responsibility as decided by Team Leader. looking into the circumstances at the time of disaster

Support Teams

Head of Personnel
1) Contact statutory authorities
2) Arrange for relievers and catering facilities
3) Give information to the media
4) Arrange shelters for affected in contacting medical centers nursing homes

Head of Material
1) Arrange for urgently required materials through cash purchase or whatever means
2) Any other responsibility given by Station In-charge
**Head of Finance**

1) Arrange for funds for various relief measures as well as emergency purchase of materials, sending his representative for emergency purchase.

2) Any other responsibility given by station In-charge.

**Disaster Management Plan for Hydro Power Projects**

Normally Hydro Power Project structures are designed to manage risks associated with natural hazards using risk assessment methods based on various models/codes/prudent practices. However, occurrence of potential costs of natural made crisis situations contain all uncertainties and surprises. It is, therefore, imperative to assess the vulnerability of projects and develop long and short time strategies to improve safety and security of Hydro Electric Projects. The hydro electric projects located in remote border areas are also vulnerable to shelling from across border.

Release of large flood water due to heavy rain fall, cloud burst storm in catchments, downstream through spillways and landslides in the Reservoir causing emergency situations. Similar emergency situations can occur due to earthquakes, leading to release of large flood volumes downstream through spillways, landslides in reservoir & damage to dam structure.

**Events Due to Heavy Rainfall/Cloud Burst in the Catchments**

Network of Rain-gauge station should be maintained along with Gauge discharge sites of important tributaries at confluence points, Gauge discharge sites should be equipped with wireless sets for transmitting information to control room, Frequency of observation should be more during rainy season, special information about storms developing in the catchments area through use of satellite to flood forecasting units.

When there is base flow in reservoir or release from reservoir do not exceed designated flow, the information about flood being released from reservoir should be sent to District Magistrate concerned & flood forecasting & control rooms ewe. In the events of cloud burst & heavy rains in catchments, inflow is likely to increase, the information should be given to District Authorities every two hours so that released downstream & flood forecasting can be passed on for downstream towns / villages likely to be affected. The district Authorities can utilize loudspeakers/sirens, radio / TV / other media to warn public likely to be affected for preventive evacuation to safe place.
Land Slides in the Reservoir

Landslides usually occur during rainy seasons during heavy rainfall of immediately after it. Therefore, it is possible that the reservoir is nearly full when a slide situation begins to develop. As soon as developing slide zone is noticed, it should be thoroughly examined to estimate the likely volume of the slide material and its nearness to dam. If the assessment indicates that sliding can lead to overtopping of the reservoir, a notice for alert situation should be given and the reservoir suitably lowered. Reservoir rim should be inspected prior to rains & also during rain to play special attention to vulnerable areas, which are prone to slides on the basis of past experience. The geologist should inspect the site & report to control room likely volume of slides for corrective measures to be adopted.

1. Equipment such as dumpers, dozers, cranes etc. be kept in order to remove the debris, boulders, etc. from the landslide site
2. Road communication between Dam and Powerhouse & Colony be restored at the earliest in case of destruction

Flooding of Power House

The general precautions and steps to be taken to mitigate the impact of flooding of hydro electric plants are given below:

1. Close liaison should be maintained by powerhouse control Room with Dam control Room
2. Silt content in water should be checked. If it exceeds the design limit, the machines must be stopped.
3. Provision for emergency closing of Tail Race Tunnel (TRT) and Draft Tube Gate (GTG) has to be made to avoid back flow of water into Turbine Units. Requisite provision of Crawler crane should be made at TRY outlet.
4. Provision for gate closing at main intake to avoid high volume of trash, log looms, etc., entering into tunnel.
5. Provision of adequate number of DG sets and de-watering pumps.
6. Adequate quantity of POL be kept in stock for DG sets and vehicles.
7. Arrangement for adequate number of vehicles to ensure movement of personnel and material to safe place(s)
8. All the testing,& measuring equipment and spares in EHV station be kept at higher location to avoid water soaking.
9. Deployment of Security personnel for guarding the assets and protection of the employees and their families.

10. All entry and exit points from the project area need to be closely monitored and entry of unauthorized vehicles and persons be prohibited in case of emergency as well as normal routine.

11. Arrangements for adequate financial resources be made so that older restoration activities do not get hampered.

12. A list of competent contractors/agencies be kept ready to be for assigning various components of restoration activities.

13. Mutual Assistance

14. Mock Exercise / drill

**Flooding due to water leakage inside the Power House**

In case of abnormal water leakage in power House from spiral, case/Main Inlet valve (MIV) on downstream side following actions Room need to be taken immediately:

a) Running machine be stopped
b) MIV & Guide vane be locked
c) Bye-pass valve be closed
d) Draft tube Gate be lowered down
e) De-watering be done

2. In case of heavy leakage from upstream side of MIV, following action need to be taken immediately:

a) Running machine be stopped
b) MIV & Guide vane be locked
c) Bye-pass valve be closed
d) Surge shaft gate be lowered
e) Intake gate be closed
f) De-watering be done

3. In case of failure in tunnel following action need to be taken immediately

a) Running machine be stopped
b) MIV & Guide vane be locked
c) Bye-pass valve be closed
d) Surge shaft gate be lowered
e) Intake gate be closed
f) De-watering of tunnel be done from all exits

4. In case of heavy flood in the river, following actions need to be taken immediately
   a) Stopping the running machines
   b) Closing of TRT gate
   c) Closing of Draft tube gate
   d) De-watering of seepage/leakage water through main portal

5. In case of supply from all sources is out DG set at powerhouse be used especially for operating the dewatering pumps.

**Fire in cable galleries / transformers / generators**

The main hazard in cable galleries is fires. To contain fires, heat sensors and smoke detectors are provided in the cable galleries to detect the fires at the inception stage itself. Automatic sprinkler systems are provided through out the cable galleries to extinguish the fires. Also fire resistance barriers are provided at the cable entries / Intersections, intermittent places on cable trays. Cable raisers and cable entry points Apart from this, automatic halon on flooding system should be available.

Major cause of fire in the generator being failure of its protection system, periodic testing of generator and its protection system should be done. Following actions be taken immediately in the event of fire in generator:

1. Trip all running generator breakers and all line breakers
2. Trip the field breaker
3. Stop the machine
4. Pull the fire button provided at control desk or in the unit control board
5. Open the butterfly valve near the shaft seal panel at turbine floor
6. Switch-off all ventilation blower and switch on all exhaust blowers
7. Inform the fire safety wing

In the transformer, major cause of fire is failure of its protection system, periodic testing of transformer & protection relay should therefore be done in case fire transformer, following action be taken immediately.

1. Trip all running generator breakers & all line breakers
2. Trip the breaker
3. Stop the machine
4. Regular checking of fire extinguishing system of transformers such as Emulsifier system etc.
**Excise Department**

**Mechanism for early warning and dissemination thereof;**

1. The field officials starting from the Constable to Superintendent of Excise of the district have been kept on alert to gather intelligence regarding production of ID liquor and consumption of spurious liquor.
2. Once information is received, it is brought to the notice of the charge S.I./Range Inspector and the Excise Superintendent.
3. Excise Superintendent of the district oversees the necessary detection, raids with regard to the information received.
4. The E.I & E.B Units (Headed by Deputy Superintendent of Excise with Inspector of Excise, two S.I./ A.S.I. of Excise and Constables) to gather intelligence and pass on information to the District units for necessary enforcement measures as well as taking up enforcement activities independently on their own.
5. Multidisciplinary Squads are formed at District level as well as at Subdivisional level consisting of one Inspector of Excise, two S.I. of Excise, three A.S.Is of Excise with 5 Constable headed by Deputy Superintendent of Excise, Police Inspector/ Drug Inspector/ S.I. of Police/ Constable.

**Trigger Mechanism for response;**

- When suspected mishap occurs, the field team makes spot visit and take precautionary steps for their medical treatment and collect samples from nearby shops for laboratory testing to know the actual cause of illness. They have also conducted massive raid in the area and the arrest the suspected persons.

**Response plan for responding effectively and promptly to any threatening disaster situation or disaster**

1. **Disaster response plan with regard to i.d. liquor**
   - The field officials from Constable upwards to the Excise Superintendent of the District have always been kept on alert to collect and transmit any information regarding suspected ID/duplicate liquor related incidents.
• Reports in mass media are also scanned for information regarding such incidents at all levels of the Department, field as well as Government.

• Once such I.D. Liquor/ spurious liquor related occurrences come into light, the district Superintendent of Excise immediate rushes to the spots/ locality with his team of Inspectors/ Sub-Inspectors/ Constables after receiving information from the S.I. of Excise of the Charge area.

• At the field level, one S.I of Excise will contact the local Medical officer immediately for medical treatment of the affected people by disaster. In field level, a Committee consisting of local Tahasildar, local S.I. of Excise and Medical Officer of PHC of that locality will meet with regularly intervals for prevention of any such hazards occurs.

• Every two hour intervals the ontoward positions of such occurrence should be reported to the Superintendent of Excise of District, who will transmit the information from time to time to the Excise Commissioner and Excise Department from time to time.

• There is a Committee consisting of Superintendent of Excise, CDMO, Superintendent of Police to meet in regular intervals for the rescue operation of the affected people at District level.

• Simultaneously the persons affected in such cases from consumption/ suspected consumption of I.D./ spurious liquor are sent to hospital under the guidance of another team of officials as selected by the Superintendent of Excise for the purpose.

• Local inquiry is conducted immediately to ascertain the source of such spurious liquor/ alcohol based substances.

• If the source happens to be unauthorised I.D. pocket, the locality is raided in coordination with Police.

• Culprits are taken into custody and the I.D. stock is seized.

• Collector, who is also the Chief Excise Officer of the district is also immediately appraised of the situation who can direct the CDMO of the district to ensure proper treatment of the victims by his team of doctors.

• If, the disaster is of larger magnitude and recurring, then the DPRO of the district is requested for issue of public warnings against consumption of such liquor in Print Media, Electronics Media and Public Address Systems.

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• The area is kept under close watch till the situation returns to normal.
• In case of disasters relating to alcohol based substances, multi disciplinary teams are deployed for conducting raids on suspected sources.
• Effective steps are taken in coordination with concerned departments as demanded by the situation at hand.

2. Response plan of Aska Cooperative Sugar Industries Ltd., Aska for prevention of disasters.

Following steps have been/ are being taken to counter act any possible disaster in future:

• Detailed study has been made by the Expert Agency, namely M/s. IRC Engineering India Pvt. Ltd., New Delhi and M/s. Sosam Sugar Consultants, Chennai:
  • Final Inspection Report in respect of molasses tank No.3 has already been received at this end during March 2013 and steps have been taken to repair and molasses tanks by way of replacement of the affected weld portions of the plate. Repair of the bottom plates has already been done prior to the crushing season 2012-13 as per the suggestion given by the team during field verification.
  • The Inspection of the molasses tank No.2 & 4 is in progress and after receipt of final report steps will be taken for repair of the tanks
  • As per recommendation by M/s. Sosam Sugar Consultants, Chennai molasses to the maximum tune of 1600 MT is being stored (less than 60%) in tank No.2 & 3 as against rated capacity of 3000 MT for each tank.
  • Steps have been taken to dispose of the molasses produced during crushing season 2012-13 at regular intervals so as to avoid excess accumulation of the same beyond the recommended storage capacity. During the crushing season 2012-13, 9808.693 MT produced out of which 9000 MT has already been disposed of in 3 phases following tender process and steps have been taken to dispose of the balance quantity as quickly as possible so as to take up the inspection & repair works of the tanks before the ensuing crushing season 2013-14.
  • Steps are being taken to construct a concrete wall along the boundary wall of the Industry in order to provide a second line guard so as to avoid spread of molasses to the public road outside the Industry premises in case of accident, if any.
• ‘Quick Response Team’ is constituted comprising the Safety Officer, Factory Manager, Security Officer and other workers to attend to any such type of accident in an effective manner in respect of Aska Sugar Industries for distillation/production of C.S.
• The proposed ‘Quick Response Team’ will also be trained relating to different aspects of Disaster Management.
• Safety materials, such as, Fire Extinguishers, hydrant system, sand fill buckets are also kept ready in the factory premises under the control of Security Officer so as to attend any emergency.
• Step is also been taken to construct concrete wall with Iron angle and MS plates in between the molasses tanks and sugar boiler house to avoid contact of accumulated bagasse with the molasses tanks so as to avoid possibility of fire accident.
• A Security Post has also been opened to guard the molasses tanks and adjacent area round the clock.
• Water spray system round the molasses tanks has been reactivated to ensure adequate cooling to molasses tanks.
• Anti-corrosive paint was applied to the existing molasses tanks prior to the commencement of crushing season 2012-13 as per the recommendation. The same will also be applied before ensuing crushing season.
• X-ray/Radiographic test has already been conducted. The same will also be done at regular intervals to ascertain the soundness of the tank from time to time.
• Steps are being taken for eviction of the road side encroachment adjacent to factory boundary wall as suggested.
• A Team consisting of MD of the Sugar Industry, local PHC medical officer, IIC Police station will meet regularly for medical treatment of affected people by accident if occurs.

3. Disaster Response plan of OSBC Godown

• Fire extinguishers have been installed in the godowns.
• The godowns are located at the NH/SH side and easily approachable.
• All the godowns of OSBC have been ensured against standard fire risk, storm, cyclone, earthquake, burglary, pilferage, explosion etc.
• The Branch Manager is the Nodal Officer of the Depot and is accountable for safe custody of the stock and management of the Depot in absence of the Branch Manager, the Assistant Manager/ Superintendent look to this aspect.

• The Depot officials have been instructed to collect and display the contact number of local Fire Brigade, local Police Station/ Outpost and Dispensary in a prominent place, so that they can be contacted at the time of emergency.

• Electrical installations are checked up regularly to prevent short circuiting.

• Fire extinguishers are kept in the godowns.

• One Inspector of Excise/ S.I. of Excise is kept in charge of OSBC Depot. He is the first information officer for any type of disaster and to coordinate with local medical officer of PHC and Police personnel like IIC for immediate remedy of the affected people.

4. Response plan with regard to environment pollution.

• To ensure protection of environments and counter probable disastrous effects of factories on environment, Pollution Control Board Certificate is insisted upon before giving licence to distilleries/ bottling units. One Inspector of Excise/ S.I. of Excise are kept in charge of Distillery and Bottling Plant as O.I.C., whenever any disaster situation ocures they are responsible to inform to concerned Superintendent of Excise of the Districts as well as responsible for rescue operation of affected people coordinating local IIC of Police, PHC Medical Officer. They will meet in regular intervals to watch the situation.

Response plan for countering disastrous effects of hemp plants.

• Cultivation of hemp plants poses serious health hazard for the society. Different parts of the plant are used as intoxicants which are banned by the Government.

• Under NDPS, provisions have been made for imposition of financial penalties as well as stringent jail sentences to act as deterrents against illicit traders of Narcotic and psychotropic substances for safeguarding public health and counter health related disasters.
Further, Excise Department is making all out efforts for hemp plant destructions. The Department is doing this independently on its own. Also such destruction is being carried out in coordination with NCB, Police Administration, and Forest Authorities etc. As at present, Hemp Plants in large scale have been destroyed in district like Angul, Deogarh, Gajapati, Boudh, Kandhamal, Rayagada etc.

The following table throws light on the activities made in this regard.

The Multidisciplinary Squad consisting of Excise Inspector, two S.I three Constables, local IIC Police with Police force, Forest Ranger with Forester/ Forest Guards are responsible for destruction of Hemp Plants.

The concerned Inspector of Excise in-charge with Excise staff like S.I/ A.S.I/ Constable are responsible for saving the affected people to Hospital in coordination with PHC medical officer and Police IIC.

Appointment of Nodal Officers to perform Emergency Support Functions (ESFs)/ roles in emergency in the format already circulated by the State Government.

District Superintendents of Excise are the Nodal Officer to perform Emergency Support Functions (ESFs)/ Roles in emergency in the format already circulated by the State Government.

In field level, Excise Inspector in charge area are responsible for the rescue operation of disaster coordinating the official of Medical Officer PHC/ Police personnel like IIC.

In the State level, Excise Commissioner is the Nodal Officer to coordinate during disaster with respective Superintendent of Excise-cum-District Level Nodal Officers.

Constitution of the Incident Response Teams (IRTs) at all levels with provision of delegation of authority;

Multidisciplinary squads consisting of official of Excise, Forest, Health and Police have been constituted in all the district for responding effectively and immediately to any disaster situation under the supervision of District Excise Superintendent who is act as the coordinating authority.
• In the district level, Superintendent of Excise will coordinate with DFO, CDMO and S.P of Police for rescue operation of affected people.

• Similarly, in the field level, Inspector of charge area within local medical officer of PHC, Forest range and IIC of Police.

• “Quick Response Team” is constituted comprising the Safety Officer, Factory Manager, Security Officer and other workers to attend to any such type of accident in an effective manner in respect of Aska Cooperative Sugar Industry for distillation/ production of C.S. They will coordinate with local Police, Medical Office of PHC will coordinate for the rescue operation of the any type of disaster occurs.

