

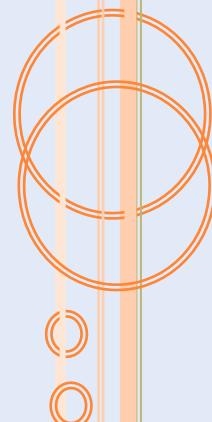


**Government of Odisha**

**State Disaster Management Plan**  
**June- 2019**



**Odisha State Disaster  
Management Authority (OSDMA)  
Government of Odisha**





Government of Odisha

## **FOREWORD**

Odisha due to its sub-tropical littoral location is vulnerable to various natural hazards and with large number of industries, also at risk of various industrial accidents. Past experiences have reinforced the learning that planning and preparedness are pivotal to effective management of disasters. The State Disaster Management Plan (SDMP) for the State of Odisha was prepared in the year 2013 and updated subsequently in accordance with provisions of the Section 23 (1) and Section (5) of the Disaster Management Act-2005 respectively. For 2019 the State Disaster Management Plan has been restructured in accordance with the requirements of the Section 23 (4) of the DM Act and National Disaster Management Guidelines on Preparation of State Disaster Management Plans-2007.

The SDMP has been prepared with combined efforts of Odisha State Disaster Management Authority (OSDMA) and the Special Relief Organisation (SRO), two dedicated institutions working under the State Executive Committee (SEC), as a robust document to provide framework and direction for all phases of disaster management cycle and process for mainstreaming Disaster Risk Reduction into our developmental agenda. The global perspectives on disaster management like the Sendai Framework for Disaster Risk Reduction (SFDRR) and the Sustainable Development Goals 2015-30 have also taken into consideration for preparation of the plan. The SDMP reflects the changes in our mindset and priorities towards disaster management in the State.

The institutional mechanism for disaster management in the State and other Government and Non-Government stakeholders needs to work in a coordinated manner for successful implementation of the plan.

Sd/-

Chief Secretary and Chairman,  
State Executive Committee

## **Executive Summary**

There has been a paradigm shift in the concept of disaster management from response and relief centric approach to a proactive and comprehensive mindset towards disaster management covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.

As per Section 23 of the Disaster Management Act, 2005 there shall be a plan for disaster management for every state. The State Disaster Management Plan (SDMP)-2019 for the State has been prepared in accordance with the provisions of the Disaster Management Act- 2005 and the NDMA guidelines issued in the matter. The State Disaster Management Plan (SDMP) is also in consistent with the priorities of action under Sendai Framework for Disaster Risk Reduction (SFDRR)- Understanding disaster risk; Strengthening disaster risk governance to manage disaster risk; Investing in disaster risk reduction for resilience and Enhancing disaster preparedness for effective response and to ‘Build Back Better’ in recovery, rehabilitation and reconstruction.

The State Disaster Management Plan (SDMP) provides a framework and direction for all phases of disaster management cycle. The broad objective is to protect and minimize the loss of lives and properties from disasters and to promote the culture of disaster risk prevention and mitigation at all levels. The SDMP also provide clarity on roles and responsibilities for all stakeholders concerned with disaster management in the state.

Odisha has a history of recurring natural disasters. The unique geo-climatic conditions of Odisha make the state vulnerable to various natural disasters. The Odisha coast is vulnerable to cyclone, associated storm surges and tsunami. The 11 major river systems of the state cause flood in regular intervals. Besides, certain parts of the state are also vulnerable to flash floods and landslides. The frequency, intensity and extent of droughts in the state are gradually on the rise. Drought is particularly frequent and severe in the western parts of the state. A portion of the state is prone to moderate earthquakes. In addition, the State is also affected by disaster like severe heat wave, lightning, forest fire, road accidents. Vulnerability to disasters of Chemical, Biological, Radiological and Nuclear (CBRN) origin also exists. As the state is on rapid industrialisation drive, industrial disasters have emerged as a formidable challenge.

As per provisions of the DM Act-2005, Odisha is having State Disaster Management Authority (SDMA) at the state level and District Disaster Management Authority (DDMA) at the district level. The State Executive Committee (SEC) has been constituted under the Chairmanship of the Chief Secretary to coordinate all disaster management activities of the state. The office of the Special Relief Commissioner and Odisha State Disaster Management Authority (OSDMA), under the Revenue & Disaster Management Department, assist the SEC in effective disaster management in the State.

In the face of increasing menace of various hazards, prevention and mitigation would remain the key and the most effective strategy to reduce the risks of various hazards. Structural mitigation measures generally refer to capital investment on physical constructions or other development works, which include engineering measures and construction of hazard resistant and protective structures and other protective infrastructure. Non-structural mitigation measures refer to awareness and education, policies, techno legal systems and practices, training, capacity development, public commitment, and methods and operating practices, including participatory mechanisms, and the provision of information, which can reduce risk with related impacts.

Mainstreaming Disaster Risk Reduction (DRR) into the developmental plans is an important mandate of the Disaster Management Act 2005. Mainstreaming DRR involves incorporating disaster risk reduction into developmental policy and practice. It means radically expanding and enhancing disaster risk reduction so that it becomes normal practice, fully institutionalized within an agency's relief and development agenda. Integration of disaster risk reduction measures into ongoing flagship programmes is being used as an entry point for mainstreaming DRR in developmental plans.

Preparedness enabling activities like planning, awareness, education, exercises, regular testing of warning systems and plans for evacuation backed with clear-cut guidelines, allocation of responsibilities and budgetary provisions improves the response mechanism to a disaster in terms of timely and effective rescue and relief operations. During any disaster, communities are always the first responder. Community participation ensures local ownership, addresses local needs and promotes volunteerism and mutual help to prevent and minimize damage. Community based disaster preparedness is the key to effective disaster management. Pre-positioning of human resources & materials is essential for quick recovery thereby saving time, resources and minimizing severity of any

emergency. This again depends upon the organization, readiness & availability of manpower & material, within and neighbouring areas, to face any impending disaster.

Response measures are those taken immediately after receiving early warning, anticipating an impending disaster, or post-disaster in cases where an event occurs without warning. The primary goal of response to a disaster is saving lives, protecting property, environment, and meeting basic needs of human and other living beings after the disaster. The State Emergency Operation Centre (SEOC) and Departments of the State Government has Standard Operating Procedures (SOPs) for responding to any disaster situation.

Capacity development covers strengthening institutions, mechanism, and capacities at all level of all stakeholders. Capacity building is an important component of investing in disaster risk reduction. Training Need Assessment (TNA) has been conducted for assessing current capacities of various departments and sectors which are directly affected by climate change induced disaster risks. The personnel of Odisha Disaster Rapid Action Force (ODRAF) are provided with 22 different types of basic and specialised training courses to augment their capacities to deal with different disaster situations. Capacity building of Civil Defence, task force members of MCS and MFS and other village volunteers is an integral part of the capacity building programme under disaster management.

Partnership is inevitable for effective knowledge management & Odisha being a key player in disaster management at national as well as international domain has a healthy network of partners in varied field of disaster management.

Media plays an important role in the management of disaster in all stages. The main objective of media management in disaster is to provide factual information to public with respect to the latest development and to provide specific information to relatives/ dependants on dead and injured persons.

Lesson learnt is a practice which needs to be documented indicating the processes undertaken in carrying out certain activities successfully. This documentation will be a guide in managing such activities in future & can be replicated in similar manner. The process documentation of managing Sever Cyclonic Storm ‘Phailin’ in the year 2013 is the corner stone in this direction.

As per the provisions of Disaster Management Act, 2005 and based on the recommendation of the 13<sup>th</sup> Finance Commission, the Government of Odisha has constituted the State

Disaster Response Fund (SDRF). Disaster Management at the state level is mostly supported by the State Disaster Response Fund (SDRF). In the event of a calamity of a severe nature when the State Disaster Response Fund is insufficient to meet the relief requirements, additional central assistance is provided from NDRF, after following the laid down procedure. Funds from other sources like State budget, Chief Minister's Relief Fund, External Assistance and loans from International Development Agencies like World Bank etc. are also used for disaster management

As per provisions of the DM Act-2005 the State Executive Committee shall have the responsibility for implementing the State Plan and act as the coordinating and monitoring body for management of disaster in the State. As per section 23 (5) of the DM Act 2005 the State Disaster management Plan (SDMP) shall be reviewed and updated annually.

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## **Abbreviations and Acronyms**

ADMO:	Assistant District Medical Officer
AIDMI:	All India Disaster Mitigation Institute
AMCDRR:	Asian Ministerial Conference for Disaster Risk Reduction
ANM:	Auxiliary Nurse Midwife
ARGs:	Automatic Rain Gauges
ASHA:	Accredited Social Health Activist
ATI:	Administrative Training Institute
AWSs:	Automated Weather Stations
BMTPC:	Building Materials & Technology Promotion Council
CCA:	Climate Change Adaptation
CBO:	Community Based Organisation
CBDP:	Community Based Disaster Preparedness
CBDM:	Community Based Disaster Management
CDMO:	Chief District Medical Officer
CMRF:	Chief Minister's Relief Fund
CSMMC:	Cyclone Shelter Management and Maintenance Committee
CSO:	Civil Society Organisation
CSS:	Centrally Sponsored Schemes
CWC:	Central Water Commission
DDMA:	District Disaster Management Authority
DDMP:	District Disaster Management Plan
DEOC:	District Emergency Operation Centre
DLCNC:	District Level Committee on Natural Calamities
DM:	Disaster Management
DPC:	District Planning Committee
DPMU:	District Planning and Monitoring Unit
DRR:	Disaster Risk Reduction
EWDS:	Early Warning Dissemination System
FSMMC:	Flood Shelter Maintenance and Management Committee
GIS:	Geographical Information System
GOI:	Government of India
GP:	Gram Panchayat

GSDP:	Gross State Domestic Product
HRVA:	Hazard Risk and Vulnerability Analysis
HAM:	Hertz Armstrong Marconi
HIV:	Human Immunodeficiency Virus
IAG:	Inter Agency Group
ICS:	Incident Command System
IDRN:	India Disaster Resource Network
IEC:	Information, Education and Communication
IMD:	India Meteorological Department (IMD)
IMR:	Infant Mortality Rate
INCOIS:	Indian National Centre for Ocean Information Services
IRC:	Indian Red Cross
IRS:	Incident Response System
IRT:	Incident Response Team
MAH:	Major Accident Hazard
MCS:	Multi Purpose Cyclone Shelters
MFS:	Multi Purpose Flood Shelters
MGNREGS:	Mahatma Gandhi National Rural Employment Guarantee Scheme
MHA:	Ministry of Home Affairs
NCC:	National Cadet Corps
NDMA:	National Disaster Management Authority
NDRF:	National Disaster Response Force
NDRF:	National Disaster Response Fund
NEC:	National Executive Committee
NGO:	Non Government Organisation
NHM:	National Health Mission
NIDM:	National Institute of Disaster Management
NITI:	National Institution for Transforming India
NRDWP:	National Rural Drinking Water Programme
NSA:	Net Sown Area
NSS:	National Service Scheme
ORC:	Odisha Relief Code
ODRAF:	Odisha Disaster Rapid Action Force
ORSAC:	Odisha Space Application Centre
OSDMA:	Odisha State Disaster Management Authority

PHC:	Primary Health Centre
PHDMA:	Poverty and Human Development Monitoring Agency
PMAY:	Pradhan Mantri Awaas Yojana
PMGSY:	Pradhan Mantri Gram Sadak Yojna
PRIs:	Panchayati Raj Institutions
RKVV:	Rashtriya Krishi Vikas Yojana
SCG:	State Crisis Group
SDG:	Sustainable Development Goals
SDMA:	State Disaster Management Authority
SDMC:	State Drought Monitoring Cell
SDMP:	State Disaster Management Plan
SDRF:	State Disaster Response Fund
SEC:	State Executive Committee
SEOC:	State Emergency Operation Centre
SFC:	State Flood Cell
SFDRR:	Sendai Framework for Disaster Risk Reduction
SLSC:	State Level Sanctioning Committee
SLCNC:	State Level Committee on Natural Calamities
SOP:	Standard Operating Procedure
SRC:	Special Relief Commissioner
SSA:	Samagra Shiksha Abhiyan
TNA:	Training Need Assessment
ULBs:	Urban Local Bodies
UNDP:	United Nations Development Programme
UNISDR:	United Nations International Strategy for Disaster Reduction
VDMC:	Village Disaster Management Committee
VDMP:	Village Disaster Management Plan
VHF:	Very High Frequency
YRC:	Youth Red Cross

# **Chapter I**

## **Introduction**

Odisha, due to its sub-tropical littoral location is vulnerable to various natural disasters like tropical cyclones, floods, storm surges, lightning, tsunami and whirlwinds etc. Changing climatic conditions is likely to increase intensity and frequency of natural disasters. Growing economy and industrial development have started giving indications of potential chemical and industrial disasters. Population growths leading to intensification of human settlements in vulnerable areas with increasing urban population pose challenges to disaster management mechanism of the state. The State Disaster Management Plan (SDMP) is the plan for disaster management for the entire State prepared under the Section 23 of Disaster Management Act, 2005. It provides a framework and direction for all phases of disaster management cycle. It covers disaster risk reduction, mitigation, preparedness, response, recovery and better reconstruction.

Section 23 of the Disaster Management Act 2005, provides that there shall be a plan for disaster management for every state. It outlines the broad coverage of the plan as well as the requirements of consultation in the preparation of the state plan. 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 plan. It provides for the departments of the state governments to draw up their own plans in accordance with the state plan. All provisions of the DM Act 2005 for preparation of the State Plan have been incorporated in the State Disaster Management Plan -2019 for the state of Odisha. The details of the provisions of the act and corresponding chapters of SDMP- 2019 are as follows

- |   |   |
|---|---|
| i. Section 23 (4) (a) the State Plan shall include the vulnerability of different parts of the State to different forms of disasters; | - Chapter- II<br>(Vulnerability Assessment and Risk Analysis) |
| ii. Section 23 (4) (b) the State Plan shall include the measures to be adopted for prevention and mitigation of disasters;            | - Chapter- III<br>(Preventive Measures)                       |

- iii. Section 23 (4) (c) the State Plan shall include the manner in which the mitigation measures shall be integrated with the development plans and projects; - Chapter- IV  
(Mainstreaming DRR and CCA in Development Planning)
- iv. Section 23 (4) (d) the State Plan shall include the capacity-building and preparedness measures to be taken; - Chapter-V  
(Preparedness) &  
VII (Capacity Building)
- v. Section 23 (4) (e) the State Plan shall include 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; - Chapter- III, IV,  
V & VII
- vi. Section 23 (4) (f) the State Plan shall include the roles and responsibilities of different Departments of the State in responding to any threatening disaster situation or disaster; - Chapter- VI  
(Response)

## **1.1 Vision:**

“To build a safer and disaster resilient state and significantly reduce the loss of life and number of people affected, economic losses and damage to critical infrastructure due to disasters, through a culture of prevention , mitigation and preparedness and building the capacity at all levels to effectively respond to disasters and to build back better.”

## **1.2 Theme:**

The SDMP has been prepared taking into active consideration of the following themes-

- a. Paradigm shift in concept of disaster management from response and relief centric approach to a proactive and comprehensive mindset towards disaster management covering all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery.
- b. During any disaster, communities are always the first responder. Community participation ensures local ownership, addresses local needs and promotes volunteerism and mutual help to prevent and minimize damage. Community based disaster preparedness is the key to effective disaster management.
- c. Priorities for action under Sendai Framework for Disaster Risk Reduction 2015-2030- 1.Understanding disaster risk; 2.Strengthening disaster risk governance to manage disaster risk; 3. Investing in disaster risk reduction for resilience and

4. Enhancing disaster preparedness for effective response and to ‘Build Back Better’ in recovery, rehabilitation and reconstruction.
- d. Sustainable Development plays an important role in reducing the risk loss and damage.
  - e. Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of the society.

### **1.3 Objectives:**

The broad objectives of the SDMP are-

- i. To protect and minimize the loss of lives and properties/infrastructure from disasters.
- ii. To minimize the suffering of people due to disasters.
- iii. To minimize the disaster risk and vulnerability of people and infrastructure in the State.
- iv. Promote the culture of disaster risk prevention and mitigation at all levels.
- v. To enhance disaster preparedness for effective response.
- vi. Empower both local authorities and communities as partners to reduce and manage disaster risks.
- vii. To build the capacity of all stakeholders in the state to effectively respond to disasters and promote community-based disaster management.
- viii. Facilitate the mainstreaming of disaster management concerns into the developmental planning and process.
- ix. Develop efficient disaster response/relief mechanism in the state.
- x. To provide clarity on roles and responsibilities for all stakeholders concerned with disaster management.
- xi. To ensure co-ordination and promoting productive partnership with all other agencies related to disaster management.
- xii. Promote “Build Back Better” in recovery, rehabilitation and reconstruction.

## **1.4 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 deals with all 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 (SDMP). 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 and 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 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 at 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 and mitigation of disaster by the State, local authorities, stakeholders and communities.

- Collect data on all aspects of disasters and disaster management and analyze it and further conduct researches and studies 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, advice 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.

**Office of the Special Relief Commissioner (SRC):**

- 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 Collectors and the local authorities 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.

**Panchayati Raj Institutions and Urban Local Bodies:**

- Provide assistance to District Administration, Office of the Special Relief Commissioner and OSDMA in disaster management activities.
- Facilitate capacity building of people's representative 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 organized and should familiarize themselves with their role in disaster management.

**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.

## **1.5 State Profile:**

Odisha extends from 17°49' to 22° 34' North Latitude and from 81° 27' to 87° 29' East Longitude. It is surrounded by West Bengal in the north-east, Bihar and Jharkhand in the north, Andhra Pradesh in the south-east, Chhattisgarh in the west and Bay of Bengal in the east. It has a coastline of about 480 km and its total area is 1,55,707 square km. covering about 4.87 % of the total area of the Country.

The State is broadly divided into four geographical regions viz. the Northern Plateau, Central River Basins, Eastern Hills and Coastal Plains. 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. The eastern hill are elevated and are generally 900 m above sea level.

### **Climate:**

The State has a tropical climate, characterised by high temperature, high humidity, medium to high rainfall and short mild winters. 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. The normal rainfall of the State is 1,451.2 mm. The actual rainfall received, vary from district to district. About 75 percent to 80 percent of rainfall is received during the period from June to September. Even though the quantum of rain fall 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. By mid-October, the south-west monsoon generally withdraws from Odisha.