Reporting procedures and formats;

• Standard reporting procedures are adopted.

Role of NGOs and Voluntary Sector and coordination thereof;

• They are engaged for seminars, meetings, street theatres etc which are being arranged for public awareness against illegal liquor trade.

• These are being funded by OSBC Ltd and their activities are coordinated by the district Excise Superintendent at district level.

System of assessing the damage from any disaster;

• Superintendent of Excise of concerned districts will assess and report to the higher authority. They are assisted by sub-ordinate field staff for spot verification and sample collection, investigation etc.

Roles and responsibilities and coordination mechanism for the department;

• Multidisciplinary squad have been constituted in all districts comprising excise, forest, revenue, health & police to conduct extensive raids in the area to curb the ID liquor and detection of Hemp Plants. They have also arrested the ID traders and bootleggers.
Relief, Rehabilitation and Reconstruction

- Norms of relief, if applicable: IMFL is inflammable and there is risk of fire. Assistance of fire brigade is necessary as and when required.

- Minimum Standards of relief: As determined by the Collector

- Action Plan for Reconstruction – ‘Building back better’:

  Excise Superintendent Offices are in Collectorate of the District. Hence, if any, damages formed due to Disaster, then the destruction of building can be met out of contingent plan of District Collector.

Knowledge Management

- Need of creating network of knowledge institutions;
- Distilleries/ Breweries where liquor / Beer are manufactured have their own emergency plan to meet the possible disaster. They identify the hazardous area and prepare their “On-site” emergency control plan which covers the inside factory area and “Off-site” control plan for the area beyond the factory.
Information Technology

Nature of Threats

All the threats mentioned above are potent to cause a Disaster. However, the Information Technology Department is methodological in its approach to apply procedures like Fault Tolerance, and Information Security Management System controls, in order to prevent a risk from escalating to causing a Disaster.

<table>
<thead>
<tr>
<th>Physical and Environmental Threats</th>
<th>IT Services Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cyclone</td>
<td>• Weak Data Back-up</td>
</tr>
<tr>
<td>• Flood</td>
<td>• Inefficient Storage Management</td>
</tr>
<tr>
<td>• Fire</td>
<td>• Weak Server Management</td>
</tr>
<tr>
<td>• Tsunami</td>
<td>• Vulnerable Operation Systems</td>
</tr>
<tr>
<td>• Earthquake</td>
<td>• Vulnerable Software, Virus / Spamming attacks</td>
</tr>
<tr>
<td>• Power Outage</td>
<td>• Inefficient security and communication link through the computer network</td>
</tr>
<tr>
<td>• Physical Security</td>
<td>• Cyber attack</td>
</tr>
</tbody>
</table>

Strategy

The three basic strategies that are being followed by the department are:

A. Preventive measures
B. Detective measures
C. Corrective measures

A. Preventive measures

Preventive measures are being taken to prevent a disaster from occurring. These measures seek to identify and reduce risks. They are designed to mitigate or prevent an event from happening.
These measures includes:

- **Business Impact Analysis** for the selection of critical applications hosted in State Data Centre by gathering information on User Department processes and prioritizing the applications based on the impacts like Financial, Services, Target Citizen base, Legal and Regulatory. Criticality of all Applications shall be categorized into 3 classes, i.e. Class I - Highly Critical, Class II - Critical, Class III – Not Critical. Application specific data like the point beyond which data loss is not permissible i.e. Recovery Point Objective (RPO) and the time within which the Systems/ Applications/ Functions must be recovered after an outage i.e. Recovery Time Objective (RTO) will be known after this analysis. It will act as the basis for the development of appropriate backup strategies and suitable recovery strategies.

- **Identification of Risks** from various sources through Risk Assessment to identify which threat has the potential to cause more damage. The different parameters to be considered are:

  - **Vulnerability** - Indicating exposure of Information System resources to various threats.
  - **Probability** - Indicating the probability of a threat occurring.
  - **Impact** - Indicating impact of a threat on Information System resources.

- **Data replication** for web servers, data base servers, application servers and file servers at off site in SAN storage devices, DVD and Tape library.

- **Testing** the replicated/backup data through regular disaster recovery testing, mock drills to make sure that restoring backup data will be easy.

- **Using diesel generator** to avoid power outage.

- **Conducting routine inspections**, mock exercise and plan maintenance of Information systems both hardware and software.

- **Security Audit** of the Application at frequent intervals.

- **The storage media with data** are being stored in fireproof safe locker and discarded backup media are disposed, so that data recovery is impossible.

- **Deploying security personal** for providing physical security.

- **Forming various Action Teams** and fixing their Roles and Responsibilities like Risk Assessment Team (RAT), Crisis Management Team (CMT), Damage Assessment Team (DAT), Operations Recovery Team (ORT) and Help Desk.
The above Teams shall be lead by Addl. Secretary – IT Dept.. Each team will have a designated Team Co-ordinator.

Regular Disaster Recovery plan updations

**Action Plan**

The various task under preventive measures are to be taken by Risk Assessment Team which consists of members from –

- IT Department & Odisha Computer Application Centre (OCAC)
  (Dy. Secretary – IT Deptt., Under Secretary & Officer on Special Duty (OCAC) as Team Co-ordinator, DGM (Tech), System Analysts, Sr. Software Engineer, SeMT Consultants and others)

- Odisha State Data Centre(OSDC)
  (Project Manager & other Composite Team Members)

- Other Department’s Official as on need basis

The primary job of the Team are -

- Discussions with various Govt. Organisation like NIC,STPI, CERT-in, DeitY, DoT,STQC, CDAC etc. and reputed private co. who have expertise in IT disaster management, Implementing Agencies, Data Centre Operator, and Application owners to find out the risk associated from various sources

- Analyze the past history of IT disasters where it happens

- Provide Help desk Technical support to end user of the application

- Known relevant intelligence available in reliable public domain like Government and private websites.

- The Risk Assessment sheet prepared for the Information Security Management System implementation for OSDC shall be referred for the above activity.

**A. Detective measures**

- Detective measures are being taken to discover the presence of any unwanted events within the IT infrastructure of the department like Odisha State Wide Area Network(OSWAN), Odisha State Data Centre(OSDC) and others.

- Aim is to uncover new potential threats. They may detect or uncover unwanted events.

- These measures include using fire alarms, using up-to-date antivirus software, firewall software, CCTV surveillance, holding employee training sessions, and
using server and network monitoring software (NMS) for intrusion detection, network tomography, route analytics, website monitoring etc.

**Action Plan**

The various tasks under detective measures are to be taken by the constituted Team which consists of members from –

- Odisha Computer Application Centre (OCAC)
  (System Administrators, System Analysts and Sr. Software Engineers)
- Odisha State Data Centre (OSDC)
  (Project Manager & Composite Team Members)
- Implementing & Consulting Agencies (OSWAN Operator, Data Centre Operator), Third Party Auditor (TPA), STQC, GoI

The primary job of the Team are -

- Discussions with various stakeholders from Govt. and Private sectors to gain their expertise in advance monitoring of ICT resources and Application owners from the Department to suggest day to day monitoring mechanism required
- Day to Day monitoring of various ICT resources of the Department using various Tools available like IBM Tivoli NMS for OSWAN and CA EMS for OSDC.
- Taking feedback from TPA & STQC and plan accordingly
- Put corrective measures in to action whenever any fault detected

**B. Corrective measures**

- Damage Assessment Team will assess the affected Information Systems
- The Operations Recovery Team will ensure that the IT Infrastructure is properly handled during the recovery process and the required resources are available on time.
- The focus of this Team is to recover the IT enablers supporting Information Systems critical business processes, to be up and running in concurrence with the identified Recovery objectives (RTO and RPO).
- Establishing a Help Desk which would play a crucial role in providing information proactively to various stakeholders.
- Taking the help of CERT-IN, the national nodal agency for any security incidents type of event occurred.
- To facilitate the efficient recovery and restoration of critical business functions, key staff members have been assigned different activities like Crisis
Management, Damage Assessment and Operations Recovery, who will be put in to action once disaster strikes.

**Action Plan**

The various task under Corrective measures are to be taken by the constituted Team which consists of members from –

- IT Department and Odisha Computer Application Centre (OCAC) (Dy. Secretary – IT Dept., Under Secretary – IT Dept., Officer on Special Duty (OCAC), DGM(Tech), System Analysts & Sr. Software Engineers, SeMT Consultants and other officials)
- Odisha State Data Centre (OSDC) - Composite Team Members
- Implementing Agencies (OSWAN Operator, Data Centre Operartor and other SIs)

The primary job of the Team are –

- Decision making
- Overall responsibility for response & recovery actions
- Authorizing crucial action steps
- Making arrangements for immediate relief to next of kin of any deceased staff
- Briefing staff of overall situation & giving overall guidance
- Vetting sensitive communications
- Keeping Chairman-cum-CEO,OCAC and Secretary – IT Deptt. and other departments informed about the status of the situation
- Formalizing operational requirements
- Damage Assessment
- Coordinating and managing recovery of Facility, Operations and IT infrastructure
- Coordinating recovery of critical processes in different departments
- Liaisoning with vendors for emergency / recovery support
- Assisting in crucial negotiations (financial & legal) and Proposing legal action, if required

**7. Scenario**

The Disaster Management Strategies to be adopted by the Department for State Data Centre is different for each kind of Disaster. Below are the descriptions of such Strategies:
Scenario Description
---
**Scenario-I (S1)**
Operating from Primary site using DR infrastructure (No people movement)
This strategy will be applicable when critical systems are unavailable at the Data Centre. However the Primary site is accessible and connectivity to the DR site is available. In such cases, the employees can remotely access and start the systems at DR site. It involve some level of coordination between the personnel at the Primary and DR site. However, it must be ensured that critical data needed for Recovery is available at the DR site before system start up.

**Scenario- 2 (S2)**
Operating from DR site using the DR infrastructure
This strategy shall be used in case of a disaster that results in unavailability of the city hosting the Primary site (i.e. the premises, technology and infrastructure in the city hosting the Primary site are either unavailable or inaccessible). City wide disasters, terrorist attacks, etc. are some of the events that may result in such a failure scenario.

### 8. Recovery Strategy

The different recovery strategies identified for for State Data Centre in various disaster scenarios are:

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>Incident</th>
<th>Applicable Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Network Penetration / Hacking (Internal/External)</td>
<td>S1</td>
</tr>
<tr>
<td>2</td>
<td>Denial of Service</td>
<td>S1</td>
</tr>
<tr>
<td>3</td>
<td>Virus Attack / Malicious Codes / Spam</td>
<td>S1</td>
</tr>
<tr>
<td>4</td>
<td>Lightning / Storms</td>
<td>S2</td>
</tr>
<tr>
<td>5</td>
<td>Theft / Unavailability of components</td>
<td>S1</td>
</tr>
<tr>
<td>6</td>
<td>Air-conditioning failure</td>
<td>S1</td>
</tr>
<tr>
<td>7</td>
<td>Power Outage</td>
<td>S2</td>
</tr>
<tr>
<td>8</td>
<td>Earthquake</td>
<td>S2</td>
</tr>
<tr>
<td>9</td>
<td>Fire</td>
<td>S2</td>
</tr>
<tr>
<td>10</td>
<td>Flood</td>
<td>S2</td>
</tr>
</tbody>
</table>
Panchayati Raj Department

Standard Operating Procedure

The existing hazard exposure of the state of Odisha its people and infrastructure is very high. In order to combat the potential threat and to mitigate multiple risks it is imperative that a coordinated intervention through key stakeholders is put into place. The Panchayati Raj department will initiate envisaged actions and nodal officers identified by the department will provide necessary horizontal & vertical linkages.

These procedures shall be updated and revised every six month incorporating the new insight experience and understanding of vulnerability & risk perceptions and disaster that take place with the passage of time.

The department with the support of SIRD will organize proper training of officers and staff so that they can help in rescue, evacuation and relief work at different stage of disaster. The disaster management committees at different levels will be kept ready so that they can move to disaster site/affected area on short notice. The Standard operating procedure shall be followed during normal times, warning stage, disaster stage and post disaster stage. Standard Operating Procedures for the Panchayati Raj Department are listed below:

<table>
<thead>
<tr>
<th>Primary Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To coordinate with Government of Odisha and State Disaster Management Authority.</td>
</tr>
<tr>
<td>• To coordinate the Relief Recovery operations in the wake of disasters.</td>
</tr>
<tr>
<td>• To declare and notify Disaster Situation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Preparedness Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Establish infrastructure at the district level in working order and all inventories updated.</td>
</tr>
<tr>
<td>• Train personnel on operations.</td>
</tr>
<tr>
<td>• Ensure basic facilities for personnel who will work at district level for disaster response.</td>
</tr>
<tr>
<td>• To coordinate the preparedness functions of all line departments.</td>
</tr>
<tr>
<td>• Establish disaster management funding mechanisms to ensure adequate resources</td>
</tr>
</tbody>
</table>
for preparedness work, and quick availability of resources for relief and rehabilitation when required.

- Help DDMC with additional resources for disaster preparedness.
- On annual basis report to the OSDMA of the preparedness activities.
- Establish and activate help lines through police and district public relations office.
- Prepare a list of potential shelters with clearly specifying their capacity and check upon their suitability for accommodating people with varying social behavior.
- Prepare a plan for the disposal of dead bodies and carcasses.
- Prepare & update inventory of resources every quarter.

### Mitigation

- Ensure that funds are being allocated for disaster management.
- Ensure that structural and non-structural mitigation measures are taken at Block and District level.
- Establish warning system between State – District and in high risk zones.
- Monitor implementation of construction norms for all types of buildings and infrastructure.

### Alert and Warning Stage

- Maintain contact with forecasting agencies and gather all possible information regarding the alert.
- Ensure activation of State level EOC in standby mode.
- Instruct all ESFs to remain in readiness for responding to the emergency.
- Advise concerned DDMA to carry out evacuations where required, and to keep transport, relief and medical teams ready to move to the affected areas at a short notice.
- Dispatch field assessment teams, if required.
- Provide assessment report to the SDMA.

### Response

- Coordinate and plan all activities with OSDMA
- Conduct Rapid Assessment and launch Quick Response.
- Conduct survey in affected areas and assess requirements of relief
- Distribute emergency relief material to affected population.
- Coordinate all activities involved with emergency provisions of temporary shelters,
emergency mass feeding, and bulk distribution of coordinated relief supplies for victims of disasters.