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 soils 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:1.1

<b>Sl. No . .</b>	<b>Agro- climatic Zone</b>	<b>Agricultural Districts</b>	<b>Climate</b>	<b>Normal Mean annual rainfall (mm)</b>	<b>Broad Soil groups</b>
1	North Western Plateau	Sundargarh, parts of Deogarh, Sambalpur & Jharsuguda	Hot & moist sub-humid	1600	Red, Brown forest, Red & Yellow, Mixed Red & Black
2	North Central Plateau	Mayurbhanj, major parts of Keonjhar, (except Anandapur & Ghasipura block)	Hot & moist sub-humid	1534	Lateritic, Red & Yellow, Mixed Red & Black
3	North Eastern Coastal Plain	Balasore, Bhadrak, parts of Jajpur & hatdihi block of Keonjhar	Moist sub-humid	1568	Red, Lateritic, Deltalc alluvial, Coastal alluvial & Saline
4	East & South Eastern Coastal Plain	Kendrapara, Khurda, Jagatsinghpur, part of Cuttack, Puri, Nayagarh & part of Ganjam	Hot & Humid	1577	Saline, Lateritic, Alluvial, Red & Mixed red & Black
5	North Eastern Ghat	Phulbani, Rayagada, Gajapati, part of Ganjam & small patches of Koraput	Hot & moist, sub-humid	1597	Brown forest, Lateritic Alluvial, Red, Mixed Red & Black
6	Eastern Ghat High Land	Major parts of Koraput, Nabarangpur	Warm & humid	1522	Red, Mixed Red & Black, Mixed Red & Yellow
7	South Eastern Ghat	Malkangiri & part of Keonjhar	Warm & humid	1710	Red, Lateritic, Black
8	Western Undulating Zone	Kalahandi & Nuapada	Hot & moist sub-humid	1352	Red, Mixed Red & Black and Black
9	Western Central Table Land	Bargarh, Bolangir, Boudh, Sonepur, parts of Sambalpur & Jharsuguda	Hot & moist sub-humid	1614	Red & Yellow, Red & Black, Black, Brown forest, Lateritic
10	Mid Central Table Land	Angul, Dhenkanal, parts of Cuttack & Jajpur	Hot & moist sub-humid	1421	Alluvial, Red, Lateritic, Mixed Red & Black

(Source: Statistical Abstract of Odisha-2012)

### **River and the Drainage System:**

All the rivers of Odisha are primarily peninsular rivers and have originated from (a) the Chotanagpur 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:

Figure:1.1

- Rivers originating from Chotanagpur 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 Jhau) 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 Baitarani, 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.

**Forest and Environment:**

Odisha is well endowed with forests and rich bio- diversity. It has 37.34 percent land under forest cover. Out of the sixteen major forest type groups in India, four forest types that exist in Odisha are: Tropical Dry Deciduous Forests (57.87 percent), Tropical Moist Deciduous Forests (39.88 percent), Tropical Semi Evergreen Forests (0.68 percent) and Littoral & Swamp Forests (0.48 percent). Its natural endowments include Simlipal National Park, Chilika Lake, Bhitarkanika Wild Life Sanctuary and mangrove forests. The mangrove cover in Odisha has increased to 231 sq kms in 2015, a rise by 8.45 percent over 2013. Odisha accounts for 11 percent of nation's water resource and is rich in several minerals including iron ore, bauxite, chromite, manganese and coal.

### **Demographic details:**

As per 2011 census, Odisha has 96, 61,085 number of households which is 3.9 percentage of the total number of households of India. The total population of the state is 4,19,74,218 (male-2,12,12,136 female-2,07,62,082), out of which 3,49,70,562 (83 %) lives in rural areas. The share of ST and SC population to total state population is 22.8 percent and 17.1 percent respectively. The decadal growth rate (2001-2011) of population is 14.0 and the density of population per sq km is 270. Odisha has a sex ratio (females per 1000 males) of 979. The child sex ratio (0-6 years) is 941.

Odisha attained the literacy rate of 72.87 percent at par with the national average 72.99 percent in 2011 census registering a decadal increase of 9.8 percent between 2001 and 2011. The State's male literacy rate of 81.59 percent was marginally higher and female literacy rate of 64 percent was also at par with national averages by 2011. The SC and ST communities had relatively lower literacy rate of 69.02 and 52.24 percent in 2011.

According to Census 2011 the total workers of the state is 1,75,41,589 of which 61 percent are main workers and 39 percent are marginal workers. Although main workers in Odisha rose by 3.2 percent between 2001 & 2011, its share to total workers fell sharply from 67.2 percent to 61 percent during the same period. The prime concern is in the increase in under- employment in the State due to the rise in the percentage of marginal workers to total workers from 32.80 percent in 2001 to 38.96 percent in 2011. While the share of Agriculture sector in the State GSDP has come down to a level of around 18 percent, still the sector accounts for 62 percent of the total workforce as per 2011 Census. The work participation rate (2011) of Odisha is 41.8, in rural areas it is 43.2 while in urban areas it is 34.8

### **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** comprises of Cuttack, Jagatsinghpur, Kendrapada, Jajpur, Balasore, Bhadrak, Puri, Khordha, Nayagarh, and Mayurbhanj districts.

- **Southern Division** includes Ganjam, Gajapati, Koraput, Nabarangpur, Rayagada, Malkangiri, Kalahandi, Nuapada, Kandhamal, and Boudh districts.
- **Northern Division** covers Sambalpur, Deogarh, Jharsuguda, Bargarh, Bolangir, Sonepur, Sundargrh, Dhenkanal, Angul, and Keonjhar districts.

Odisha has 58 sub-divisions, 317 tahasils and 314 blocks. These 314 blocks comprise of 6,801 Gram Panchayats & 51,349 villages. There are 5 Municipal Corporations, 47 Municipalities, 62 Notified Area Councils. There are 617 numbers of Police Stations and 318 No. of Fire Stations. The State is divided into 21 no. of Lok Sabha Constituencies and 147 no. of Assembly Constituencies.



Figure:1.2

## Economy:

The economy has been witnessing structural transformation from an agriculture-based economy to services and industries driven economy. The share of the broad agriculture sector which was around 55 percent of GSDP in 1950-51 has come down to a level of 19.91 percent by 2016-17, while the combined share of Industries and Services sectors has rose from 45 percent to 80.09 percent during the same period. By 2016-17, the

Mining, Manufacturing, Trade, Transport and Real Estate sub sectors, in particular, have become the major drivers of Odisha's economy.

**Socio – Economic profile:**

Land holding pattern is a prime determinant of the production structure and socio-economic conditions in a society. Operational land holdings in Odisha are classified as marginal, small, semi-medium, medium and large land holdings depending upon the area controlled in a single land holding. Distribution of operational holdings indicates that the total number of operational holdings has been increasing over the years but the area under holdings has been declining except for Scheduled Castes. As per 2000-01 agriculture census, the area of operational holdings of all social groups was 50.81 lakh hectares, which has declined to 50.19 lakh hectares in 2005-06 census and finally to 48.52 lakh hectares in 2010-11 census. The corresponding figures for scheduled caste stood at 5.14 lakh hectares, 5.26 lakh hectares, and 5.65 lakh hectares respectively for 2000-01, 2005-06 & 2010-11, while for scheduled tribes the figures were 16.31, 17.48 and 16.15 lakh hectares respectively. Land use in Odisha gives a contrasting picture in current decade. Between 2004-05 & 2011-12, the net sown area (NSA) depleted from 57.39 lakh hectares to 52.92 lakh hectares. But NSA increased from 52.92 lakh hectares to 56.08 lakh hectares between 2011-12 & 2015-16. In contrast, the area sown more than once (ASMO) was increasing consistently since 2004-05.

Nearly 83 percentage of Odisha's population live in the rural areas and depend mostly on agriculture as their livelihood. 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 marginalized STs and SCs, housing facilities, establishment of special employment exchanges, reservation in employment, etc.

(Source: Odisha Economic Survey-2016-17)

**Millennium Development Goals and Odisha:**

As per "Odisha State Report on Millennium Development Goals" published in 2016 by Poverty and Human Development Monitoring Agency (PHDMA), Planning and

Convergence Department, Government of Odisha the progress of the state with respect to different development indicators are as follows.

**Goal 1: Eradicate Extreme Poverty and Hunger:**

During the past few decades Odisha have made considerable progress in economic and development indicators. The Poverty Head Count Ratio (PHCR) of Odisha has declined significantly during 1990-2012, from 59.6 in 1990 it has come down to 32.6 in 2012. The Poverty Gap Ratio (PGR) has also recorded a sharp decline in both rural and urban areas of the State. In rural Odisha it has come down from 17.37 in 2004-05 to 7.01 in 2011-12 and in Urban Odisha it has come down from 9.60 in 2004-05 to 5.05 in 2011-12. Similarly the proportion of underweight children below three years of age has gradually declined. From 54.1 in 1990 it has come down to 34.4 in 2013-14. The share of poorest quintile in terms of monthly per capita consumption expenditure in rural areas is higher as compared to urban areas in Odisha. Their share of consumption is slightly higher in both rural and urban areas of Odisha as compared to the national average.

**Goal-2: Achieve Universal Primary Education:**

The Net Enrolment Ratio (NER) in primary education in Odisha has increased by about 9.0 percent from 2006-07 (82.06) to 2014-15 (91.01). The NER is the highest in Mayurbhanj district (97.08) and the lowest in Khurda district (85.46). About half the districts (14) have NER higher than the state average (91.01 percent). The retention rate in primary education has also improved gradually from 70.44 in 2007 to 86.12 in 2014-15. However, in almost half of districts (14), it is significantly lower than the state average (86.12). The literacy rate of 15-24 year olds, or the youth literacy rate, has increased from 75.4 percent in 2001 to 86.0 percent in 2011. The youth literacy rate in both rural and urban areas in Odisha has increased and the rural- urban gap has declined from 16.0 percent in 2001 to 8.1 percent in 2011. While the male youth literacy rate is considerably higher than female youth literacy, there has been a significant reduction of the gender gap in youth literacy rate.

**Goal- 3 Promote Gender Equality and Empower Women:**

Freedom from any type of discrimination and disparity is a key human right. The State Government is aware of this and is promoting gender equality in education, health,

nutrition and governance through support for reproductive and sexual health and rights and empowerment of women.

In 2014-15, the Gender Parity Index (GPI) in primary education was recorded at 0.93, which is unfavourable to girls. It came down marginally from 0.94 in 2011 to 0.93 in 2014-15. There is significant inter- district variation with the GPI being the highest in Boudh (0.99) and the lowest in Nayagarh (0.85). There has been noteworthy improvement in the GPI in secondary education. During 2014-15, the gender parity index was recorded at 0.98, which means it is favourable to girls and that the number of girls dropping out of school has gone down.

Odisha has witnessed major advances in improving women's literacy and access to all level of education. As per Census 2011, the ratio of literate young women to young men (15-24 years Age Group) was recorded 0.89 in Odisha, indicating a gradual increase from 0.78 in 2001. The ratio of literate women to men among youth is the highest in Jagatsinghpur district (0.89) and the lowest in Koraput (0.63).

The share of women in wage employment in non- agricultural sector indicates the degree to which women have equal access to be paid for employment in industry and service sectors. The share of women in wage employment in non- agricultural sector in Odisha has declined from 21.0 in 2004-05 to 18.4 in 2011 12. The low shares of women in this sector is a concern and reflects their restricted participation in non- agriculture wage employment.

Proportion of seats held by Women in National Parliament/ State Assembly is linked to women's empowerment. In the State Assembly out of 147 members, only eleven women (7.48 percent) were elected in 2014. Through there has been an improvement between 1990 and 2014, the percentage of women representatives in the State Assembly is still quite low. The proportion of seats held by women in the National Parliament from Odisha has remained alarmingly low and far below the desired level of equal participation. Women are better represented at the bottom level of political decision-making in the state. As per 2012 data, out of 854 seats, more than half of Zilla Parisad seats had women members. The percentage of women members increased from 35.2 in 2007 to 50.09 in 2012.

**Goal-4 Reduce Child Mortality:**

Child health in general and childhood mortality in particular are commonly used as the basic indicators of social and human development. The Under -Five Mortality Rate (U5MR) in Odisha has declined from 136 in 1990 to 66 in 2013. As per the Sample Registration System 2014, the IMR has decreased in Odisha from 112 in 1990 to 49 in 2014. However, it is still higher than the national average.

As per SRS, the infant mortality rate is higher in rural areas as compared to urban areas during 1990 to 2014. However, the gap has reduced over a period of time. From gender perspectives, the female infant mortality rate is 51 against the male infant mortality rate of 48 in the State. The proportion of one- year old children immunized against measles was 75.5 percent in 2013-14. During the period of 2002-2014, the proportion of children immunized against measles increased in rural areas by 7 percentage points while in urban areas it went up by 7.7 percentages.

**Goal- 5 Improve Maternal Health:**

The Maternal Mortality Ratio (MMR) during 1990- 2013 has declined about 53.9 percent in Odisha. From 482 in 1990 the MMR has come down 222 in 2013. However it is still much higher than what was targeted.

There has been improvement in the attendance of skilled health personnel in delivery, and percentage of safe delivery in Odisha. Nearly 83.7 percent women reported birth attended by skilled health professionals during 2013-14 in Odisha.

**Goal-6 Combat HIV/ AIDS, Malaria and Other Diseases:**

The prevalence of HIV among various population groups has declined in Odisha, including pregnant women aged 15-24 years, in the period 2010 to 2015. The highest prevalence of HIV is in Ganjam (0.20) and the lowest in Bhadrak (0.02). More than 90 percent of currently married women aged 15-49 year are aware of HIV/ AIDS and the knowledge increased significantly by 32.2 percentage points during 2002-04 and 2012-13.

**Goal-7 Ensure Environmental Sustainability:**

Increasing forest cover is a measure towards ensuring sustainable environment and biodiversity. Odisha is rich in forest cover and has recorded forest land area of about 58,136 sq. kms., which is more than one- third (37.3 percent) of the total geographical area. The State's forest area is composed of 26,329 sq. kms reserve forests, 11,686 sq kms of demarcated forests, 3,839 sq kms of un- demarcated protected forests and 16,282 sq kms of unclassified forests in 2015.

To maintain bio-diversity, the state has tow national parks, 19 wildlife sanctuaries, two tiger reserves, one proposed tiger reserve and one biosphere reserve. The total area covered by national parks and sanctuaries (protected area) is 8,351.31 sq. km. which constitute 5.36 percent of geographical area and 10.37 percent of forest area in the state.

The solid fuels lead to indoor air pollution and the high percentage of households using solid fuels for cooking results in major health problems. As per Census 2011, about 86.2 percent households in rural area and 45.2 percent in urban areas were using solid fuels for cooking. There was an increase of 5.37 percentage points using solid fuels for cooking between 2001 and 2011.

Improved drinking water source is a proxy for measuring access to safe drinking water. It includes tap water, hand pump and tube well. According to Census 2011, more than three-fourths of households had access to safe drinking water in Odisha, which includes hand pump (41.4 percentage), tube well (20.0 percentage), tap water from treated source (10.0 percentage) and tap water from untreated source (3.9 percentage). Odisha has progressed in access to safe drinking water from 39.2 percent in 1991 to 75.2 percent in 2011, which means an increase of 36.1 percentage points.

According to Census 2011, more than three-fourths (76.6 percent) of Odisha's population has no toilet/ latrine facility in their households and practice open defecation. Overall, only 18.2 percent of households have access to improved sanitation facilities within their houses. The disparity between rural and urban areas is stark. In rural Odisha, only 10.6 percent households have improved sanitation facilities within their premises while 59.6 percent households in urban Odisha have such facilities.

According to Census 2011, only 16.7 percent of the State's population resides in urban areas. Boudh with 4.6 percent has the lowest percent urban population while Khurda is

the most urbanized district at 48.1 percent. There was a significant increase in the slum population from 6.4 lakh in 2001 to 15.6 lakh in 2011 in the state, which is about 9.2 lakh increase in the slum population. More than one-fifth of the urban population lives in slums in Odisha and there was a substantial increase in the slum population to urban population between 2001 and 2011 by about 6.6 percent.

**Goal-8 Develop A Global Partnership for Development:**

New technologies, especially information and communication have brought about amazing changes and played an important role in modernization and rapid economic growth. The overall tele-density in the state on March 2015 was 66.85 per 100 population. In urban areas the density was 172.11 per 100 population and 44.46 in rural areas. As per Census 2011, 38.0 percent of households in Odisha had mobile phones and 4.2 percent had telephone lines.

Odisha has witnessed tremendous improvement in internet subscribers. There were 17.30 internet subscribers per 100 population in March 2015 in the State. It is lower than the national average (24.09 per 100 population). There is a significant rural and urban difference. Urban areas had 51.03 internet subscribers per 100 population, while rural areas were limited to 10.13 per 100 population. In Odisha, only 1.4 percent of households had internet as per 2011 Census.

## **1.6 Disaster and Sustainable Development**

Disasters are intertwined with development in three-dimensional nexus. First, disasters eat away hard earned gains of development of years and decades. Second, lack of development exposes vulnerable communities to the risks of disasters. Third and ironically in an opposite direction, development creates new risk of disasters, such as houses and infrastructure without compliance of zoning and building regulations are vulnerable; mining and industries in ecologically sensitive zones may destroy the natural buffer to disasters, while fossil fuel based production and consumption enhance risks of climate related disasters.

The 2030 Agenda for Sustainable Development adopted by the UN General Assembly in September 2015 embedded disaster risk management in Sustainable Development Goals (SDGs) with specific targets of building disaster resilience across different sectors of development.

**Goal 1: End poverty in all its forms everywhere**

1.5 By 2030 build the resilience of the poor and those in vulnerable situations, and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters

**Goal 2: End hunger, achieve food security and improved nutrition, and promote sustainable agriculture**

2.4 By 2030 ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and that progressively improve land and soil quality

**Goal 3: Ensure healthy lives and promote well-being for all at all ages**

3. d. Strengthen the capacity of all countries, particularly developing countries, for early warning, risk reduction, and management of national and global health risks

**Goal 4: Ensure inclusive and equitable quality education and promote life-long learning opportunities for all**

4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

**Goal 6: Ensure availability and sustainable management of water and sanitation for all**

6.6 By 2020 protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

**Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all

**Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable**

11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage

11.5 By 2030 significantly reduce the number of deaths and the number of affected people and substantially decrease the economic losses relative to GDP caused by disasters, including water-related disasters, with the focus on protecting the poor and people in vulnerable situations

11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality, municipal and other waste management

11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, develop and implement in line with the Sendai Framework for Disaster Risk Reduction 2015-30, holistic disaster risk management at all levels

11.c Support least developed countries, including through financial and technical assistance, for sustainable and resilient buildings utilizing local materials

**Goal 13: Take urgent action to combat climate change and its impacts**

13.1 Strengthen resilience and adaptive capacity to climate related hazards and natural disasters in all countries

13.2 Integrate climate change measures into national policies, strategies, and planning

13.3 Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning

**Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development**

14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration, to achieve healthy and productive oceans

**Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

15.1 By 2020 ensure conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and dry lands, in line with obligations under international agreements

15.3 By 2020, combat desertification, and restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land-degradation neutral world

The disaster specific targets of Sustainable Development Goals 2030 and the short and long term targets of Odisha Vision Document 2036 for Disaster Management along with Sendai Framework for Disaster Risk Reduction (SFDRR) 2015-2030, as well as the Honourable Prime Minister's 10 point agenda for disaster risk reduction have been taken into active consideration for preparation of the State Disaster Management Plan.