- Prepare an evacuation plan for villages which are devastated or affected.
- Ensure the supply of food grains through the Public Distribution System.
- Prepare a list of relief items to be distributed.
- Formulate sector specific teams such as transport, material and equipment for responding to the disaster incident.
- Prepare a transportation plan for supply of relief items.
- Convene meetings of all NGOs, Youth Clubs, and Self Help Groups operating in the district and assign them unambiguous responsibilities for relief, recovery and rehabilitation.
- Call for emergency meeting to take stock of the situation. Develop an action plan.
- Appoint In-charge Officers of Response base.
- Ensure damage and need assessment

**Recovery and Rehabilitation**

- Ensure preparation of rehabilitation plan for displaced population through PRIs.
- Organise initial and subsequent technical assessments of disaster affected areas and determine the extent of loss and damage and volume and nature of relief required.
- Keep OSDMA informed of the situation.
- Ensure supply of food, medical supplies and other emergency items to the affected population.
- Visit and coordinate the implement of various rehabilitation programmes.
- Coordinate the activities of NGOs in relief and rehabilitation programmes.
- Allocate funds for the repair, reconstruction of damaged infrastructure after considering their overall loss and damage.
- Prepare an evacuation plan for population from the dangerous area / buildings as per the advice of agencies identified for issuing warnings before, during & after the incident.
- Ensure immediate disbursal of compensation.
## SOP at district, Block and GP level

<table>
<thead>
<tr>
<th>Activities</th>
<th>Responsibility</th>
<th>Flood/ Cyclone</th>
<th>Drought/ Heat wave</th>
<th>Tsunami/ Lightening</th>
<th>Manmade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparedness</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mock Drill</td>
<td>Sarpanch</td>
<td>May</td>
<td>January</td>
<td>Quarterly</td>
<td>Fire</td>
</tr>
<tr>
<td>Communication from Block to GP</td>
<td>BDO</td>
<td>T-3 days</td>
<td>T-10 days</td>
<td>Immediate</td>
<td>Others</td>
</tr>
<tr>
<td>Communication from GP to Block</td>
<td>Sarpanch</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Awareness campaign for disaster preparedness</td>
<td>Sarpanch/E O</td>
<td>April</td>
<td>Decembe r</td>
<td>Quarterly</td>
<td></td>
</tr>
<tr>
<td><strong>Pre-Arrangement for evacuation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coordination with Inspector of schools to use school building as cyclone shelters</td>
<td>BDO</td>
<td>T-3 days</td>
<td>T-10 days</td>
<td>Immediate</td>
<td>NA</td>
</tr>
<tr>
<td>Assessing the medical facilities</td>
<td>Sarpanch</td>
<td>T-3 days</td>
<td>T-10 days</td>
<td>Immediate</td>
<td>NA</td>
</tr>
<tr>
<td>Arrangement of flood/Cyclone shelters</td>
<td>Sarpanch</td>
<td>T-3 days</td>
<td>T-10 days</td>
<td>Immediate</td>
<td>NA</td>
</tr>
<tr>
<td>Resource Mapping &amp; Gap Analysis to prevent calamity</td>
<td>BDO/Sarpanch</td>
<td>April</td>
<td>Decembe r</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Medical Stock at BNRGSK</td>
<td>BDO/Sarpanch</td>
<td>Monthly</td>
<td>Monthly</td>
<td>Monthly</td>
<td>Monthly</td>
</tr>
<tr>
<td>Insurance Cover for Assets &amp; Livestock</td>
<td>Sarpanch/E O</td>
<td>Annual</td>
<td>Annual</td>
<td>Annual</td>
<td>Annual</td>
</tr>
<tr>
<td><strong>Response</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication from GP to Block</td>
<td>Sarpanch/E O</td>
<td></td>
<td></td>
<td>Immediate</td>
<td></td>
</tr>
<tr>
<td>Evacuation to temporary shelters</td>
<td>BDO/Sarpanch/EO</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
</tr>
<tr>
<td>Ensuring drinking water, Sanitation &amp; medical facilities</td>
<td>BDO/Sarpanch/EO</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
</tr>
<tr>
<td>Mobilising of relief distribution</td>
<td>BDO/Sarpanch/EO</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
</tr>
<tr>
<td>Communicate with the district administration for assistance</td>
<td>BDO</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
<td>T-0 days</td>
</tr>
<tr>
<td>Post Disaster</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identification of victims for compensation</td>
<td>Sarpanch/E O</td>
<td>T+7 days</td>
<td>T+7 days</td>
<td>T+7 days</td>
<td>T+7 days</td>
</tr>
<tr>
<td>Arrange work under MGNREGS, SGSY &amp; NRLM</td>
<td>BDO</td>
<td>T+7 days</td>
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<tr>
<td>Meeting fund requirements for Social Security, Consumption and economic activities through loans from Community Investment Support Fund (CISF)</td>
<td>PD/ Collector/ BDO/ Sarpanch</td>
<td>T+7 days</td>
<td>T+7 days</td>
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<tr>
<td>Reconstruction of houses through rural housing Schemes</td>
<td>BDO</td>
<td>T+30 days</td>
<td>T+30 days</td>
<td>T+30 days</td>
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<tr>
<td>IAY – 95% allocated for construction of houses</td>
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<tr>
<td>5% allocated for BPL families affected by natural calamities</td>
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<td>Mo-Kudia – 25% is reserved for household affected due to Fire, Flood, Riot and Elephant Menace.</td>
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<tr>
<td>Reconstruction of local infrastructures through the following Schemes</td>
<td>BDO</td>
<td>T+30 days</td>
<td>T+30 days</td>
<td>T+30 days</td>
<td>T+30 days</td>
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<tr>
<td>CC Roads – construction of inter village roads</td>
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<tr>
<td>BRGF – to fill critical gaps in local infrastructure in 20 districts</td>
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<tr>
<td>GGY - to fill critical gaps in local infrastructure for the remaining 10 districts</td>
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Rural Development Department

Areas of Vulnerability

Cyclone and Flood

The region vulnerable to cyclones and low pressures spreads over an area of 20,800 sq. kms and extends from the undivided Balasore district to the undivided Puri and Ganjam districts. Areas that are frequently hit by low-pressure disturbances are Astarang in Puri district, Mahakalpada in Kendrapada district, Balikuda and Erasama in Jagatsinghpur district, and Chandbali in Bhadrak district and Chandipur in Balasore district. In addition, it is a common feature of the coastal Odisha that many breaches develop in saline embankments. These areas are prone to high flooding.

Drought:

Nuapada, Bolangir and Kalahandi districts and several other areas in the western parts of Odisha experience drought and crop loss almost every third year. In addition to crop loss, acute drinking water crisis is an annual feature in Bolangir, Jharsuguda, Sundergarh, Kalahandi, Sonepur and Nuapada districts.

The Issue:

(i) In the light of Odisha’s epidemiological indicators, mortality and morbidity rates are closely related to infectious diseases which to a large extent, depend on the quality of water consumed by people and their access to adequate sanitation services. Therefore, when situation turns critical during and after disasters, post-disaster activities must focus on rehabilitating services that might otherwise constitute sources of epidemics; special attention must be paid to ensure the quality and quantity of water, sanitation facilities and removal of excreta and solid waste management.

(ii) Connectivity provided by roads is perhaps the single most important determinant for the well being and the improvement of quality of life of people living in rural areas. Moreover, during the disasters Rural connectivity plays a major role in distribution of relief to the affected people.
Problems encountered:

(A) Rural connectivity:

With improvement in connectivity the rural people have been accustomed with an improved standard of life. After an area is calamity hit, the connectivity gets disrupted by creation of breaches, restriction of road width due to erosion damage to CD works and washing out of components of CD works and bridges etc.

Communication is of paramount importance to reach out to the affected people and also, essential for any other restoration activity such as Water supply and Electricity etc to be undertaken and for supply of relief materials, disinfectants and medicines. But owing to the standing water the restoration works can only take off after the flood water recedes. Moreover, rural roads generally take off from PWD roads and the access of plants machineries has to wait till the affected PWD road is restored for taking up the full fledged restoration activity. However restoration activity on a smaller scale by deploying the local labour force can be immediately taken up.

(B) Public Health

Public health problems that arise out of an emergency / disaster, like a flood or a cyclone, mostly include the following:

- Access to safe water sources is cut off;
- Surface water sources are submerged and polluted;
- Spot sources like hand pump tube wells, open wells, sanitary wells, etc. are submerged and polluted;
- People take shelter in nearby uplands such as river / canal embankments, high lands, schools, community places, cyclone shelters, etc. They defecate around areas causing serious unsanitary conditions;
- People often use available polluted floodwaters for bathing, washing utensils, culinary purposes and even for drinking. These activities may lead to the spread of water-borne and water-related diseases;
- Diseases such as diarrhoea, gastroenteritis, etc. usually spread due to use of unsafe drinking water, sometimes leading to outbreak of epidemics;
- Communication is cut off to reach the affected population for providing safe water, disinfectants, medicines, etc.
Handling Public Health Problems:

Government officials as well as representatives of PRIs remain engaged in rescue and relief measure and work for the restoration of communication facilities. Care is taken to combat possible health hazards. Alternative arrangements are made for supply of drinking water to the ‘affected’ as well as ‘local’ population. (Affected population means refugees, internally displaced persons and returnees from temporary camps, while local population means those living in an area, to which affected people are displaced temporarily or otherwise. It is often noticed that the local communities are forgotten, when there is a displacement of affected people to an area). Alternative arrangements for supply of drinking water and provision of sanitation can be by way of

- Distributing drinking water in the affected areas through portable pouches / jerry cans, etc. by bringing it from outside the affected areas;
- Distributing water by transporting potable water through road tankers and truck tanks;
- Installing hand pump tube wells, temporary or permanent, in the shelter sheds, camps, etc;
- Distributing water by treating and disinfecting the available waters through package treatment plants installed temporarily over trucks or otherwise; disinfection of the areas (along with health authorities), where people defecate during stay in temporary shelters by putting bleaching powder (This is often less emphasized).

- Disinfection of drinking water sources through Bleaching powder, Halogen tablets, Calcium hypo-chlorite solution, etc. in the affected areas to eliminate bacteriological contamination;
- Repair of damaged platforms immediately afterwards to eliminate pollution;
- Repair and restoration of damaged Piped Water Supply Systems;
- Re-sinking/replacement of tube wells/other water sources in case of a permanent damage;
- Similar other works.

The Shortcomings:

The normal deficiencies and shortcomings that are observed in ensuring safe
water supply and sanitation facilities in disaster affected areas are as under:

- The community is not prepared to cope with the shock;
- There is a gap in communication between the Revenue authorities and RWSS authorities. The officials of both organisations do not meet too often. As a result, flow of information of affected/marooned villages/population etc. is not updated on day-to-day basis or hour-to-hour basis. This affects the disaster management process;
- Alternative arrangements for supply of safe drinking water and sanitation facilities do not commence immediately and are delayed;
- The distribution of water, halogen tablets and bleaching powder is often disproportionate to the requirement;
- The arrangements for transport and communication are often delayed due to want of vehicles, boats, etc.,
- Adequate water tankers / truck tanks are not available to be deployed in the affected or nearby areas;

People are not made aware of the importance of good practices of drinking water, carriage, storage, handling and use. As a result water is contaminated and diseases break out;

- Inadequate / no measures are taken for solid waste management, etc.

The Need for a Manual (Public Health)

Rural Water Supply and Sanitation Organisation (RWSS) under the Rural Development Department is a responsible organization with clear cut organizational set up. It is the nodal agency for all water supply and sanitation programmes in normal times and during emergencies. To streamline preparedness initiatives and the response mechanism and to address certain specific issues during an emergency, the need for a manual is felt.

The Rural Development Department took the initiative and asked the newly formed State Water and Sanitation Mission (SWSM) to develop the proposed manual. The consultation resulted in a set of draft guidelines that were refined and finalized a meeting of a designated Core Committee.

These guidelines have been formulated basing on lessons learnt from the past
experiences and in most parts are limited to responses needed for an emergency arising out of a disaster like a flood or a cyclone. But nevertheless the broad guidelines can also be used for other disasters.

The Response

As the first step towards a coordinated disaster response mechanism, the Department have a clear cut organizational structure with the following nodal officers.

Nodal Officers:

The designation of the nodal officers is permanent in nature. These nodal officers at various levels shall be notified once and shall continue to function in normal times as well as during emergency.

- The Chief Engineer, RWSS shall be the State level Nodal Officer for coordinating the emergency support functions relating to drinking water supply and sanitation. Similarly, the Chief Engineer, Rural works (Roads) shall be the State level Nodal Officer for the rural connectivity.
- The Executive Engineers of RWSS and RW shall be the District level Nodal Officer for the respective wings for the above purpose.
- The Junior Engineers of RWSS and RW shall be the Block level Nodal Officer for the respective wings for the above purpose.

State Disaster Mitigation Committee (SDMC)

A State Disaster Mitigation Committee (SDMC) is formed at the state level under the R.D. Department on permanent basis for coordination of emergency support relating to drinking water supply and sanitation, & emergency restoration of rural connectivity. The committee comprises of the following members:

Principal Secretary, RD Department  
Chief Engineer, RWSS  
Chief Engineer, RW (Roads)  
Joint Secretary, RD in charge of Water, Sanitation & RW  
Superintending Engineer, RWSS Circle, Bhubaneswar  
Chairman  
Member Secretary  
Member  
Member  
Member  
(Note: The above Committee may co-opt one NGO as its member.)
The committee shall meet at least once before the onset of monsoon and immediately after hit by a calamity and thereafter as frequently as may be necessary (specially during the disaster);

- Review the following:
  - Inter-Departmental co-ordination, if any.
  - Needs and strategies to be taken for restoration of connectivity for safe movement of the relief vehicles;
  - Permission for adequate quantity of restoration materials and timely mobilization and optimum utilization of the available plants and machineries
  - Position of spare parts for repair of hand pump tube wells and Piped
  - Position of stock and arrangements for procurement of
    - Water pouches / poly packs and jerry cans
    - Halogen tablets
    - Bleaching powder, etc.

- Make arrangements for:
  - Tankers, Tippers and truck mounted tanks
  - Transport vehicles, boats etc.

- Monitor responses to the emergency and the impact thereof;
- Set up Disaster Control Rooms (DCRs) at the State, District and other levels and monitor the functioning of these;
- Similar other works.

**District Mitigation Committee (DMC) for Public Health**

A similar Committee, called the District Mitigation Committee, will formed on a permanent basis for coordinating disaster support relating to drinking water supply and sanitation at the district levels. The committee will comprise following members

<table>
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<tr>
<th>Collector</th>
<th>Chairman</th>
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<tr>
<td>Executive Engineer, RWSS</td>
<td>Member Secretary</td>
</tr>
<tr>
<td>Project Director, DRDA</td>
<td>Member</td>
</tr>
<tr>
<td>Chief District Medical Officer</td>
<td>Member</td>
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</table>

The above Committee may co-opt one NGO as its member.

The committee shall
Meet at least once every three months before the expected normal commencement of a flood and thereafter as frequently as may be necessary (specially during the disaster);

Review the following:

- Needs and strategies to be taken;
- Position of spare parts for repair of hand pump tube wells and Piped Water Supply System
- Position of stock and arrangements for procurement of
  - Water pouches/poly packs and jerry cans
  - Halogen tablets
  - Bleaching powder, etc.

Make arrangements for:

- Tankers and truck mounted tanks,
- Transport vehicles, boats, etc.

Monitor responses made to the emergency and the impact thereof;

Set up of and functioning of Disaster Control Rooms (DCRs) at the District, Block and other levels;

Report to the State Disaster Mitigation Committee.

Disaster Control Rooms (DCRs)

A Disaster Control Room (DCR) shall be set up at the state level in the office of the Chief Engineer RW (Roads) and RWSS.

Similarly, DCRs shall be set up at the RW and RWSS Divisions,

Additionally, DCRs shall be set up at the RWSS Sub-Divisions and Sections at the affected areas, but not for RW sub-Division and Sections.

At least an Executive Engineer, will remain in charge of the DCR at the State level

A telephone shall be available in the DCR exclusively for the purpose. This will be notified and intimated to all concerned including other related Departments
and related Control Rooms.

❖ The DCRs at all levels shall remain open preferably for 24 hours during the emergency period (to be decided by the DMC), in any case, between 6 AM to 10 PM everyday.

❖ A register shall be maintained in the DCR to record all information/complaints received officially or otherwise and to pass on the same to appropriate authorities for necessary action.

❖ The information available in the DCR shall include
  ● District / Blocks / Villages affected,
  ● The nodal officer of the affected areas,
  ● The telephone and contact no. of other Control Rooms of RWSS, Revenue and Health departments, etc.
  ● Action taken by the RW; Department on disaster management.

❖ This will be applicable to all State / District / Sub-Divisional and Section level DCRs.

❖ The DCRs shall automatically be activated when a disaster strikes.

**Preparedness**

It is commonly agreed that there should be full preparedness to efficiently manage the situations arising out of disasters such as floods and cyclones. Such preparedness helps to a very large extent to adequately respond to the crisis and bring about normalcy.

The three stages of response are

Stage I - Pre Disaster
Stage II - During- Disaster
Stage III - Post- Disaster

The State level Disaster Mitigation Committee (DMC) shall decide the detailed location-specific activities to be taken up under each of the above phases and communicate to the Nodal Officers (RW/RWSS Organisation) for action. However, a few strategic clusters of activities are suggested in this manual, which are only indicative and not exhaustive.
Phase I: Pre-Disaster Response

In line with the old and time tested adage, "Prevention is better than cure", pre-disaster mitigation measures are of vital importance. Meticulously planned and properly implemented, the efforts can go a long way in meeting and even preventing the dislocations likely to occur in the event of floods and cyclones, the two disasters which frequent Odisha. Involving the local community in all these activities holds the key to disaster management initiatives. With location specific variations, the following groups of activities are suggested. It may be noted that most of these would hold good for Phase II (Response During Disaster) as well.

Standard operating procedure,

(A) For connectivity (Rural Works):

Before the onset of monsoon every year usually in the month of April, pre-monsoon inspection of each road and Bridge under this Organisation is conducted in order to check the vulnerability of the Structure & roads in order to quell breach of bridges and roads and road side drain. All the drainage spots of the bridge and C.D. works are cleaned for free passage of runoff water. Roads side drains are cleaned for obstacle free flow of run-off water. In order to check the erosion of soil road side plantation are made. Turfing is also done in embankments in order to quell soil erosion and also to lower velocity of runoff water to apprehend further damage.

Assessment and mapping of shelter, pucca buildings, schools which can be converted in to shelter during flood is also conducted.

i) Inspection of Roads and Bridges: The JE/AE/AEE inspects all the roads, buildings and Bridges under his jurisdiction before the monsoon, ensures that the previous restoration of damages are taken care of and the repair work in the weak points are complete. The Chief Engineer holds an annual meeting with the concerned staff and reviews.

ii) Flood risks assessments will be taken up annually to determine the susceptibility of the land bordering the relevant watercourses to flooding. This periodical assessment will provide the concerned governmental agency or local body the state of readiness of the road network and their vulnerability, if any, and other works necessary to meet calamity.

The main outcome of such an exercise will be a flood risk map that will be updated every 3-5 years. The planning tasks will include the following:
a) Identification of any point of recurrent damages to public property and brainstorming the best available solution to protect it against calamity.

b) Specify the criteria against which new development would be managed within areas of risk.

c) Suggest detailed safeguard measures to be adopted for minimizing various risk factors.

iii) **Stock piling materials** at weak points during emergencies:

Sand bags, sand, bamboo etc. is collected at weak points or at near by locations for use in case of breach or damage to embankments.

iv) **Opening Control Rooms:**

Control rooms are opened in the office of the Chief Engineer, and below to the rank of Junior Engineers from 1st June to 31st October every year. These control rooms function round the clock during emergencies and from 6 a.m. to 10 p.m. during normal conditions. Control Rooms also functions in the offices of respective Collectors and the Revenue Department. All district control rooms will have the state of the art communication systems as well as a network with the State Control Room so that data can be regularly exchanged. The control rooms of this Department function in close liaison with the respective counterparts of the Revenue Department for optimisation of efforts.

v) **Directory for communication** giving names, designation, address, and telephone numbers will be updated before every flood season and distributed to all concerned in specific locations.

vi) Preparedness for the immediate restoration of rural connectivity.

- Identification of vulnerable points.
- Stocking of sand, morrum & boulder etc at a safe place at these locations.
- Keep the manpower / labour force ready prior to the occurrence
- Considering favourable ground situation, commence restoration of activity of movement of men and material to the cut-off zone.
- The restoration cost is to be met from the funds available on the roads or the expenditure will be met from the funds received from S.R.C. But all out efforts should be made to restore the damages within 24 hours or as soon as possible.

(B) **For Water supply and Sanitation:**
1. Awareness Campaigns
   - Linkages between lack of awareness on safe water, hygiene and sanitation and health problems during disasters; awareness on collection, transportation, storage and handling of water, use of domestic water filters or terracotta filter.
   - To make the community aware of the prospects and benefits of Government programmes such as Swajaldhara, PWS, NBA and other health programmes.
   - Campaigns to be conducted before the onset of monsoon in collaboration with the health officials, NGOs, representatives of PRIs health and Anganwadi workers.

2. Social Mapping
   - This exercise involves the preparation of a simple social map indicating problem areas and developing the networking system.
   - While preparing such a map, information can be gathered from the inhabitants of the affected villages/areas.
   - Timeline data on levels of flood, degree of damage caused in the past, places affected and probable shelter places.
   - Occurrence of disasters such as flood/drought/cyclone/heat wave, etc. in a graphical form.
   - Warning systems available in the areas.
   - Geographical situations such as rivers, forest, barren land, canal, high land, etc.
   - Road connectivity to the district headquarters.
   - Location of institutions such as school/college/hospital/PRI/veterinary center/cyclone shelter/multipurpose buildings/others.
   - Local NGOs, their location and operational area.

3. Sanitation
   - To identify and earmark the vulnerable areas, on priority base, for construction of temporary sanitary latrines.
   - The system adopted should be cost-effective. The most common and economical type is the trench/pit latrines in the down stream side of the river.
   - There should be separate latrines for the male and female population.
   - Installing water supply and disposal systems in relatively hazard free locations.
   - Keeping disposal installations relatively away from residential areas.
Installing sewage and excreta disposal units downstream from human habitants, embankments, ponds, water reservoirs and other life line installations.

- Treating open defecation areas with strong disinfectants to check spread of pathogenic materials.
- Sanitation and waste disposal facilities need to be ensured in the shelter places particularly in the multipurpose cyclone shelters.

4. Availability of Boats
- During floods, due to submergence of flood water the road transport gets disrupted. In such cases boats are the immediate and convenient mode of conveyance. Thus availability of boats in such a situation solves the problem of relief and reconstruction measures in an effective manner.
- It is essential to formulate an action plan, in consultation with other district / block officials, for keeping adequate boats ready before the onset of monsoon.

5. Shelter Places
- Identification of shelter places in the vulnerable areas is an important exercise prior to a disaster.
- No. of shelter places, capacity of accommodation in each shelter place, facility available, etc. should be prepared block wise.
- The shelter places should be equipped with facilities such as water supply, toilet, water storage arrangement and scope for free kitchen service etc.

6. Construction of Raised Platforms
- If the tube well hand pumps get submerged in flood water, the source also becomes contaminated and unsafe for human consumption. Therefore, in flood prone areas, it would be necessary that tube well platforms be built at a level higher than the ordinary flood levels.
- The places to be identified where raised platforms have already been constructed and are under progress.
- The raised platform so constructed should have proper access to the public. The site should be selected by the community.

7. Enlisting NGOs
- Identification of NGOs operating block-wise should be prepared. While
preparing such list, care should be taken to collect information with regard to

- Number of volunteers, NGO-wise
- Type of activities carried out and the expertise achieved
- Bonafides of the NGO (whether registered under the SRA Act)
- Area of operation
- Address, telephone number, Fax, E-mail, etc. of the NGO to be collected and recorded

8. Procurement of Materials

Preparedness as regards procurement of materials is of prime importance. This should include

- Survey, at least before one month of the onset of monsoon, is to be conducted in the flood prone areas to assess the number of tube wells out of order, piped water supply gone non-functional, etc.
- Materials required for the restoration of such water supply units be prepared by the JE, RWSS and sent to the EE, RWSS through the AE, RWSS.
- Material procurement be ensured by the EE, RWSS observing the codal procedure.
- Materials procured should include the spare parts, riser pipes for hand pump tube wells, pipe and fittings for piped water supply schemes. Besides, jerry cans, halogen tablets, bleaching powder, other disinfectants etc. should also be procured just before the monsoon and stored in the sectional store and other identified strategic places.
- Proper documentation should be made for such procurement and utilization thereafter.

9. Arrangement of Water Tankers

- Advance planning is for arrangement of truck and trolley mounted tankers. However, such arrangement can work well in the non-submerged area.
- In the submerged/marooned areas, action is needed to be taken to set up PVC tanks in the shelter places.

10. Identification to Tube wells Susceptible to Submergence
A detail survey to be conducted to identify the tube wells village-wise, which are susceptible to submergence during flood.

Raised platforms suggested at SI. 6 should be constructed in those areas to meet the urgent need during floods.

In the event of less submergence, the tube wells should be disinfected.


- Generally, water supply systems suffer structural damage to pipe lines and water supply installations in the event of disaster.

- The nature of such disruption should be identified and action plan to be decided by the JE/AE RWSS to take up repair works. All the sources should be repaired in the flood prone areas (especially those in uplands, schools, shelter places etc.) on priority basis.

- Adequate tool sets and spare parts should be made available with the JE, RWSS to fake up urgent repair in case of breakdown.

- In case of dislocation in piped water supply schemes, water user group should be trained for restoration of the service as part of community based disaster preparedness initiatives. This assures local capacity building and could be used for maintenance in normal period.

- Repair of water supply systems should be followed by disinfection of the tubewells, production wells, etc. with halogen tablets, bleaching powder, calcium hypochlorite, sodium hypochlorite, potassium permanganates, etc.

- Regular testing of water should be made with H₂S strips.

- Water sources in the shelter places/schools be disinfected by the community at regular intervals. The process of disinfection should be made aware to them by the JE/AE, RWSS.

12. **Identification of Store Houses**

- Location of Central/Divisional/Sub-divisional/Sectional Stores is to be ascertained.

- Location of such store with detailed address, contact numbers and route chart, etc. should also be made available for ready reference by the concerned officials and
agencies engaged in the task.

13. **Formation of Groups/Teams for Rapid Response**
   - It is necessary to prepare, in advance, a list of groups / teams / individuals for rapid response at the time of a disaster.
   - The group so formed should indicate the designation of officials, NGOs and member of PRI and individuals of the village, with allocation of duties to perform, for ready reference.
   - The group members should make the villagers/communities aware to face disaster in the most organized manner.
   - One or more meetings (as would be necessary) should be held at the block level jointly by the BDO, AE, RWSS and JE, RWSS with the help of the NGOs.

**Phase II: During - Disaster Response**

The first and foremost task is to make an analysis of the situation and its impact on the affected population. Most of the activities that need to be undertaken have been detailed in Phase I, which also hold good for the Phase II. The basic difference is that the focus will on the populations who have been already affected. This can best be done through a mapping exercise of the area, as suggested in Phase I.

**The information should include**:
   - Affected areas : a list of affected villages, gram Panchayats, blocks
   - Affected communities with details of population, households, etc
   - A list of marooned pockets (villages or parts thereof) and the likely duration of the situation
   - Affected infrastructure : Roads - extent of damage and remedial measures required
   - Temporary shelters : Schools, community halls, embankments, etc with location, what needs to be done to address water and sanitation services

**The above information should be collected from two sources**

   - Informal: Local informers, Community leaders, NGOs and other organizations. This is the first information which should be confirmed from formal sources later
Formal : Official information collected from Block, PRI, Line Departments and Field Functionaries

(A) Rural Works

The timely communication of information on damages

- Prompt action needs to be taken by the District level Control room to report the preliminary report of damage to State level Control room, including the District Administration
- The CE, RW (Roads) on receipt of such reports will take prompt steps to compile all the damages over the entire state and timely report the same to the RD Department, and the Special Relief Commissioner

Augmentation of Men, Material and Machine

- Procurement of materials such as gunny bags; Bamboos/ Bullas;
- Procurement of machinery such as PRR, excavator, Tipper/Truck, Tankers, Power saw, Generator, Crane etc.
- Identification of alternative routes of communication;
- Preparation, distribution and adherence to route charts converging with activities of PWD, in particular and other line departments; in general.

(B) Rural Water Supply and Sanitation

Action on procurement and distribution of Material and Machine

- Procurement of pouch / poly pack materials (plastic bags) along with sealing equipment for distribution of water, bleaching powder and halogen tablets;
- Procurement of Jerry cans;
- Procurement of halogen tablets and packing in small plastic pouches
- Procurement of bleaching powder and packing in small plastic pouches;
- Arrangements for water tankers (truck tankers or trolley tankers);
- Arrangements for PVC tanks to be set up at shelter camps or nearby areas;
- Procurement of adequate quantity of spare parts for repair of tube wells;
- Identification of location of Central/Divisional/Sub-divisional/Sectional stores;
- Identification of location of stationing equipment;
- Identification of sources for filling water in poly packs, pouches, jerry cans, water
tanks, etc. for distribution;

- Preparation, distribution and adherence to route charts converging with activities of other line departments;
- Arrangement of transportation, especially those related to boats;
- Arrangement distribution mechanism as per route chart finalized in consultation with other line department;
- Making temporary emergency arrangements for drinking water along the connecting roads through tanks filled up frequently;

**Human Resource, Social Mobilisation and Coordination**

- Formation of groups/teams/individuals at the Section level for immediate response;
- Making villages/communities / VWSCs aware to face disasters in the most organized manner For this one or more meetings could be held at the block level by the Block Development Officer and the AE/J E., RW,
- Ensure proper coordination and linkages through Control Room, Civil Society Network, Inter departmental co-ordination, field functionaries, PRI;

**Monitoring of Activities**

- Monitoring of activities by the designated Nodal Officers as frequently as necessary;
- Daily feed back in suitable format needs be furnished by the JE for review and monitoring and review of the different planned activities;
- It is to be reviewed if the advance planning is implemented in proper manner or not. If not then the deficiencies are to be reviewed and solutions suggested;

**Phase III: Post - Disaster Response**

Reconstruction of assets damaged or washed away normally requires resources well beyond those available during or after emergencies and the resulting humanitarian assistance phase. As a result, reconstruction is often undertaken without vulnerability reduction. Therefore, immediately after the emergency stage, an assessment must be made of the direct and indirect impact on the population. This assessment need not entail the utmost quantitative precision, but it must be comprehensive in that it covers
the complete range of effects and their cross-implications. With this assessment in hand, it should be possible to plan the course action that can be taken locally.

**The specific activities will include:**

(A) **RURAL CONNECTIVITY**

1. Assessment of damage to the infrastructure after the standing water recedes and a detailed plan for the restoration, Rehabilitation and reconstruction needs of the affected area.
2. Exploring the alternatives for restoration.
3. Adopting economic measures for prompt repair and restoration.
4. Reviews are made at various levels to determine the reasons damage at the individual locations and measures to be adopted to reduce the chances of recurrence.
5. Documentation of lessons learnt. This is an important activity which is normally overlooked. A proper documentation will help institutionalizing the process and mitigating next disaster in a more timely and efficient manner.

(B) **RURAL WATER SUPPLY AND SANITATION:**

1. Assessment of damage to the drinking water and sanitation situation and a detailed plan for the restoration, Rehabilitation and reconstruction needs of the affected area. As far as practicable, this exercise should be made community-based.
2. Disinfection of all drinking water sources including the privately owned and institutional sources followed by clearing up of water sources and restoration of damaged platforms and pipelines.
3. Water qualities testing of all drinking water sources. This should be a continuing process.
4. Village sanitation drives for carcass, excreta and solid disposal.
5. Intensive awareness on safe water handling/hygiene education through the help of District WATSAN Mission, NGOs and local community. Sample fliers that were used during earlier disasters to good effect are attached.
6. New installations or replacements of the ones that are completely damaged. Additionally, some tube wells that were submerged may require raising of the...
platforms. An inventory of these sources will be beneficial in preventing them for further damage (RWSS).

7. Documentation of lessons learnt. This is an important activity which is normally overlooked. A proper documentation will help institutionalizing the process and mitigating next disaster in a more timely and efficient manner. Help from RWSS, DWSM and other external agencies can be solicited for this important activity.

Roles and Responsibilities

The Roles and Responsibilities of the different officers in the hierarchy in respect of both the wings of this Department namely Rural Works and Rural Water Supply and Sanitation are separately narrated below:

(A) RURALCONNECTIVITY

Junior Engineer, RW

Junior Engineer, RW shall personally be in touch with the Block Control Room/BDO once or twice daily, collect information on affected areas, pass on the same to sectional Control Room and act accordingly. He will request the concerned Assistant Engineer, RW for additional support, if required.

He will ensure prompt reporting of the details of damage under his jurisdiction and the daily progress of the restoration activities to the Divisional Control Room.

He will mobilise the restoration material at his command and in case of shortfall may seek the intervention of his sub-divisional/divisional officers for sending the requisite materials as may be necessary to the affected areas without loss of time.

He will visit as many areas as possible to have first-hand information of the situation.

He will keep the AE, RW informed daily about the action taken by him under his jurisdiction.

Sub Divisional Officer, AE / AEE, RW

Assistant Engineer/Assistant Executive Engineer, RW shall monitor all the above activities and ensure smooth management of the situation.

He will function as a link between the Divisional Control Room and the JE and update
the EE on development of the restoration works from time to time.

He will coordinate supply of materials and spare parts as may be necessary by the JE, RW of the affected areas.

He will mobilize/deploy staff from other areas to the affected areas to cope with the requirements of the affected areas.

He will visit as many areas as possible to monitor the situation.

**Executive Engineer, RW**

Executive Engineer, RW shall be responsible for the overall monitoring the activities of the Assistant Engineer and junior Engineers to ensure smooth management of disaster management operations.

He will ensure proper functioning of the Control Room in his office.

He will ensure supply of materials and spare parts as may be necessary by the AE/ JE, RW of the affected areas.

He will mobilize/deploy staff from other areas to the affected areas to cope with the requirements of the affected areas.

He will mobilize/deploy vehicles, machineries such as Road rollers and staff from other areas to the affected areas to cope with the requirements of affected areas.

He will visit as many areas as possible to monitor the situation.

He will keep the Chief Engineer, RW (Roads) and the Superintending Engineer, RW informed daily or as frequently as required about the situation and action taken in his area.

**Superintending Engineer, RW**

Superintending Engineer, RW shall monitor the activities of the Executive Engineer, AE and JE of the affected area under his jurisdiction to ensure smooth management of disaster management operations.

He will function as a link between the Divisional Control Room and the CE office control room.
He will mobilise inter-Divisional supply of man and machinery as may be required by the Executive Engineer / AE / JE, RW of the affected areas.

He will visit as many areas as possible to monitor the situation.

He will keep the Chief Engineer, RW (Roads) informed daily or as frequently as required about the situation and action taken in his area.

**Chief Engineer, RW(Roads)**

Chief Engineer, RW (Roads) monitors the following activities:

Ensure functioning of the Control Room in his office, ensure supply of materials and spare parts as may be necessary by the Superintending Engineer/Executive Engineer of the affected areas, mobilize/deploy staff from other areas to the affected areas to cope with the requirements of the affected areas, mobilize/deploy vehicles, Plants and machineries, from other areas to the affected areas , keep the Principal Secretary, RD Department , ensure submission of information, returns, etc. required for the purpose to the SDMC, Government and other authorities as may be decided or required.

(B) RURAL WATER SUPPLY AND SANITATION:

**Junior Engineer, RWSS**

Junior Engineer, RWSS personally contacts the Block Control Room/BDO once or twice daily, collect information on affected areas, pass on the same to sectional Control Room and act accordingly. He seeks additional support from the concerned Assistant Engineer, RWSS, if required.