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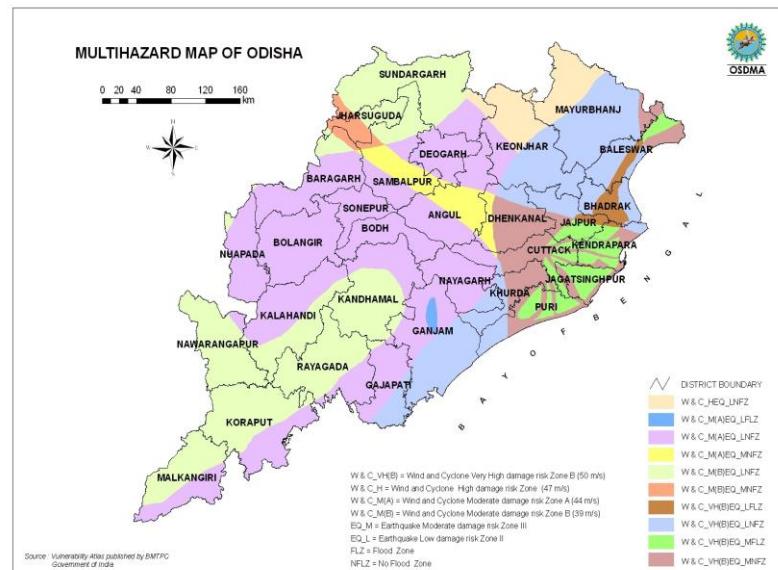
# Chapter II

## Vulnerability Assessment and Risk Analysis

### 2.1 Vulnerability to various Hazards:

Figure:2.1

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, the Mahanadi and her tributaries have the potential to cause very severe floods. Odisha has 10 other major river systems which cause flood in regular intervals. Out 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 failure, decline in surface and groundwater level, 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.

**Details of areas vulnerable to floods, cyclones and earthquakes:**

Table:2.1

Type of Hazard	Particulars	% of Area vulnerable
<b>Flood</b>	Flood Prone	1.9%
	Flood Protected	2.4%
	Outside Flood Area	95.7%
<b>Cyclone</b>	198-180 km/h	24.1%
	169.2 km/h	3.3%
	158.9-140.9 km/h	72.6%
<b>Earthquake</b>	Low damage risk Zone	84.2%
	Moderate damage risk zone	15.8%

*Source: Vulnerability Atlas of India, 1997*

The table below indicates the occurrence of major disaster in the State during last 20 years.

Table:2.2

Year	Calamity
1996	Drought
1997	Drought
1998	Drought, Heat wave
1999	Super Cyclone
2000	Drought
2001	Floods
2002	Drought
2003	Floods
2004	Floods
2005	Floods
2006	Floods
2007	Floods (July) (Aug & Sept)
2008	Floods(June & September )
2009	Flood & Heavy rain Drought / Pest Attack

2010	Flood & Heavy rain Drought & Unseasonal Cyclonic Rain
2011	Drought & Flood
2012	Drought & Flood
2013	Very severe cyclonic storm 'Phailin' & Flood
2014	Flood & Very severe cyclonic storm 'Hudhud'
2015	Drought, Flood & Heavy Rain

(Source: Office of the Special Relief Commissioner)

## 2.2 Major Disasters during 2006-07 and 2017-18

A brief profile of major disasters occurred in the State during 2006-07 to 2017-18 and their impact is given below.

Table:2.3

Sl. No .	Disaste r	Year	No. of Districts Affected	No of Villages Affected	No. of Deaths	Affected Population	Livestock Loss	Houses Damaged	Damage and loss of Crop Area (in Hectares)
1	Flood	2006-07	27	18912	105	6739168	1656	130460	249488
		2007-08	15	5677	91	4235627	19495	76902	197000
		2008-09	20	9794	110	4523590	1677	258155	382080
		2009-10	17	2711	59	661000	-	13547	2399
		2010-11	6	889	14	89700	1454	5402	30212
		2011-12	21	6473	82	6000000	1493	176980	260256
		2012-13	5	1059	3	61000	23	14655	1061
		2013-14	18	18374	23	-	-	-	651590
		2014-15	27	5573	61	4000000	187	49061	397538
		2015-16	14	953	09	494088	-	1739	46135
		2016-17	6	-	3	15100	-	-	-
		2017-18	08	606	09	514669	-	5136	51531

***State Disaster Management Plan-2019***

2	Drought	2008-09	5	463	-	-	-	-	-
		2009-10	18	5294	-	-	-	-	-
		2010-11	17	10674	-	-	-	-	-
		2011-12	21	14119	-	-	-	-	-
		2012-13	4	314	-	-	-	-	-
		2015-16	27	29175	-	-	-	-	1492565
		2016-17	4	508	-	-	-	-	22658.35
		2017-18	15	6021					335548
3	Fire	2006-07	30	3941	27	-	79	-	-
		2007-08	30	4341	12	-	54	-	-
		2008-09	30	4563	21	-	17	-	-
		2009-10	27	5346	26	-	187	-	-
		2010-11	29	4721	9		16	-	-
		2011-12	30	-	21	-	104	-	-
		2012-13	30	6939	36	-	173	-	-
		2014-15	30	4368	25	-	153	-	-
		2015-16	29	3852	26	-	63	-	-
		2016-17	30	3935	92	-	195	-	-
		2017-18	30	3355	107	-	140		
4	Hail Storm	2006-07	6	125	2	2216	-	981	-
		2007-08	13	149	6	130	2	2406	4372.8
		2008-09	3	18	20	10000	512	2258	3694.22
		2009-10	4	4	5	-	-	100	-
		2010-11	9	252	14	-	-	2308	194.51
		2011-12	12	120	5	-	-	1750	-
		2012-13	8	-	-	-	-	2957	-
		2014-15	1	-	1	-	-	-	-
		2015-16	4	-	5	-	-	-	-
		2016-17	6	-	7	-	-	-	-

***State Disaster Management Plan-2019***

		2017-18	11		9				
5	Cyclone	2013-14	18	18374	21	13235000	4502	541200	651590
		2014-15	15	9657	3	3343966	670	44236	247557
6	Pest Attack	2006-07	3	-	-	-	-	-	4571
		2017-18	24	8394	-				142723.18
7	Lightning	2006-07	30	-	204	-	-	-	
		2007-08	30	-	351	-	-	-	-
		2008-09	30	-	362	-	-	-	-
		2009-10	28	-	214	-	-	-	-
		2010-11	30	-	227	-	-	-	-
		2011-12	28	-	353	-	-	-	-
		2012-13	30	-	265	-	-	-	-
		2014-15	30	-	309	-	-	-	-
		2015-16	30	-	400	-	-	-	-
		2016-17	29	-	398	-	-	-	-
		2017-18	29		465				
8	Heat Wave	2006-07	12	-	21	-	-	-	-
		2007-08	18	-	47	-	-	-	-
		2008-09	16	-	68	-	-	-	-
		2009-10	19	-	87	-	-	-	-
		2010-11	19	-	100	-	-	-	-
		2011-12	8	-	22	-	-	-	-
		2012-13	20	-	84	-	-	-	-
		2013-14	7	-	16	-	-	-	-
		2014-15	15	-	40	-	-	-	-
		2015-16	6	-	18	-	-	-	-
		2016-17	17	-	52	-	-	-	-
		2017-18	17		43				

***State Disaster Management Plan-2019***

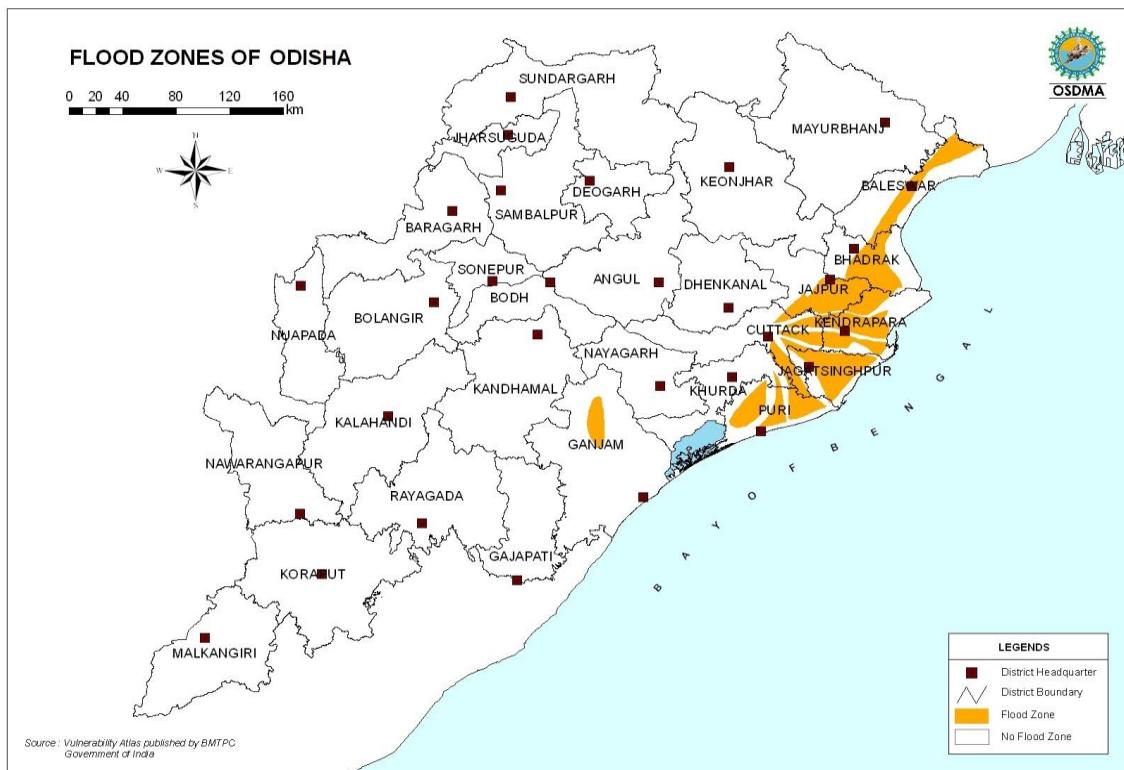
9	Tornado	2008-09	1	12	16	10000	-	1425	134.66
10	Heavy Rain	2015-16	5	-	5	-	-	-	-
		2016-17	1	-	1	-	-	-	-
11	Boat Accidents (Other than during Flood)	2015-16	5	-	17	-	-	-	-
		2016-17	2	-	7	-	-	-	-
		2017-18	4		4				
12	Drowning (Other than during Flood)	2015-16	26	-	191	-	-	-	-
		2016-17	26	-	418	-	-	-	-
		2017-18	29		820				
13	Snake Bite(Other than during Flood)	2015-16	23	-	305	-	-	-	-
			28	-	542	-	-	-	-
		2017-18	30		824				

(Source: Office of the Special Relief Commissioner)

## 2.3 Disaster Specific Vulnerability:

### I) Vulnerability to floods:

Figure:2.2



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 rivers like Mahanadi, Brahmani and Baitarani, which have a common delta where floodwater intermingles (when in spate) and wreak considerable havoc. The problem is further accentuated when flood synchronizes with high tide. The silt deposited constantly by these rivers in the delta area raises the bed levels. 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, the Rusikulya, the Vansadhara and Budha Balanga rivers and cause massive floods.

The entire coastal belt is prone to storm surges, throughout the monsoon season, which is usually accompanied with heavy rainfall thus making the estuary region vulnerable to both storm surges and river flooding. A few districts in the western part of Odisha are prone to flash floods.

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 percent hit Odisha, particularly during April – May and September – November. Once in 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 like 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.

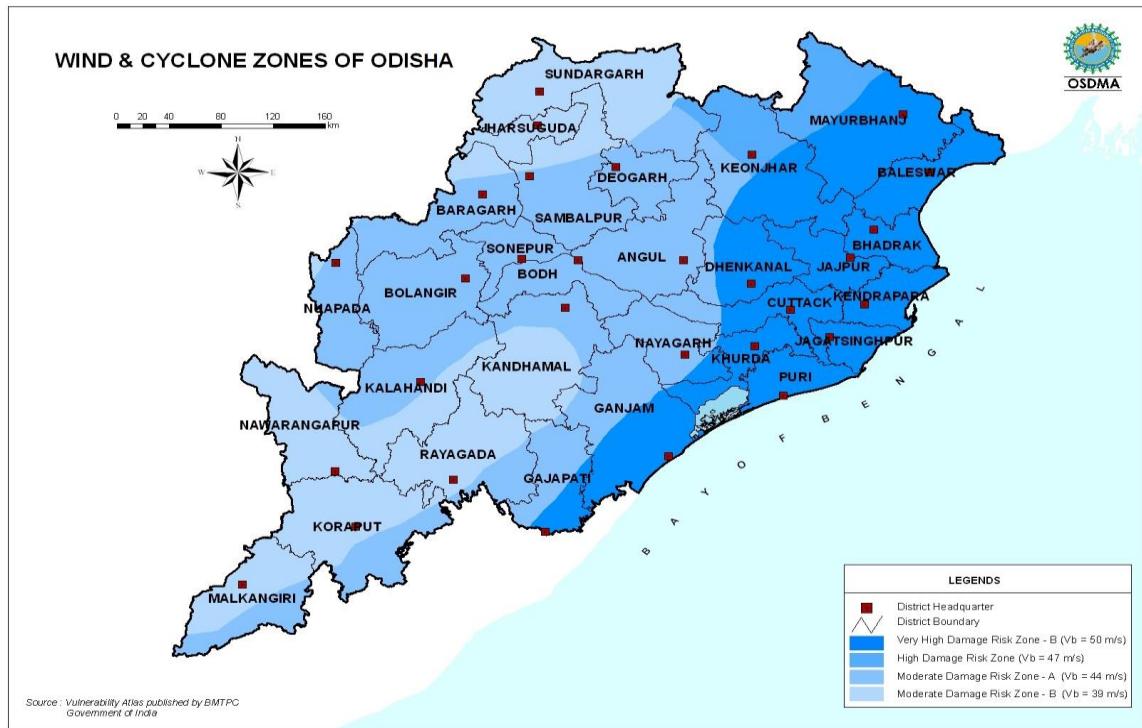


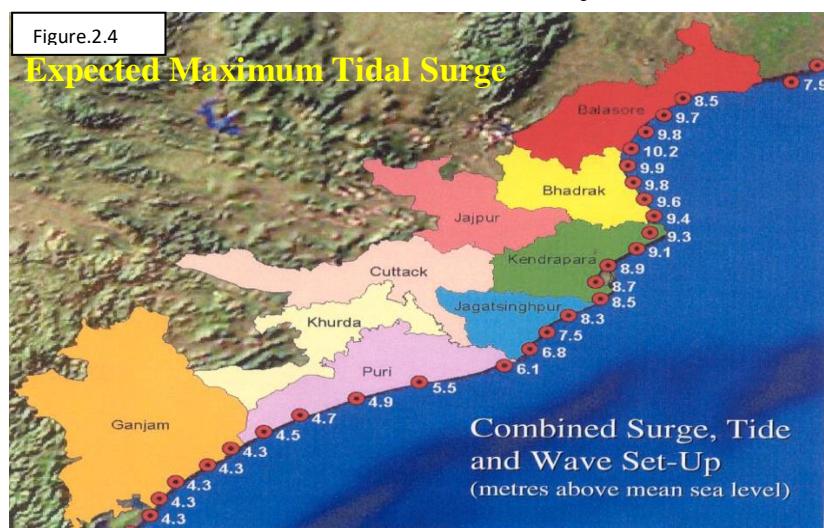
Figure:2.3

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 leading to 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  $6^{\circ}\text{N}$  to  $10^{\circ}\text{N}$  and  $85^{\circ}\text{E}$  to  $88^{\circ}\text{E}$  is a high probability source area of origin for the severe storms. The second in the importance is the eastern part of the Andaman Islands.

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 have 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 mm, 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:2.4

Rainfall interval (in mm)	Frequency during the decade					
	50's	60's	70's	80's	90's	Total
1500 and above	5	-	2	2	3	12
1499-1300	3	5	3	3	5	19

1299-1100	2	4	2	3	1	12
1099-1000	-	-	-	2	-	2
Less than 1000	-	1	3	-	1	5

*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 1091mm. 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 the 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 and oilseeds generally are not affected as the quantum of monsoon rainfall received even in the worst drought years is more than 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 about coping with heat wave and not following certain do's and don'ts during heat wave conditions. Though extensive awareness campaigns has reduced large number of fatalities in post 1998, poor socio-economic conditions, lack of enforcement and adoption of good working conditions during the summer months remain the main risks of heat wave.

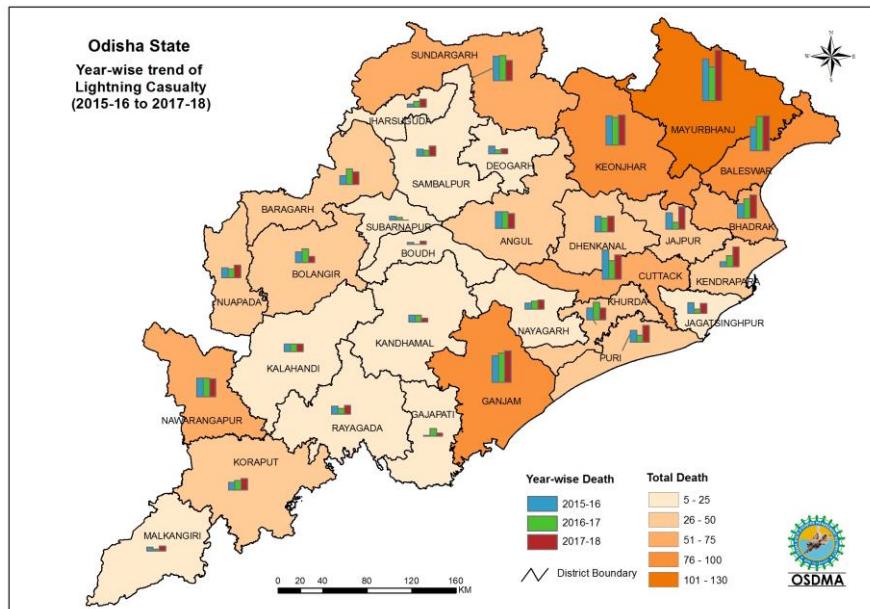
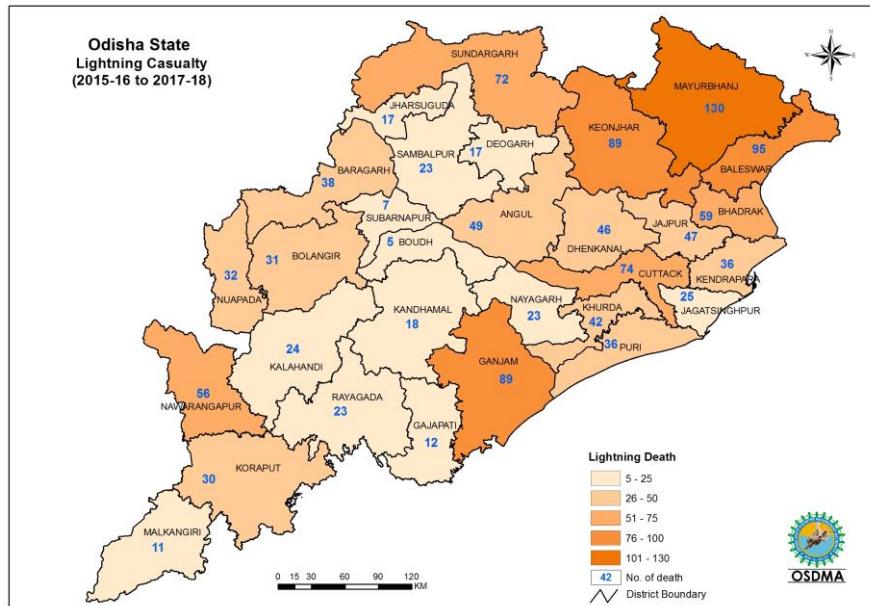
**V) Vulnerability to Lightning:**

Lightning has been the biggest killer in the State. During last 7 years lightning has taken 2408 lives more than any other natural disaster during the period. On an average it takes around 350 lives each year. Most deaths occur during the months from May to August (about 71%). High occurrence of deaths has been observed in Mayurbhanj, Ganjam, Keonjhar, Sundergarh, Cuttack, Balasore, Dhenkanal, Jajpur, Khordha and Nawarangpur districts. About one third of lightning deaths took place while working in paddy fields.