He ensures the following things for response activities:

1. Functioning of the Control Room in his office.
2. Arrange to procure materials which include but not be limited to poly packs/pouches containing water, jerry cans, Halogen tablets in small pouches and bleaching powder in small pouches. from his own store or from the sub-divisional/divisional stores as may be necessary and send the same to the affected areas for distribution among villagers.
3. Make arrangements in convergence with other relief parties
4. Make arrangement to depute designated staff and Self Employed Mechanics
(SEMs) individually or in teams with adequate spare parts and materials to repair the tube wells/ piped Water Supply systems immediately, if there is a breakdown.

5. One of the members of the staff is designated as Task Force Commander (TFC) for one area. The TFC reports to the JE, RWSS daily on the action to be taken and already taken by him and his force.

6. Ensure disinfection of submerged water sources in the affected areas immediately after the water level recedes.

7. Arrange to test the quality of water from tube wells and Piped Water Supply Systems in the affected areas from time to time during and after the flood/cyclone through indicator tests using H2S strips. In case of doubt, he will refer it to the higher authorities for other confirmatory tests without loss of time.

8. He will ensure sanitation near all shelter camps to the extent possible in coordination with local health authorities.

9. Visit as many areas as possible to have first-hand information of the situation and keep the BDO/AE, RWSS informed daily about the action taken by him in his area.

Sub Divisional Officer, AE / AEE, RWSS

Assistant Engineer/Assistant Executive Engineer, RWSS shall monitor all the above activities and ensure smooth management of the situation.

He will ensure functioning of the Control Room in his office, supply of materials and spare parts as may be necessary by the JE, RWSS of the affected areas, mobilize/deploy staff from other areas to the affected areas to cope with the requirements of the affected areas, visit as many areas as possible to monitor the situation, keep the Executive Engineer, RWSS informed once or twice daily about the situation and action taken in his area.

Executive Engineer, RWSS

Executive Engineer, RWSS monitors the activities of the Assistant Engineer and junior Engineers to ensure smooth management of disaster operations. He ensures proper functioning of the Control Room in his office, ensure supply of materials and spare parts as may be necessary by the AE/ JE, RWSS of the affected areas, mobilize/deploy staff from other areas to the affected areas to cope with the requirements of the affected areas, mobilize/deploy vehicles, water tankers, tanks, staff
from other areas to the affected areas to cope with the requirements of affected areas, visit as many areas as possible to monitor the situation, keep the Chief Engineer, RWSS and the Superintending Engineer, RWSS informed.

**Superintending Engineer, RWSS**

Superintending Engineer, RWSS monitors the activities of the Executive Engineer, AE and JE of the area to ensure smooth management of disaster response activities such as ensure functioning of the Control Room in his office, ensure supply of materials and spare parts as may be necessary by the Executive Engineer / AE / JE, RWSS, visit as many areas as possible to monitor the situation, keep the Chief Engineer, RWSS informed.

**Chief Engineer, RWSS**

Chief Engineer, RWSS monitors the activities of the RWSS organization to ensure smooth management of disaster management operations. He ensures the following activities:

1. Functioning of the Control Room in his office.
2. Supply of materials and spare parts as may be necessary by the Superintending Engineer/Executive Engineer of the affected areas.
3. Mobilize/deploy staff from other areas to the affected areas.
4. Mobilize/deploy vehicles, water tankers, tanks, from other areas to the affected areas.
5. Keep the Secretary, RD Department informed once or twice daily or as frequently as required about the situation and action taken.
6. Ensure submission of information, returns, etc. required for the purpose to the SDMC, Government and other authorities as may be decided or required.
Steel & Mines Department

The Department looks after the mining and steel sector of the State. The infrastructure and personnel working in these sectors are vulnerable to various natural as well as human induced disasters. The Department has prepared disaster preparedness and response plans taking into the hazard and vulnerability aspects.

Risk Analysis – The risk is calculated on the basis of various hazards that can cause to the steel and mines infrastructures and assets of the department keeping in the view its vulnerability and capacity.

The mining sector can be looked into partly as organised sector which includes mines of State PSUs, Central PSUs and mines being managed by large industrial houses such as Tatas and Birlas and some other private mine owners. The mines in the unorganised sector include mines of economically less important minerals like quartz, quartzites, fireclay, chinaclay, graphite etc. Besides the decorative stone mines and the mines for extracting other minor minerals can also be classified into unorganised sector. Mining activities in these mines are governed by either Coal Mines Regulation (CMR) or Metalliferrous Mines Regulation (MMR) (Under Mines Act, 1952) and DGMS Dhanbad takes care of the safety aspects of the mines. DGMS also conducts safety awareness programmes in the mines for prevention of any hazard arising out of mining activities. DGMS has also been conferred with the punitive powers to deal with the erring mining units. Although the organised mining sector is equipped to considerable extent to meet the exigencies arising out of such hazards, much is desired to be done for the unorganised sector where risk factor is much more.

All the disasters related to mines carry high risk factor involving loss of life and property of the mine and area under its influence. The assessment of risk involved is always site specific for which a generalised assessment cannot be done prior to incidence of such disasters.

Hazard, Vulnerability, Capacity and Risk Profile –

i) Nature, frequency and intensity of disaster to which the department is prone to or is likely to be impacted in future

The probable disaster situations to happen includes both natural and operational

Natural (i) Flood (ii) Earthquake (iii) Beach erosion
**Operational** (i) Fire (ii) Explosion (iii) inundation (iv) Slope failure (v) subsidence (vi Accidents.

For effective management of disasters, District disaster management cells have been constituted. The District Level Disaster Management Cell has the following representations:

1. Addl. District Magistrate - Head of the Cell
2. Dy. Superintendent of Police - Member
3. Chief Medical Officer - Member
4. Deputy Director, Mines/Mining Officer - Member
5. District Fire Officer - Member
6. Executive Engineer (PWD) - Member
7. Regional Transport Officer - Member
8. Deputy Director Geology/Geologist of the concerned Zone - Member
9. Any other member as desired by the Cell

Deputy Director Mines/ Mining Officer will act as *Nodal Officer* of the cell.

The District Level Disaster Management Cell shall constitute a Quick Response Team (QRT) with representative of their respective Departments for early response to the disaster. This team will be under beck and call of the head of the District Level Disaster Management Cell and on receipt of information from the nodal officer, the head of the cell will mobilise the QRT.

**Response Plan:**

1. **Mechanism for early warning and dissemination thereof:**
   - In each mining unit an officer not below the rank of Asst. Mines Manager is designated as nodal officer of the Disaster Management unit of the mine. In the event of any disaster he immediately intimates through phone/ e-mail to the Nodal Officer of District Level Disaster Management Cells and describes the magnitude of the disaster vis-a-vis the capacity of the unit to negotiate the disaster. The District Level Disaster Management Cells initiate actions as per the nature of the disaster so reported.

2. **Trigger Mechanism for response**
   - Sooner the information reaches the District Level Disaster Management Cell the Nodal Officer of the Cell alerts the nearby mining units and commands them to render
necessary assistance to rescue man and machineries. He also assess the situation and
intimate the District Level Disaster Management Cells for further actions. The Cell
mobilises the Quick Response Team (QRT) to the spot of disaster for relief and rescue
operations.

iii) **Response plan for responding effectively and promptly to any threatening
disaster situation or disaster in accordance with the State Plan, and in accordance
with the guidelines or directions of the National Executive Committee and the State
Executive Committee and the State Government and the SDMA:**

The head of District Level Disaster Management Cells mobilises the Cell for meeting
the requirements as demanded by the situation/disaster. He also assess the situation
further and if required he immediately contacts the State Executive Committee and
SDMA and seek necessary assistance from them promptly.

iv) **Appointment of Nodal Officers to perform Emergency Support Functions
(ESFs)/roles in emergency in the format already circulated by the State
Government:**

The concerned Deputy Director Mines/Deputy Director Geology /Geologist/Mining
Officer acts as Nodal Officer in each District Level Disaster Management Cells. In
case more than one mining circle comes under the same District, DDM/DDG/GEOLOGIST/MO in charge of each circle/zone will act as Noda Officer
in respect of the respective mining circle/zone. The Nodal Officers acts independently
without waiting orders from the Director of Mines while handling mining and
geological disasters. Similarly there shall be one nodal officer in the State Level
Disaster Management Cell. The District Level Nodal Officer keeps in contact with the
State Level Nodal Officer for further assistance while negotiating a disaster. The
following Emergency Support Functions are discharged by the Nodal Officer:

a) Provide his contact number to the head of District Level Disaster Management
   Cell, R&DM Department and State Level Disaster Management Cell
b) Act as convenor for emergency meetings of the District Level Disaster
   Management Cell.
c) Ensure mobilisation of the QRT available with the District Level Disaster
   Management Cell
d) Maintain official records concerning District Level Disaster Management relating
to his mining circle.
e) Set up control room and assign officials for control room duty in consultation with the Head of District Level Disaster Management Cell.

f) Identify staff/manpower for on-site operation centres.

g) Make arrangement for alternative communication system, if required, in consultation with the Director of Mines.

h) Ensure timely mobilization of resources available under the District Level Disaster Management Cell for timely mitigation.

i) Organize mock drills and awareness programmes periodically at least twice in a year.

j) Procure necessary machines, tools and equipments for the QRT.

*Constitution of the Incident Response Teams (IRTs) at all levels with provision of delegation of authority:*

Each District Level Disaster Management Cell has an Incident Response Team under its disposal to further strengthen the QRT. The team has provision of representations from the respective Departments corresponding to the constitution of the District Level Disaster Management Cell. The Incident Response Team is under the control of the head of the District Level Disaster Management Cell, who in consultation with the Nodal Officer deploys the IRT for disaster mitigation. After deployment of QRT by the cell in the event of any disaster for emergency operation, the IRT is pressed into service by the District Level Disaster Management Cell with detailed strategic instruction for undertaking further mitigation and rehabilitation measures.

*Reporting procedures and formats:*

Initial information is sent by the Nodal Officer through telephone/e-mail with magnitude of the disaster. Thereafter, the Nodal Officer makes reports of actual damage and actual assessment report on utilisation of funds for disaster management. A format for reporting of the disaster is devised by the training institute and circulated amongst each District Level Disaster Management Cells. The final report on the entire disaster management operation is submitted by the District Level Disaster Management Cell to the State Level Disaster Management Cell for their appraisal. A format for the same will also be devised by the training institute for circulation among the District Level Disaster Management Cells.
Roles and responsibilities and coordination mechanism for the department:

Roles and responsibility of the Department of Steel & Mines - The role of the Department of Steel & Mines in disaster management will be as follows:

i) To be in constant touch with the nodal officers and collect information on preparedness and capacity building.

ii) Collect detailed information of the disaster and intimate the State Level Disaster Management Cell under R & DM Deptt..

iii) To inform the nearby mines/cells and the State Level DM Cell of the magnitude of the disaster and seek assistance.

iv) To appraise the Government of the details of Disaster Management operations and the expenses made for the same.

Disaster Specific Response Plan – Response plan for major disasters such as earthquake, inundation, landslide, slope failures, subsidence etc. in which state level response would be needed:

In the event of disasters like earthquake, landslide, slope failure, subsidence in mining sector the nodal officer of the District Level Disaster Management Cell immediately moves for seeking necessary assistance from state and central disaster management units. The Remote Sensing Centre of Directorate of Geology provides spatial extent of inundated areas using pre-cyclone/flood IRS LISS-III/LISS-IV data and post cyclone/ flood IRS LISS-III/LISS IV data for further assistance to the District Level Disaster Management Cell.

Identification of suppliers and pre-contracting for supplies in case of emergencies:

The District Level Disaster Management Cell finalizes the suppliers for various commodities, logistic support required for assistance of the victims and for related operations through an open tender every year and keeps the suppliers in readiness for meeting any emergency.
Textile, Handloom and Handicraft Department

Hazard, Vulnerability, Capacity and Risk Profile:
Department is prone to disasters due to Heavy Rain, Flood, Cyclone, Fire etc. Heavy Rain, Flood, Cyclone usually occurs annually during rainy season (July-September). The nature of the disaster depends upon the frequency and intensity of the calamity.

Historical / past disasters / losses in the Department:

Handloom Sector:
a. Last occurrence - Flood 2011-12
b. Total Weavers affected - 2260
c. Total districts affected - 09
d. losses / damages caused to - Work Shed, Looms, Accessories, Raw material and Finished product
e. Total losses assessed - Rs. 238.18 lakh

Sericulture Sector:
a. Last occurrence –2011-12
b. Total Farmers affected - 337
c. Total area affected 81.22 hectors
d. Total districts affected - 6
e. losses / damages caused to - Mulberry, Tasar and Eri Plantation
f. Total losses assessed - Rs. 3.24 lakh.

Handicraft Sector:
a. Last occurrence of Super Cyclone during 1999
b. Sever losses to Artisans, their Work sheds, Raw materials , Tools & Machineries and Finished Products

I. Causes of Losses / Damages:

<table>
<thead>
<tr>
<th>Cause (Type of Disaster)</th>
<th>Damages</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Handloom Sector:</strong></td>
<td></td>
</tr>
<tr>
<td>Heavy Rain, Flood, Cyclone &amp; Fire</td>
<td>Infrastructure</td>
</tr>
<tr>
<td></td>
<td>Livelihood</td>
</tr>
<tr>
<td></td>
<td>Health</td>
</tr>
<tr>
<td>Sericulture Sector:</td>
<td>Nature</td>
</tr>
<tr>
<td>-------------------</td>
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</tr>
<tr>
<td>Heavy Rain</td>
<td>Livelihood</td>
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<tr>
<td>Flood, Cyclone</td>
<td>Infrastructure</td>
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<tr>
<td></td>
<td>Livelihood</td>
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<tr>
<td></td>
<td>Health</td>
</tr>
<tr>
<td>Heat Wave, Hail storm, Fire</td>
<td>Livelihood</td>
</tr>
<tr>
<td></td>
<td>Health</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Handicraft Sector:</th>
<th>Nature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Rain, Flood, Cyclone &amp; Fire</td>
<td>Infrastructure</td>
<td>Work shed &amp; Dwelling House</td>
</tr>
<tr>
<td></td>
<td>Livelihood</td>
<td>Machineries, Tools &amp; Implements, Raw materials &amp; Finished products</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>Water borne diseases, epidemic like Cholera, and burnt ( in case of fire occurrence)</td>
</tr>
</tbody>
</table>

I. Capacity of the Department to deal with the identified disasters:

I. Institutional:

<table>
<thead>
<tr>
<th>Handlooms, Textiles &amp; Handicrafts Department</th>
<th>Monitor the Disaster management at Department level and co-ordinate with other line Departments/Agencies.</th>
</tr>
</thead>
</table>
| Directorate of Textiles (Handlooms, Textiles, Sericulture Sector) | a. Directorate of Textiles at State Level  
  b. 5 Divisional Offices for Handloom and 3 Divisional Offices for Sericulture Sector  
  c. 15 Zonal Offices and 11 Zonal Offices at field level for Handloom and Sericulture sector respectively. |
| Directorate of Handicrafts & Cottage Industries (Handicraft Sector) | a. Directorate of Handicrafts & Cottage Industries, OSCHC Ltd. And SIDAC at State Level  
  b. 31 District Industries Centres/ Regional Industries Centres at district level  
  c. Office of IPOs at Block level |

II. Organizational:

a. Primary Weavers Co-Operative Societies at field level for Handloom Sector  
 c. Primary Handicraft Co-operative Societies for Handicraft Sector

2. Actionable Plan

I. Handloom & Sericulture Sector
a. As per past occurrence the following areas/districts such as Balasore, Jajpur, Cuttack, Kendrapara, Bargarh, Jharsuguda, Sambalpur, Subarnapur, Ganjam, Boudh, Keonjhar & Bhadrak for Handloom Sector are prone to hazards of natural calamities like Flood/Cyclone/Heavy rain.

b. Similarly, in Sericulture Sector the following districts such as Cuttack, Kendrapada, Jagatsingpur, Nayagarh, Jajpur, Angul, Dhenkanal, Mayurbhanj, Deogarh, Sambalpur, Kalahandi, Nuapada, Sundargarh, Koraput, Rayagada, Gajapati, Phulbani, Boudh, Balasore & Keonjhar are prone to hazards of natural calamities like Heat wave/Hail storm/Flood/Cyclone/Heavy rain.

c. In hazard prone areas of Handloom Sector, Inspector of Textiles & Technical Assistant are at field level to look after & assess the losses/damages and SARCS and Weaving Supervisor at Zonal level to help the field staff & coordinate with the Nodal officer at Zone Offices.

d. Similarly, in Sericulture Sector Technical Inspector, Senior Tassar Assistant & Field Assistant are at field level to look after & assess the losses/damages and Production Officer at Zonal level to help the field staff & coordinate with the Nodal officer at Zone Offices.

e. Zonal Deputy/Assistant Director works as the Nodal Officer in respect of the Districts falling under his jurisdiction. Zonal Office works as the control room for the area (in term of Districts) falling under the jurisdiction of the concerned Officer. Handloom and Sericulture zone offices work for their respective sector.

f. Identification of safer places nearest to the affected areas to utilise the Common Facility Centres and Organisational building available for providing shelter to the affected people during occurrence of calamities with co-ordination of District administration.

g. Zonal Officers identify weavers/sericulture farmers of the above disaster prone area and prepare a database.

h. Zonal Office works as the control room for the area (in term of Districts) falling under the jurisdiction of the concerned Officer. Zonal Deputy/Assistant Director works as the Nodal Officer in respect of the Districts falling under his jurisdiction. Handloom and Sericulture zone offices will work for their respective sector.
i. Directorate of Textiles to work as the State Level Control Room to monitor Disaster Management. Additional/Joint Director of Textiles functions as the Nodal Officer in the Directorate.