As per reports received from the Collectors, as many as 1261 lightning deaths have occurred in the State during the last 3 years, i.e., from 2015-16 to 2017-18.

2015-16	:	399
2016-17	:	397
2017-18	:	465
<b>Total</b>	:	<b>1261</b>

(Source: Office of the Special Relief Commissioner)

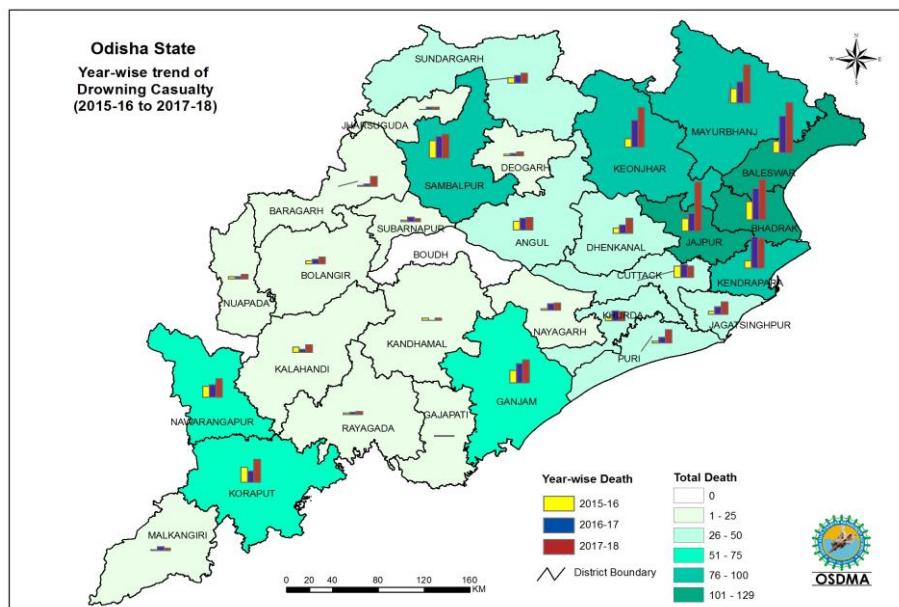
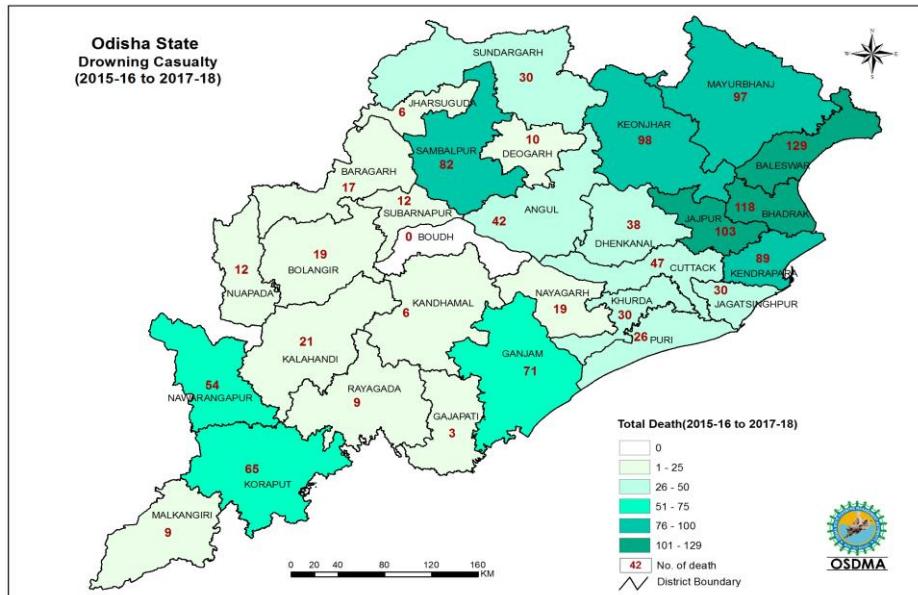


## VI) Vulnerability to Drowning:

Drowning (other than during flood) has been declared as a ‘State Specific Disaster’ by the Government of Odisha with effect from 1st April 2015. The Collectors have been reporting the cases of deaths due to drowning to the Special Relief Commissioner. As per the reports received from the Collectors, as many as 1494 deaths due to Drowning have occurred in the State during the last 3 years, i.e., from 2015-16 to 2017-18.

2015-16	:	246
2016-17	:	428
2017-18	:	820
Total	:	1494

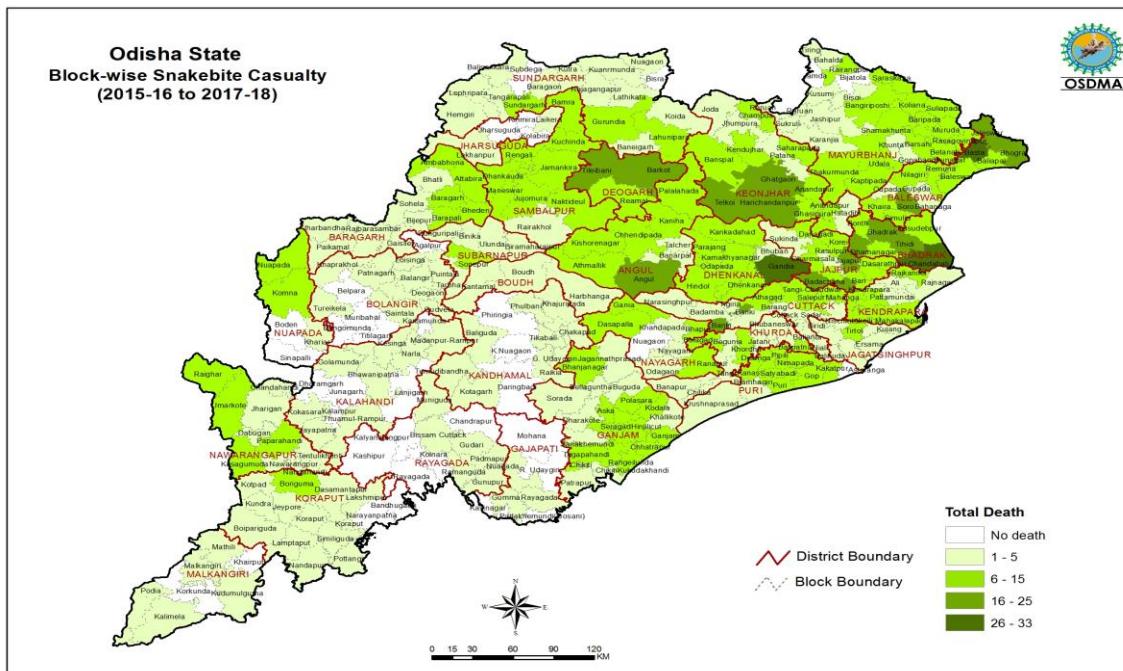
(Source: Office of the Special Relief Commissioner)



## VII) Vulnerability to Snake Bite

Snakebite has been declared as a ‘State Specific Disaster’ by the Government of Odisha with effect from 1st April 2015. From then onwards, the Collectors have been reporting the cases of death due to snakebite to the Special Relief Commissioner. As per reports received from the Collectors, as many as 1844 snakebite deaths have occurred in the State during the last 3 years, i.e., from 2015-16 to 2017-18.