II. **Handicraft Sector**

a. The coastal belt is flood-prone and other belts are generally prone to cyclone. As per past occurrence the following areas/districts such as Balasore, Jajpur, Cuttack, Kendrapara, Bargarh, Jharsuguda, Sambalpur, Subarnapur, Ganjam, Boudh, Keonjhar & Bhadrak for Handicrafts Sector are prone to hazards of natural calamities like Flood/Cyclone/Heavy rain.

b. In hazard prone areas of Handicrafts Sector, IPO in Block Level act as base level field officer for the concerned block and coordinate with the Nodal officer at district level Offices.

c. GM, DICs/RICs in each district acts as district level Nodal Officer and DIC/RIC functions as control room for the concerned district. Nodal Officers in the district level i.e. G.M. DIC/RIC identify artisans of the above disaster prone area and prepare a data base.

d. Identification of safer places nearest to the affected areas is made to utilise the Common Facility Centres and Organisational building available for providing shelter to the affected people during occurrence of calamities.

e. Directorate of Handicrafts & Cottage Industries work at the State Level as Control Room to monitor the programme. Addl. Director/Joint Director of Handicrafts functions as the Nodal Officer in the Directorate.

III. **Handlooms, Textiles & Handicrafts Department:**

Additional Secretary / Joint Secretary of Handlooms, Textiles and handicraft Department function as Nodal officer at the Departmental level to monitor all the activities.

IV. **Awareness and Capacity Building of the staff on the following aspects:**

a. To keep updated information on areas likely to be affected by natural calamities.

b. To assess probable damage in case the calamities occur.

c. To access net work available for providing relief to the affected people i.e. Local Revenue authorities, Health Centres, NGOs, Panchayat Office and other line department etc.

d. Communication to proper quarter during pre-hazard, hazard
e. Preliminary knowledge on evacuation and availability of safety places for temporary shelter.

f. To conduct mock drills four to five times to assess their capacity to pace with any disaster.

g. Post-hazard mitigation plan.

h. Construction of concrete pit for all pit-looms.

i. Coverage of all eligible weavers/artisans/sericulture farmers under Health Insurance and Life Insurance Scheme.

3. Implementable Plan:

a. On information of probable hazards, Arrange shifting of people to safer place in shortest possible time.

b. On occurrence of any hazard, concerned Inspector of Textiles/Technical Assistant/Technical Inspector/Field Assistant/Sericulture Tassar Assistant/Industries Promotion Officer etc of the area immediately intimate the same to their respective Zonal officer/ GM, DICs.

c. Identify the weavers/artisans/sericulture farmers affected emergency assistances to be provided and contact officials of the other line department of the area for extending help.

d. Zonal officer/ GM, DICs on getting the information from the field officials immediately bring the matter to the notice of the District revenue Authority as well as the Nodal Officer of the respective Directorates.

e. Zonal officer/ GM, DIC himself immediately visit the areas on priority and also depute responsible subordinates like Sub Assistant Registrar Co-Operative Society (SARCS), weaving supervisor and Production Officer, DCIO/Asst. Managers etc to co-ordinate the mitigation activities.

f. Assessment of losses is made by the Inspector of Textiles, Technical Assistant, Technical Inspector, Senior Tassar Assistant, Field Assistant and IPOs for respective sectors at field level and submit the same to Zonal offices. The Nodal Officers (Zones) take step for development of Data Base and submit the consolidated report along with recommendation of other line departments (wherever necessary) to the Directorates for further action on providing rehabilitation assistance.
g. Divisional officers keep close liaison with the zonal officer and function as the co-ordinating agency between Zonal officer and District authorities/Directorate.

h. Officials from the Directorates are deputed to the worst affected area to co-ordinate the relief operation.

i. Basing on the reports received from zonal level, Directorate submits the proposal to Handlooms, Textiles & Handicrafts Department and other Agencies for availing assistances for rehabilitation and restoration.

j. Assistance received from various sources are channalised through zonal offices to the affected areas under the supervision of field functionaries.

**Constitution of Disaster Management Cell with an objective to assess loss, restoration and rehabilitation:**

**I. Handloom & Sericulture Sector**

a. **State Level**

   i. Additional/Joint Secretary - Nodal Officer
   ii. Under Secretary - Member
   iii. Concern S.O/D.O - Member
   iv. Concern ASO - Member

b. **Directorate Level**

   i. Additional/ Joint Director of Textiles - Nodal Officer
   ii. Deputy Director of Textiles - Member
   iii. Deputy Director of Sericulture - Member
   iv. Concerned Section Officers - Member

**Zonal Level**

   i. Zonal officer Textiles/ Sericulture - Nodal Officer
   ii. SARCS/PO - Member
   iii. Weaving Supervisor/Technical Inspector - Member
   iv. Representative of lead PWCS/TRCS/MRCS/ERCS - Member

**II. Handicraft Sector**

a. **State Level**

   i. Addl. Director/Joint Director (Handicraft) – Nodal Officer
ii. Dy. Director (Civil)/ Dy. Director (H) - Member
iii. Asst. Director (H)/ Deputy Manager (HC) - Member
iv. Special Officer/ Establishment Officer - Member

b. District Level
i. General Manager, RIC/ DIC - Nodal Officer
ii. District Cottage Industries Officer (DCIO) - Member
iii. Asst. Manager - Member
iv. Industries Promotion Officer (Hq.) - Member
v. A prominent handicraft artisan of the district - Member

c. Block Level
i. Industries Promotion officer (concerned block) - Nodal Officer
ii. A prominent handicraft artisan of the block - Member
Tourism Department

The domain of the Tourism Department covers the tourist destinations of the State and the infrastructure available there. The safety and security of the tourists is also the responsibility of the Department. The Department coordinates with other Government Departments at the district and below level for providing essential services to the tourists and the personnel of the Department in a disaster affected location.

Hazard, Vulnerability, Capacity and Risk Assessment

Common understanding amongst stakeholders on tourism sectors needs attention for risk reduction and sustaining development gains. Some of the major points are given below:

- Odisha is having a coastline of 480 kms
- Experiences cyclones, thunder storms and lightening.
- Bay of Bengal is one of the major areas for breeding of tropical storms.
- Possibility of Tsunami may not be ruled out
- Cyclone over the Bay of Bengal brings the strong wind and high rainfall to the coastal region
- This causes damage to property and loss of human lives.
- Odisha is very much exposed to cyclone and flood, causing damage to the tourism infrastructure also.
- 12 tourism properties are located in the coastal belt

Standard Operating Procedures (SOPs) and checklist

1.1 Roles and responsibility of the Department

a. Create Awareness among Tourists on Natural Disasters and Man Made Disasters- precaution measures to be taken.
b. Safety and security measures for the tourists.
c. Liaison with SRC/ District authority for relief operation.
d. Utilisation of Depts. / OTDC (Panthanivas etc.) properties in emergent situations.
e. Identification of Hospitals/Health Centres/Accommodation units close to the tourist destinations.
f. Provision of Fire Fighting equipments/extinguishers in the units.
1.2 Pre-disaster planning

Pre disaster planning is crucial for ensuing an effective response at the time of disaster

a. To assess the threat to life and property and create awareness to reduce the loss of life and property.
b. Prompt and quick action to address the disaster; educate the people and tourists to mitigate the disaster situation.

1.3 Preparedness and Preventive Measures

Among the 30 districts of Odisha the tourists destinations which are prone to various disasters are identified as follows: (a) Flood Prone (b) Cyclone Prone (c) Multi-disaster Prone area etc. Adequate safety and security measures for the tourists in sea beach are taken. Services of the Tourist Police/Home Guards/Trained Nolias/Life Guards etc. in the Tourist locations are immediately utilised in emergent situations for rescue and evacuation.
Women and Child Development Department

The infrastructure and the services of the Women and Child Development Department are severely affected during a natural disaster. Since the Department is responsible for welfare of women and children who are the most vulnerable in a disaster situation, it requires very comprehensive plans and response protocols to mitigate the effects of the disaster and speedy recovery to normalcy. The following operational aspects are followed during and in the immediate aftermath of a disaster situation.

Standard Operating Procedure (SOP) for management of disaster

(Start Immediately on Receiving Cyclone / Flood Warning or Information about any Other Emergency from any Source)

- Officer in charge of EOC: Joint Secretary, Coordination, remains in charge of Control Room. S/he is personally responsible for implementing the SOP. S/he takes all decisions as outlined below and sign on all reports mentioned below. S/he does not wait for orders from anybody.
- Alert all field officers: Early warning is issued to DSWOs, CDPOs, Supervisors and AWWs with information from SRC / OSDMA.
- Call up the officers and ensure that they remain in headquarters.
- Prepare a logbook for recording chronological sequence of events.
- Make a thorough situation assessment and report to the respective authority.
- Make a thorough assessment of relief items available in stock at different places.
  *(Make a quick assessment (Annexure 3) of district needs and expectations from different agencies.)*
- Place requisition as per local need assessment
- Coordinate with Civil Society Organizations, other Govt. departments, PRI and Media.
- Prepare Status report every day and submit to the relevant authority.
- Keep vigilant eye on Child Protection issues in the area and coordinate with structures of OSCPS as required.
- Keep spare copies of district maps. Jurisdiction maps of all ICDS divisions and AWCs shall be kept ready in good numbers.
• Send daily situation report to District Collector, OSDMA & SRC.

**Disaster Response Mechanism of DWCD**

Following mechanism is followed for responding to any disasters by DWCD.

**Assessment**

A rapid assessment is launched after receiving instructions from the Collector as soon as possible but not later than 24 hours after the onset of any disaster. Following the assessment, immediate response plan is prepared at district level under the guidance of Collector and supervised and compiled by DSWO in close coordination with Emergency Officer.

The rapid assessment at least includes, not limited to, the following:

- Loss of life
- Loss of Assets
- Damage to Infrastructure
- Loss of food materials, registers etc. of AWC & Institutions
- Situation of women and children in the community
- Issues of child protection
- Situation of old & infirm and PwDs
- Check up availability of food (chhatua and others) and kerosene at AWCs, block headquarters, with suppliers and other inaccessible pockets.

**Early Warning Dissemination and Response Plan:**

<table>
<thead>
<tr>
<th>Preparedness</th>
<th>Pre (after Warning)</th>
<th>During Disaster</th>
<th>Post Disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting up Control Room and ensuring round the clock functioning</td>
<td>Coordination with District officials and DSWO/CDPO/ BDO</td>
<td>Dissemination of information regarding status of the disaster &amp; submission of report to state, and media.</td>
<td>Providing information about the precedence of disaster and information about the relief and rehabilitation programme undertaken by the district administration.</td>
</tr>
<tr>
<td>Assignment of duties to the District Level officials and DSWO/CDPO/ BDO</td>
<td>Ensure the announcement system for warning dissemination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arrangement of vehicles and public announcement system</td>
<td>Ensure proper maintenance and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early warning to AWWs, CPC &amp; GKS for further</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparedness</td>
<td>Pre (after Warning)</td>
<td>During Disaster</td>
<td>Post Disaster</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>dissemination</td>
<td>functioning of systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>◆ Ensure proper maintenance and functioning of warning s &amp; communication systems</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**WCD District and Block Control Room**

- Institution wise keep update record of children, pregnant women, Lactating women, PwDs, old & infirm etc.
- List out the staff with contact address
- Stock position of the food and other materials in AWCs
- ANMs / male health workers / volunteers/task forces/ Anganwadi workers for use and providing minimum health services to the community.
- Coordinate with CHC/PHC FOR arranging mobile health unit for inaccessible areas
- Dis-infections of Drinking water Sources thrice before flood season at least, one month before
- Site visit and report preparation
- Awareness generation for using bleaching
- Helping BDO during emergency
- Supply of drinking water during emergency
- CDPOs, Supervisors, AWWs will be directed to join Head Quarter
- Settings of a Control Room and Delegation of duties/Area distribution
- Request BDO for requisition of vehicle
- To inform all its staff member s to report their respective headquarte rs
- Arrangement of medical help
- Coordination of the information and keeping a strict vigil over the situation and act accordingly.
- Maintenance of record for information generation and dissemination.
- Co-ordinate with District Administration
- Damage assessment
- Identification of areas for clearance
- Delegation of team
- Monitoring of work
- Proposal to the governm ent for repair and restoratio n
Flow of Early Warning Dissemination to all the Institutions

**Health Response Plan:**

Flow of information related to Health Response Plan

---

294
<table>
<thead>
<tr>
<th>Relief Operation - Response</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preparedness</strong></td>
</tr>
<tr>
<td><strong>WCD State Control Room</strong></td>
</tr>
<tr>
<td>✦ Procurement and transportation of Relief materials to affected pockets/areas/people</td>
</tr>
<tr>
<td>✦ Assigning of free kitchen in the shelter camps affected areas.</td>
</tr>
<tr>
<td>✦ Assigning responsibilities to officials for distribution of emergent relief/running of free kitchen.</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>WCD District and Block Control Room</strong></td>
</tr>
<tr>
<td>✦ List out the staff with contact address</td>
</tr>
<tr>
<td>✦ Stock position of the subcenter and PHC/AWCs</td>
</tr>
<tr>
<td>Facilities for privacy are arranged for pregnant women, lactating mothers in the identified temporary shelters.</td>
</tr>
<tr>
<td>All relief dry food are ensured to reach women, children and the aged.</td>
</tr>
<tr>
<td>Begin distribution of cooked food as soon as possible</td>
</tr>
<tr>
<td>Provision of safe drinking water and temporary toilets in coordination with RD Dept. in rural areas and with PH Dept in the urban areas</td>
</tr>
<tr>
<td>Immediate first aid &amp; medical care if required would be provided in coordination with Health Dept.</td>
</tr>
<tr>
<td>Delivery kits, sanitary napkins &amp; emergency medicines to be kept ready for pregnant women &amp; adolescent girls. GKS funds may be used to maintain sanitation &amp; hygiene to prevent epidemics.</td>
</tr>
<tr>
<td>Protection of women against violence &amp; abuse in coordination with GKS/SHGs &amp; Jaanch Committees</td>
</tr>
<tr>
<td>Psycho, social care, support and counseling of the distressed</td>
</tr>
<tr>
<td>Co-ordination with Health Dept. for Emergency Obstetrics &amp; New Born Care</td>
</tr>
<tr>
<td>AWW &amp; CPC will keep a vigilant eye on the child protection issues for e.g. trafficking, physical and sexual exploitation, child labour etc.</td>
</tr>
<tr>
<td>Care &amp; support to old &amp; infirm and PwDs/CWSNs as per their specific needs</td>
</tr>
</tbody>
</table>

Volunteers /NGOs shall be encouraged to facilitate the same

---

**Protocol in Relief Camps**

- Facilities for privacy are arranged for pregnant women, lactating mothers in the identified temporary shelters.
- All relief dry food are ensured to reach women, children and the aged.
- Begin distribution of cooked food as soon as possible.
- Provision of safe drinking water and temporary toilets in coordination with RD Dept. in rural areas and with PH Dept in the urban areas.
- Immediate first aid & medical care if required would be provided in coordination with Health Dept.
- Delivery kits, sanitary napkins & emergency medicines to be kept ready for pregnant women & adolescent girls. GKS funds may be used to maintain sanitation & hygiene to prevent epidemics.
- Protection of women against violence & abuse in coordination with GKS/SHGs & Jaanch Committees.
- Psycho, social care, support and counseling of the distressed.
- Co-ordination with Health Dept. for Emergency Obstetrics & New Born Care.
- AWW & CPC will keep a vigilant eye on the child protection issues for e.g. trafficking, physical and sexual exploitation, child labour etc.
- Care & support to old & infirm and PwDs/CWSNs as per their specific needs.

Volunteers /NGOs shall be encouraged to facilitate the same.
Relief Operation Response Plan:

Protocol for Missing Children

Production
A missing/runaway child is usually accessed by the Police, concerned citizen/s, Child Helpline, Hospital authorities, NGO representatives and brought to the notice of the Child Welfare Committee (CWC).

The child/children should be produced before the CWC or any individual member of the committee within 24 hours (Section 32 (1), JJ (C&P) Act) excluding the travel hours. In case the child is unwell or hospitalized, relaxation can be granted with due information to the CWC.

Ensure Safety
The child is admitted to the nearest Shelter Home, CCI, Open

Missing Child
A child found without any adult accompanying him/her. A missing child is usually unable to express verbally, non-verbally or otherwise his/her whereabouts and whose parents cannot be located.
Shelter for temporary care and treatment. In case the child is able to indicate his/her place of residence or provide some clue about the place of residence or parents:

CWC can issue an order to SJPU / POs / NGOs /Child Helpline to verify the information.

CWC can issue an order to SJPU/PO/NGO/ Child Helpline to escort the child to his place of residence and verify the information about the home and parents.

**Enquiry**

If the child is not brought by the police, then the CWC needs to first verify if an FIR or missing complaint exists for the child. If not, then the CWC needs to ensure that a Police diary (within 24 hrs) with a photograph of the child is maintained at the nearest police station in order to trace the child’s parents or relatives.

To trace the family of the child, wireless messages is sent to all the police stations, missing children’s bureau etc. The photograph of the child is published in at least one leading local and national newspaper. The CWC also orders a Television Order Memo (TVM) for police to advertise the abandoned child over the TV mass media. All these efforts are made in local language and concentrated in and around the local area and home state. Announcements are immediately made at the place where the child has been located e.g. at railway stations as well as in religious places like temples, mosques etc. This is done urgently, within a week, as the family is likely to be looking for the child especially if the child is a runaway or missing child.

**Restoration**

During the process of inquiry, if the parents are traced, the CWC gives summons to them to appear before the CWC within a week.

The CWC tries and understands the causes for which the child was abandoned and assess whether the parents are fit to take responsibility of the child and if so, the parents/extended family could be counseled to assume responsibility of the child.

CWC assesses the case based on the documents produced by the claimants, the report of the police and the report of the PO recommending restoration of the child to the claimants. Based on this assessment, the committee decides whether the
parent/parents/guardians are fit to look after the child. If the parents and guardians are found to be fit individuals, then the CWC can pass an order that they find the parent/parents/guardian fit and handover the child to the parents/guardians (JJ (C&P) Act 39-3(a)). The parents/relatives/guardians have to sign an undertaking in Form-IX outlining their responsibility as parents.

**Documents of verification**

Birth certificate of the child or his/her school leaving certificate or certificate from the Sarpanch and family photographs (if available). CWC cross questiones the parents and verify using different means to establish the authenticity of the parents such as a telephonic call to the Sarpanch of the village etc. For identification of parent/parents/guardians Voter Id card, Ration card, BPL card, ADHAR card or letters from PRI members are entertained.

**Exceptional Circumstances**

**If parents are not willing to take custody of the child**

Incase during the process of interaction, the CWC establishes that there is substantial evidence indicating that the parents/claimants are not fit individuals or unwilling to take responsibility of the child, the CWC can order to house the child in the Children’s Home/Shelter Home/Open Shelter for not more than one year. The CWC clearly indicates the reasons for the decision such as care, treatment, education and rehabilitation. The CWC recommends counseling or other support services for the parents so that their capacities are enhanced to take care of the child and the child can be reintegrated with the family in the shortest possible time.

The CWC reviews the decision of institutionalization of the child at least once in a year instructing the institutions to prepare the Individual Care Plan for each child. Each procedure should be recorded in writing.

**If the child does not have a claimant**

If parent/parents fail to respond to the advertisement issued in the regional and national newspaper, the TV announcements or are not located through the police or NGO missing person links, the CWC comes to the conclusion that the child has been abandoned by the parents.
Once the CWC is satisfied that all possible efforts have been made to locate the parents/guardians, the CWC can declare the child legally free for adoption, and place the child in a Children’s Home which is licensed as Specialized Adoption Agency (SAA) for placing children in adoption.

**Procedure to be followed for a child missing/run away from an institution**

If a child is missing from an institution, the institution immediately informs the local police with a copy to the CWC. CWC initiates an inquiry into the matter and as part of the inquiry take the statement of the staff in the institution and other children to understand the circumstances, reasons and details of the child’s escape. CWC submits the report to the Commissioner, WCD and SCPS. The CWC also ensures that the matter has been reported to the police. In case the child has escaped from an institution and the child is found or returns back, the CWC is informed and the Superintendent of the institution sends a report to the Commissioner, DWCD about the return of the child.

**Restoration of missing children to another State**

If the child’s residence is in a different State then after verification of the information given by the child, the Nodal department of the State, WCD / local Child Helpline should be informed of the details given by the Child. CWC can send the child to the CWC of the source district, with intimation to the nodal department (DWCD) with the support of the Child Helpline/DCPS/SJPU and police.

**Repatriation of a Child to another Country**

If the child’s residence is in a different country, the CWC immediately contacts the State Department of Women and Child Development for his/her repatriation to the concerned country. The Diplomatic Mission and the High Commission’s offices of both the sending and receiving countries are to be actively involved.

**Protocols for Child with Special Needs (Mental & Physical)**

**Production**

A) A child with special needs (mental and physical) is generally brought by the police, concerned citizen/s,
child-line, hospital authorities, and NGO representatives.

B) The child is produced before the CWC or any or any individual member of the committee.

The child should be produced before the CWC within 24 hours (Section 32 (1), JJ (C&P) Act) excluding the travel hours. In case the child is unwell or hospitalized, relaxation can be granted with due information to the CWC.

Ensure Safety

In case of urgent need for medical care, the CWC can write a letter to the concerned medical authority to provide medical facilities to the child.

In both the cases the child is admitted to the nearest children’s home, specially meant for these children with required provisions for temporary care and treatment till the enquiry process is over. Extension of stay can also be made, if required.

If the parents of the child are unwilling to take back the child, then the child is considered as a surrendered child and the DOS will be executed.

In case the parents want to keep the child, the order is executed vide Form VIII and the parents will give an undertaking vide FORM IX.

It is mandatory to give admission to each and every child round the clock by the authority responsible for the management of Children’s Home meant for the children with special needs.

Enquiry

If the child is brought by the parent/parents then no enquiry is executed. In all other cases an enquiry is mandatory.

If the child is not brought by police, the CWC needs to first verify if an FIR or missing complaint exists for the child. If not, then the CWC needs to ensure that a Police diary (within 24 hrs) with a photograph of the child is maintained at the nearest police station in order to trace the child’s parents or relatives.

To trace the family of the child, wireless messages are sent to all the police stations, missing children’s bureau etc. The photograph of the child along with some identifying information are published in at least one leading local and national newspaper. The CWC also order a Television Order Memo (TVM) for police to advertise the abandoned child over the TV mass media. All these efforts are made in local language and concentrated in and around the local area and home state. Announcements are immediately made at the place where the child has been located.
e.g. at railway stations as well as in religious places like temples, mosques etc. This is done urgently, within a week, as the family is likely to be looking for the child.

**Restoration**

Depending on the report of the PO and efforts in tracing the family, the CWC gives its final decision, in writing.

If the family is in a position to take care of the child, and the child is willing, the child is handed over after proper counseling of the parents.

In case the family is not traced out or the child does not want to go back to the family, a long term plan for rehabilitation through transfer to a fit institution that offers long-term care and is able to meet the developmental needs of the child is made.

Arrangements for individual care plan such as sponsorship, foster care, and adoption are also made.

**Rehabilitation**

If the child is surrendered then the child is placed in a children’s/special home for care and it is the duty of the PO to draw an age- and ability-appropriate Individual Care Plan for the child with the help of a special educator or rehabilitation professional experienced in working with children with disabilities and the report to the CWC from time to time about progress of the child. Staff and children of the children's home meant for these children are sensitized on the needs of the child. Every effort is made to treat the children at par with other children in the home. The child is not discriminated on account of her/his ability.

An appropriate educational and rehabilitation programme needs to be initiated, in consultation with specialists such as special educators, occupational therapists, physiotherapists, speech and language therapists, communication therapists, counselors etc. Required aids and appliances should be provided for the child.

**Check List for Control Room:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Activities</th>
<th>Pre Disaster</th>
<th>During Disaster</th>
<th>Post Disaster</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Assignment of Duty</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2</td>
<td>Maintain inventory of resources</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Identification of Weak and vulnerable points</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Proper setting up of the control room</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Provide information who need it</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Service division and assign duties

Receive information on a routine basis and record

Receive preparedness report from relevant dept.

Basing on the information report to the state authority

Vulnerable area map displayed

Imp. Phone numbers

<table>
<thead>
<tr>
<th>Plans</th>
<th>Updating Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>State level Disasters Management Plan</td>
<td>½ Yearly (April &amp; Sep)</td>
</tr>
<tr>
<td>District and Block level Disasters Management Plan</td>
<td>½ Yearly (April &amp; Sep)</td>
</tr>
<tr>
<td>AWC and other institution (Govt. &amp; non-Govt.) level Disasters Management Plan</td>
<td>½ Yearly (April &amp; Sep)</td>
</tr>
</tbody>
</table>

Update and review of Disaster Management (DM) Plan:

- At state level Joint Secretary, Co-ordination is responsible to update and review DM Plan of DWCD on a yearly basis in co-ordination with district officials & OSDMA.
- Planning & Budget estimation is undertaken by the Dept. accordingly.

Programme Management and Coordination

<table>
<thead>
<tr>
<th>Component</th>
<th>Who?</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td></td>
<td>Rapid Assessment Template</td>
</tr>
<tr>
<td>- Deploy a rapid initial assessment team within 48 hours</td>
<td>State team</td>
<td></td>
</tr>
<tr>
<td>- Where possible, coordinate assessments with other NGOs already been identified include these in the</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**team**

- Triangulate initial assessment findings with information from other sources (e.g. media, government, other NGOs)
- Procure detailed maps of the affected areas
- Plan and budget for a comprehensive multi-sector assessment within 6 weeks

### Coordination

- Attend coordination meetings hosted by OSDMA
- Initiate coordination activities where there are no existing coordination arrangements
- Meet government officials to gauge their likely response and to share information (e.g. National and State Disaster Management Authorities, District Collectors, Block Development Officers)

### Staff

- Ensure staff clearly understand their roles and responsibilities and are appropriately equipped in terms of material support and training
- Orient key staff on disaster response guidelines / templates and core humanitarian and child protection standards.

### Security

- Ensure that field staff / offices are fully equipped as the situation requires (e.g. car Humanitarian kits, life jackets, contingency supplies, communications equipment)

### Programme Design, Monitoring and Evaluation

- Establish monitoring tools and reporting systems (e.g. output tracker)

### Key Contact:

<table>
<thead>
<tr>
<th>Humanitarian Manager</th>
<th>Situation Report template</th>
</tr>
</thead>
<tbody>
<tr>
<td>State/distict/block level team</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State team</th>
<th>Code of Conduct</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>State team</th>
<th>Security Guidance</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>State team</th>
<th>Output Tracker</th>
</tr>
</thead>
</table>
### Human Resources

#### Rapid Assessment Team

- Mobilise Rapid Assessment Team for deployment within 48 hours for up to 8 days
- Try to ensure that the team includes people with the following expertise and experience:
  - Previous needs assessments
  - Programme management
  - Logistics / IT / Security
  - Child Protection
  - Health and Nutrition
  - Food and Livelihoods
  - Media and Communications
- Try to ensure that the team is gender-balanced
- Ensure that the team has knowledge of local languages or, if not, that they are accompanied by translators
- Agree a team leader, team structure and lines of communication/reporting

<table>
<thead>
<tr>
<th>Who?</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>State team</td>
<td>Rapid Response Team database</td>
</tr>
<tr>
<td></td>
<td>HR Placement Process Flow</td>
</tr>
<tr>
<td></td>
<td>Rapid Assessment Template</td>
</tr>
<tr>
<td></td>
<td>Code of Conduct</td>
</tr>
</tbody>
</table>

#### Disaster Response Team Mobilisation

- Designate a team leader in the field and ensure that his/her regular work can be adequately covered for the coming weeks/months
- Ensure all staff are fully briefed on their role, responsibilities, level of authority and reporting obligations
- Ensure all staff are oriented on the Preparedness Plan, the annexed formats.

<table>
<thead>
<tr>
<th>Who?</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>State team</td>
<td>JDs &amp; TORs</td>
</tr>
</tbody>
</table>

#### Key contacts

**Logistics and Administration**
<table>
<thead>
<tr>
<th><strong>Humanitarian Supplies and Procurement</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Immediate Actions (following launch of initial assessment)</strong></td>
<td><strong>Standard kit contents</strong></td>
</tr>
<tr>
<td>- Identify the most likely additional relief supplies required and contact suppliers for quotes</td>
<td></td>
</tr>
<tr>
<td>- Initiate internal authorisation process for use of contingency stocks – these should be distributed to beneficiaries within 72 hours of a response being declared</td>
<td></td>
</tr>
<tr>
<td><strong>Response Actions (following commitment of funds)</strong></td>
<td></td>
</tr>
<tr>
<td>- Issue purchase orders for priority relief items, prioritising speed of delivery but also ensuring quality standards are met</td>
<td></td>
</tr>
<tr>
<td>- Establish pipeline plan to meet programme supply needs for the projected length of the response</td>
<td></td>
</tr>
<tr>
<td><strong>Operational Support</strong></td>
<td></td>
</tr>
<tr>
<td>- Ensure logistics needs are adequately assessed in the initial rapid assessment</td>
<td></td>
</tr>
<tr>
<td>- Ensure logistics and administration staff contribute to the development of programme strategies and budgets and that logistics costs are adequately covered in grant budgets</td>
<td></td>
</tr>
<tr>
<td><strong>Dist &amp; block level</strong></td>
<td></td>
</tr>
<tr>
<td>- Assess quality of available facilities, considering size, cost, ease of access, electricity and water supply, security, extra works needed, lighting, cleanliness, kitchen, sanitation etc.</td>
<td></td>
</tr>
<tr>
<td>- Identify additional needs in terms of storage, accommodation, catering needs, equipment</td>
<td></td>
</tr>
<tr>
<td>- Ensure all new assets are tagged and recorded in an asset register</td>
<td></td>
</tr>
<tr>
<td>- Ensure all field staff are appropriately equipped</td>
<td></td>
</tr>
<tr>
<td><strong>Warehousing, Stock and Distribution</strong></td>
<td><strong>Stock control forms and</strong></td>
</tr>
<tr>
<td>- Locate and hire warehouse space</td>
<td></td>
</tr>
</tbody>
</table>
- Orient staff on stock-control guidelines, and templates
  - Orient and train staff, and volunteers for warehousing, security and distributions

**Communications**
- Ensure that all staff, including drivers have working phones / chargers and local SIM cards
- Ensure that all key staff have functional access to computers and internet connections

**Transport**
- Identify personal and freight transport options and procure or hire vehicles or boats as required
- Ensure all rented and purchased vehicles have functioning front and rear seat belts, that they are fully road-worthy, including working headlights and brakes and tyres in good condition, and that they are carrying a properly inflated spare tyre, a jack, a wrench, a fire extinguisher and a first-aid kit
- Ensure all drivers (including hired drivers) are carrying working mobile phones and supplies of water (and THR packets, if required)

**Key Contacts:**

<table>
<thead>
<tr>
<th>Information &amp; Communication</th>
<th>Who?</th>
<th>Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Information</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Designate focal points at the district / block level responsible for information collection and dissemination to all concerned staff at different levels
- Develop a framework for sharing appropriate information with beneficiaries
- Ensure that field-level information is available in local languages for beneficiaries
- Establish regular situation reports (Situation...
Reports), initially daily, then three per week, then weekly (clearly dated & marked
- Compile distribution lists for different audiences

**Communications**
- Incorporate communications activities (e.g. case studies, photography) in the initial rapid assessment
- Develop communications materials as required for different audiences for media briefings, website updates

**Key Contacts:**

<table>
<thead>
<tr>
<th>Key Contacts:</th>
</tr>
</thead>
</table>

**Preparedness Matrix**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Action</th>
<th>Responsibility</th>
<th>Resources / Support</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Appoint an Disaster Focal Point to lead on early warning, alerts and state-level preparedness actions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Identify principal hazards and vulnerabilities of the state and districts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Maintain regular contact with other actors in the state (inc. government, INGOs and LNGOs) and develop joint strategies for preparedness and response</td>
<td></td>
<td></td>
<td>Continuous</td>
</tr>
<tr>
<td>4</td>
<td>Orient and train staff on disaster preparedness planning and the basics of disaster response</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Develop database of key contacts in government, UN and other NGOs/INGOs at state level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Set up Rapid Response Team</td>
<td></td>
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<tr>
<td>7</td>
<td>Maintain and update rosters of internal employees</td>
<td></td>
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<tr>
<td>8</td>
<td>Develop state-level human resources contingency plans in advance of the</td>
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<tr>
<td>9</td>
<td>Maintain stocks of standard first-phase supplies (e.g. hygiene kits, child-friendly space kits, tarpaulins, first-aid kits) in at least one central location</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Ensure that each location has a first-aid kit and that staff are familiar with its contents</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>11</td>
<td>Identify potential warehouse space for use in emergencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Ensure all vehicles have functioning front and rear seat belts, are fully road-worthy, with headlights, brakes and tyres in good condition, and are carrying a properly inflated spare tyre, a jack, a wrench, a fire extinguisher and a first-aid kit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Train key staff on media management in emergencies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Develop databases of local media contacts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Create Child Friendly Space minimum standards, kit lists, standard job descriptions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Develop Family Tracing and Reunification (FTR) kit and training</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Review and develop pre-stocked IEC materials for hygiene-promotion activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Establish links with organisations and individuals with technical WASH skills</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Develop standard dry and wet food packages, including micronutrients for children and pregnant/lactating women

Develop guidance on training teachers on child-friendly approaches, psychosocial care and child protection

Protocol for ICDS Sustenance

Preparedness
ICDS is an extremely important service oriented programme. The services rendered under ICDS have very specific target group viz. the children up to six years of age, pregnant women, lactating mothers and adolescent girls. The people in the target group of the ICDS are also the most vulnerable in the disaster situation. Ergo, it is pertinent that the ICDS system right from village to the state level remains prepared to meet any eventuality in the time of any disaster.

Objective
The objective of the disaster management plan for ICDS is that the effect of any disaster on the services to be rendered to the children, women and adolescent girls is minimized and the essential services go on unhindered. Since the services provided under ICDS do pertain to the nutrition and health of the target group, the sustainable ICDS would help the children, girls and women in also overcoming the ill effects of the disaster event.

Alternative Plans in case of eventuality
There is arrangement for a village level alternative ICDS plan to sustain the services of the programme in case of an eventuality. The components of the alternative plan are as follows:

- A group consisting of AWWs, ANM, ASHA and Primary School Teacher forms a core group.
- In case of any eventuality at the AWC level, the group ensures that the programme is shifted to the nearest Primary School. This is because the institutional structure of mid-day-meal scheme would provide sustenance to the Supplementary Nutrition Programme.

310
• If any of the AWWs is not able to attend the AWC the core group would ensure to get an alternative person to be selected immediately for the purpose with the help of the PRIs.

• The group would discuss and identify in advance some alternative space for storing the ration, medicines and other essential things. A safe place shall also be identified to conduct the VHNDs.

• The group would also identify the alternative place of procurement of materials and also an alternative path way to carry them to the village.

• The core group would be regularly trained in measures to be taken to mitigate the effect of different disasters like flood, cyclone, fire, disease epidemic, drought, heat wave, cloudburst, earthquake, mass accident etc. The case studies would be developed on the high risk disaster for which a particular area is prone to, and the capacity of the core group would be built and regularly strengthened.

• The mock drills would be organized at the village level.

• In case of the events which have the long lasting effect like drought and floods, the provision would be made to enhance the number of days the services would be rendered in the programme. Like, the number of days on which SNP is made available to the children is enhanced by fifty days from the scheduled 300 days.

• The core group in consultation with other members of the community and the PRIs in the village would prepare an alternative ICDS plan for their village and discuss it in the meetings of Gram Sabha etc. so that all the people remain apprised of the measures to be taken at the time of ill event.

• The Lady Supervisors and CDPOs would facilitate the preparation of the village alternative ICDS plan and would ensure to make provisions for the same in advance.

**Rescue and Relief**

**Rescue**

The rescue measures are to be taken within shortest possible time of occurrence of disaster. This can be undertaken in following ways as mentioned in table below..
### Rescue Measures:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Major Disaster</th>
<th>How</th>
<th>Mobilization required</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flood</td>
<td>Provision of temporary shelter after evacuating people from affected places.</td>
<td>Local Volunteers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ODRAF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>2</td>
<td>Cyclone</td>
<td>Provision of temporary shelter after evacuating people from affected places.</td>
<td>Local Volunteers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ODRAF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>3</td>
<td>Drought/Heat wave</td>
<td>Provision of Medicines and safe water supply to the people.</td>
<td>Health &amp; FW Dept</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RWSS, Rural Development</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Panchayati Raj Dept.</td>
</tr>
<tr>
<td>4</td>
<td>Epidemics</td>
<td>Provision of Medicines/ORS, ambulances, referral services.</td>
<td>Health Department, NGOs, Private</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Practitioners/Hospitals</td>
</tr>
<tr>
<td>5</td>
<td>Tsunami</td>
<td>Provision of temporary shelter after evacuating people from affected places.</td>
<td>Local Volunteers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ODRAF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>6</td>
<td>Tornado/Earthquake</td>
<td>Provision of temporary shelter after evacuating people from affected places.</td>
<td>Local Volunteers</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ODRAF</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NGOs</td>
</tr>
<tr>
<td>7</td>
<td>Building Collapse</td>
<td>Shifting to a safer place, emergency medical support.</td>
<td>Panchayati Raj , Health &amp; FW, and PWD Department</td>
</tr>
</tbody>
</table>
Measures Initiated by FS & CW Department

- All Collectors and Civil Supply Officers (CSOs) ensure storage of adequate quantities of essential commodities in remote / inaccessible pockets and flood prone areas before the onset of monsoon in F.S. & C.W. Department letter No. 9606 dt.25.05.2013.

- All Collectors take steps for floating of tenders for supply of *Chuda & Gur* to be procured in the eventuality of flood / occurrence of natural calamities during the year 2013 in F.S. & C.W. Department letter No. 11010 dt.21.06.2013.

- They finalize the tenders by 1<sup>st</sup> of July, 2013 so as to keep the Millers / Traders in readiness to meet the exigencies of Natural Calamities.

- Besides, all Collectors do the exercise for fresh identification of inaccessible / possible cut-off locations & ensure pre-stocking of PDS rice (for all schemes) with the FPS retailers on pre-deposit of cost latest by 15.07.2013 positively with an instruction to allow all the Fair Price Shops in these areas to lift their entitlement for the period of next 2-3 months in advance so as to make the PDS commodities available during the rainy season and to be utilized in the event of flood / natural calamities in F.S. & C.W. Department letter No. 11570 dt.29.06.2013.

- They review the pre-flood arrangement and stocking of essential commodities in inaccessible / remote pockets of their districts on regular basis and to report compliance to in F.S. & C.W. Department.

- Control room has already been set up in the Department for transmission of Flood / Natural Calamities related information to the Office of Special Relief Commissioner vide F.S. & C.W. Department letter No.11436 dt.28.06.2013. Control room has started functioning with effect from 01.07.2013. The contact Number of F.S. & C.W. Department’s Control Room is 0674-2393644.

- Necessary arrangement has already been made for stocking of *Chuda&Gur* in 250 godowns of different flood prone districts.
Processes for procurement of Polythenes for protecting the food grains in flood affected areas have been initiated.

**Response Plan**

**Pre Disaster**

**Mechanism for Early Warning Dissemination**
After getting warning from State authorities or District Administration, information is disseminated to field by the State/District Incident Response Team. Mass media like TV, Radio and Press are also considered for warning communication.

The State and District Control are activated to function round the clock in the concerned district. The State IRT furnishes the status report about the establishment of control room at district level. CSO is responsible to provide all support to control room at district level.

**Trigger mechanism for response**
After issue of early warning, Civil Supply Officer of the vulnerable districts explains the detailed response plan at district level meeting of District disaster management authority constituted in every district in conformity with GoI guideline for planning, coordinating and implementing various activities.

**Response Plan for Responding Effectively and Promptly**
The CSOs of non-vulnerable districts prepare 3 separate teams of IS& PI (up to 30% of total strength) for deployment to the affected area at the request of State IRT. The first team is replaced after 7 days by second team and so on. All the field staff are asked to remain at their respective head quarters with necessary preparation as per the standard operating procedure.

The control room collects, collate and transmit information regarding matters relating to the natural calamities and relief operations undertaken, if any, and for processing and communicating all such data to concerned quarters. The list of volunteers and community resources that is already available is kept in readiness to support response measures.

The Control Room is manned round the clock during the peak period of disaster till the relief operations are over. For this purpose one officer, one assistant and one peon are on duty in suitable shifts. The Officer-In-Charge of the Control Room maintains a station diary and such other records as may be prescribed by the department.
particulars of all information received and actions taken are entered in the Station diary chronologically.

The CSO furnishes a daily report to the head of office on the important messages received and actions taken thereon. The head of office indicates the particulars to be released for public information.

**Appointment of Nodal Officers to Perform Emergency Support Functions**

The Civil Supplies Officer is the nodal officer at the district level to perform emergency support functions. M.D., OSCSC Ltd. Is the nodal officer at state level and he is supported by Controller, Legal Metrology. OSCSC ltd. serves as a support agency for supply of food grains during the disaster. The department also assists the district administration for assessing food grain requirement of people in the affected areas. The district administration provides necessary technical support for timely distribution of food grains in affected areas.

**Constitution of the Incident Response Teams (IRTs) at all levels**

Incident Response Team are constituted at State and District level to tackle any disaster.

**Role of the District Incident Response Team are:-**

i. To coordinate with Department, OSCSC, Food Aid Agencies (WFP)and District Authority

ii. To activate Disaster Plan

iii. To prepare Food Aid plan and procure required resources as per incident specific action plan.

iv. To manage the overall response activities in the field

v. To deploy adequate staff for the response and monitor effectiveness

vi. To develop the media messages regarding up to date status of disaster mitigation and response work

vii. To Procure necessary Food stock necessary for response measures

viii. To collect and store disaster related information for post incident analysis

ix. To visit the affected areas to assess the extent of damage

**Role of the State Incident Response Team are:-**

i. To coordinate with State Government, Central Government, Food Aid Agencies and other concerned Departments

ii. To facilitate execution of orders for declaring the disaster
iii. To prepare a status report regarding the disaster
iv. Visit the spot and assist the District Response Team for pre disaster planning
v. Assess the staff and other logistic requirement for field operation and monitor effectiveness
vi. To ensure availability of funds at District and block level to meet contingency expenses
vii. To develop the media messages regarding up to date status of disaster mitigation and response work
viii. To arrange necessary Food stock necessary for response measures
ix. To monitor and guide the district response team
x. To maintain an inventory of all related guidelines, procedures, action plans, district maps and Contact numbers.
xii. To document the lessons learnt at different stages of disaster management and make suggestion for necessary addition/alteration.

IRT at State level for FS & CW Deptt.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Post</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M.D., OSCSC Ltd.</td>
<td>Chairman</td>
</tr>
<tr>
<td>2</td>
<td>Addl. Secy., FS &amp; CW Deptt.</td>
<td>Member</td>
</tr>
<tr>
<td>3</td>
<td>Controller, Legal Metrology</td>
<td>Member</td>
</tr>
<tr>
<td>4</td>
<td>Joint Secy., FS &amp; CW Deptt.</td>
<td>Member</td>
</tr>
<tr>
<td>5</td>
<td>Dy. Secy., FS &amp; CW</td>
<td>Member -Convenor</td>
</tr>
<tr>
<td>6</td>
<td>GM-PDS, OSCSC</td>
<td>Member</td>
</tr>
<tr>
<td>7</td>
<td>Dy. Director, FS &amp; CW Dept.</td>
<td>Member</td>
</tr>
<tr>
<td>8</td>
<td>Dy. Controller, Legal Metrology</td>
<td>Member</td>
</tr>
<tr>
<td>9</td>
<td>Manager, Storage, OSCSC</td>
<td>Member</td>
</tr>
<tr>
<td>10</td>
<td>Manager, Procurement</td>
<td>Member</td>
</tr>
</tbody>
</table>

IRT at State level meets at least twice in a year. 1st meeting in 2nd week of December and 2nd meeting in 2nd week of May.

IRT at each District level for FS & CW Deptt.

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Post</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DM-cum-CSO</td>
<td>Chairman</td>
</tr>
<tr>
<td>2</td>
<td>ACSO, Hqrs.</td>
<td>Convenor</td>
</tr>
</tbody>
</table>
IRT at District level meets at least twice in a year after getting proceedings of meetings/instructions/guidelines from State IRT State level. 1<sup>st</sup> meeting on 1<sup>st</sup> week of January and 2<sup>nd</sup> meeting on 1<sup>st</sup> week of June every year.

**Schematic Diagrams of Various Disaster Management Committees**

At each district there is Control Room headed by District Collector. There is District Disaster Management Committee at the District level, Block Disaster Management Committee at Block Level, GP Disaster Management Committee at GP level and Village Disaster Management Committee at the village level.

**Rescue and Relief**

**Rescue**

The rescue measures are taken within the shortest possible time of occurrence of disaster. This are undertaken in following ways as mentioned in table below

**Rescue Measures in Public Distribution System**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>Major Disaster</th>
<th>How</th>
<th>Mobilization required</th>
<th>Cost involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flood</td>
<td>Provision of temporary Storage and Food Materials</td>
<td>Local Volunteers ODRAF NGOs</td>
<td>Construction of damaged Godowns &amp; Cost for procuring additional food</td>
</tr>
<tr>
<td>Institution</td>
<td>Preparedness</td>
<td>Response System</td>
<td></td>
<td></td>
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<tr>
<td>-------------</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
| District Control Room | * Setting up control room and ensure round the clock functioning*  
  * Assigning responsibilities to ADM, Sub Collectors and BDOs*  
  * Vehicle arrangement*  
  * Coordination with NGOs*  
  * Ensure functioning of warning and communication systems*  
  * Ensure Muck Drill* | * Monitor functioning of DCR*  
  * Coordination with officials*  
  * Assigning duties to NGOs*  
  * Holding DDMC meetings* | * Dissemination of information regarding status of the disaster and submission of reports to F.S. & C.W. Department* | Report to State Control Room |
| Cyclone | Provision of temporary Storage and Food Materials | Local Volunteers ODRAF NGOs | Construction of damaged Godowns & Cost for procuring additional food materials |
| Drought/ Heat wave | Provision of Food Materials | Revenue & Disaster Deptt. | Cost for procuring additional food materials |

**Role of the Response Team**

The Role of Response Team is crucial and need to be performed sincerely and within shortest possible time of occurrence of disaster. The details of the Roles are given in the following Table.

**Role of the Response Team**
<table>
<thead>
<tr>
<th>Institution</th>
<th>Preparedness</th>
<th>Pre- Disaster</th>
<th>During Disaster</th>
<th>Post Disaster</th>
</tr>
</thead>
</table>
| DDMC        | • Assign responsibilities to BCRCs and BDOs  
• Ensure availability of country boats | • Arrangement of all important telephone lines  
• Coordinate with district Administration on a regular interval | Report to Dist. Control Room |
| BDMC        | • Assign responsibilities to all concerned officials at the Block level | • Ensure all BNRGSK buildings are functioning at GP and Block level  
• On receipt of warning ask all the staff to join duty immediately | Coordinate with DDMC and Control room on a regular interval  
• Deploy staff at the disaster site for food stock distribution | Report to District |
| GPDMC       | • Ensure formation of village level disaster management groups  
• Coordinate with local NGOs working in the area | • Open GP office and other Shelters available  
• Rescue operation and Relief Measures | • Report to Block |

**Reporting Procedure and Format**

<table>
<thead>
<tr>
<th>SI</th>
<th>Preparedness measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Update District Disaster Management Plan twice a year specifically with reference to the resources available.</td>
</tr>
<tr>
<td>2</td>
<td>Check upon communication network such as phones, wireless, fax, internet etc every month.</td>
</tr>
<tr>
<td>3</td>
<td>Identify and determine Hazard wise most vulnerable &amp; risk prone pockets quarterly.</td>
</tr>
<tr>
<td>4</td>
<td>Activate District Control Rooms establish communication with subdivision, Block &amp; GP level functionaries in the close proximity affected area.</td>
</tr>
<tr>
<td>Sl</td>
<td>Preparedness measures</td>
</tr>
<tr>
<td>----</td>
<td>-----------------------</td>
</tr>
<tr>
<td>5</td>
<td>Designate In-charge officials</td>
</tr>
<tr>
<td>6</td>
<td>Check the availability of Food Grains and deployment of resources and mobilize them.</td>
</tr>
<tr>
<td>7</td>
<td>Convene meetings with concerned Authority on a regular interval</td>
</tr>
<tr>
<td>8</td>
<td>Convene meetings with NGOs, PRIs etc and prepare a list with their Functional Specialization and Geographical Coverage.</td>
</tr>
<tr>
<td>9</td>
<td>Check the availability of country boats and their functioning</td>
</tr>
<tr>
<td>10</td>
<td>Prepare a list of relief items for distribution division wise keeping in view the food habits of people</td>
</tr>
<tr>
<td>11</td>
<td>Prepare a transport and alternate transport plan for relief and distribution of food materials</td>
</tr>
<tr>
<td>12</td>
<td>Ensure appropriate stocking of food grains and relief material received from outside</td>
</tr>
<tr>
<td>13</td>
<td>Prepare a media plan for dissemination of information to the people of the district; local newspaper, radio, TV and cable, etc</td>
</tr>
</tbody>
</table>