2015-16	:	446
2016-17	:	574
2017-18	:	824
Total	:	1844



(Source: Office of the Special Relief Commissioner)

### VIII) 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.

### IX) Vulnerability to Earthquakes:

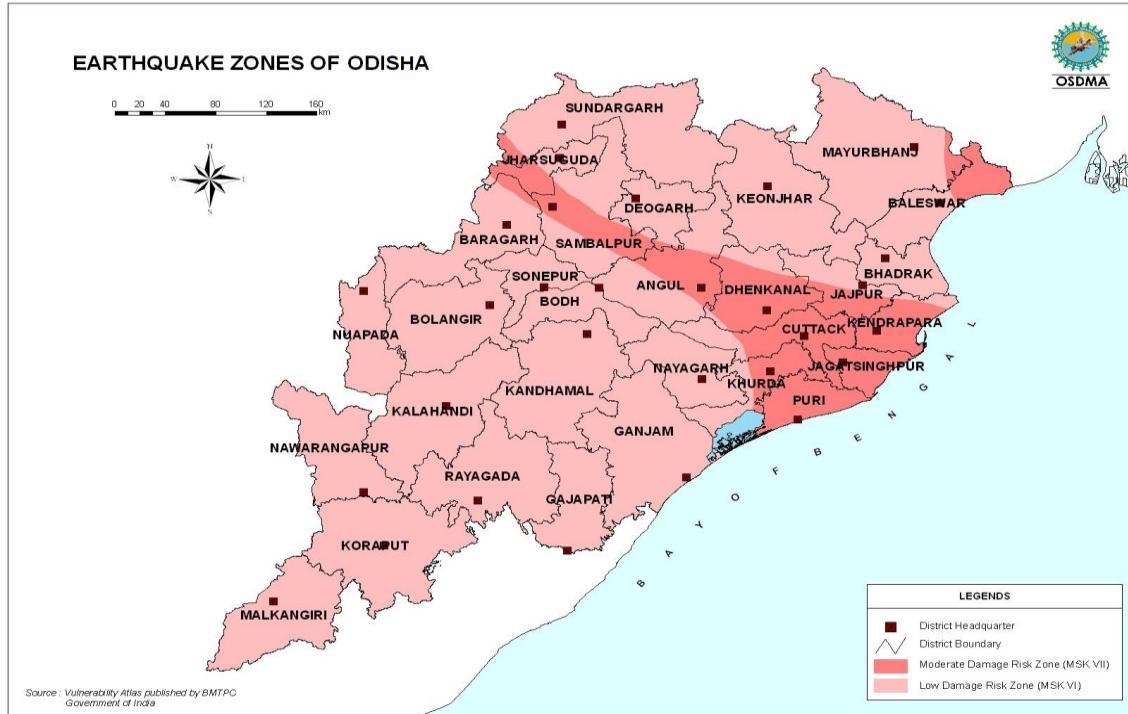
Records of historical seismicity indicate activity along the Odisha coastal belt. Current seismicity is related to activity along Gondwana Basin boundary faults and those associated with continent-oceanic crust transition zone in the Bay of Bengal. Within the Mahanadi coastal basin, several subsurface 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 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:2.5

District Coming Under Moderate Risk Zones (Zone-III)	Districts Coming Under Low damage Risk Zones (Zone-II)
Sundargarh, Jharsuguda, Bargarh, Sambalpur, Deogarh, Anugul, Dhenkanal, Jajpur, Cuttack, Khurda, Puri, Jagatsighpur, Kendrapada, Bhadrak, Mayurbhanj, Balasore.	Malkanagiri, Korapur, Rayagada, Gajapati, Ganjam, Kandhamala, Nawrangpur, Kalahandi, Nuapada, Bolangir, Sonepur, Boud, Nayagarh, Keonjhar,

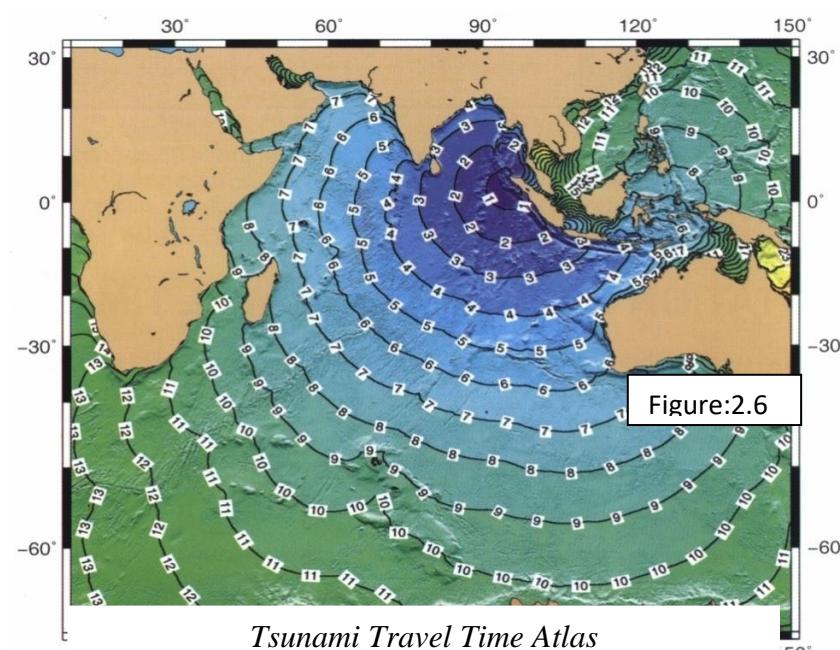
Figure:2.5



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 Paradeep Port and the Hirakud dam also fall under moderate risk zone.

## X) Vulnerability to Tsunami:

Odisha coast is vulnerable to tsunami.



328 villages covering 6 coastal districts located within 1.5 km of the coastline are identified as tsunami prone villages. Though there is no specific tsunami event in the recent past, the disaster cannot be ruled out. As per the scientific study conducted by IIT, Kharagpur, the State may experience tsunami within 4 hour, if the tsunami occurs at the nearest point in the Indo-Burman plate.

## **XI) Coastal Vulnerability Index (CVI)**

The risk classes due to individual input parameters/factors for the Odisha state are tabulated below. It indicates that the coastal slope and elevation are the very risk factors affecting the coastal length of 453 km and 384 km respectively. The shoreline change rate and the tidal range factors account for very low risk representing 228 km and 201 km respectively.

<b>Parameter</b>	<b>Length of Risk Classes along the Coastline(Km)</b>				
	Very Low	Low	Medium	High	Very High
Shoreline Change Rate	228	134	38	32	65
Coastal Slope	9	6	6	22	453
Coastal Elevation	6	-	18	89	384
Geomorphology	-	254	38	80	124
Sea Level Change Rate	45	56	118	67	211
Mean Significant Wave Height	80	58	93	105	161
Tidal Range	201	91	76	64	63

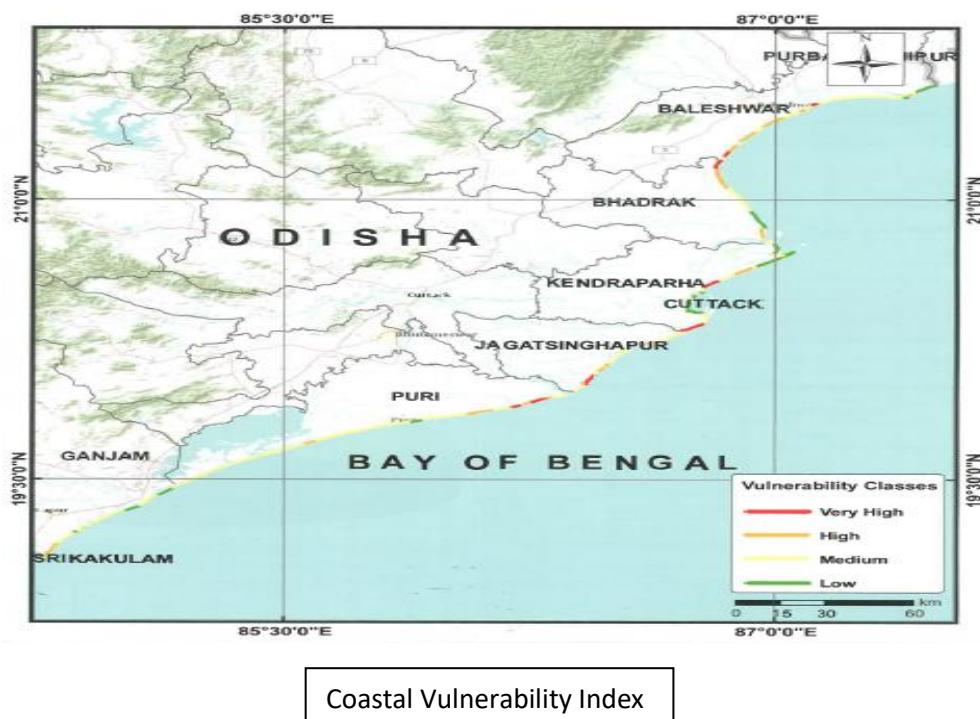
(Source: Coastal Vulnerability Atlas of India-2012, INCOIS)

The CVI assessment for the Odisha state indicates that a length of 37 km (~7.51%) is under Very High Vulnerable Category. The major class is the Medium Vulnerable recording a length of 267 km (~53.78%); whereas Low and High Vulnerable classes recorded a length of 106 km and 86 km (constituting 21.29 % and 17.42%) respectively. The spatial distribution of the vulnerability classes along the coast of the state is shown in table above. The coastal stretches of Puri, Jagatsinghpur, Kendrapada, Bhadrak and Baleswar recorded High to Very High Vulnerable classes. In general, the CVI analysis shows the northern part of the coast as Medium to Very High Vulnerable expect for a few

low category patches; whereas the southern parts of the state were categorized as Medium to Low Vulnerable classes.

### Statics of CVI along Odisha

CVI	Length (Km)	% of Length
Low	106	21.29
Medium	267	53.78
High	86	17.42
Very High	37	7.51
Total	496	100.00



(Source: *Coastal Vulnerability Atlas of India-2012, INCOIS*)

## XII) Vulnerability to Industrial/ Chemical disasters:

Over the years, there is substantial increase in industrial activities in the State. Many industries in the State handle and process large volume of hazardous chemicals. This has caused potential threat to the employees, general public and environment in general. 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 super cyclone has reflected the seriousness of the

problem. Some areas in the State have been identified which are having cluster of industries handling hazardous chemicals and thus pose chemical and industrial disaster.

The details of districts having Major Accident Hazard (MAH) installations and 2 (cb) factories are given below.

<b>Sl. No.</b>	<b>District</b>	<b>No. of MAH Factories</b>	<b>No. of 2 (cb) factories including MAH</b>
1	Angul	4	29
2	Balasore	1	42
3	Dhenkanal	3	26
4	Ganjam	1	23
5	Jagatsinghpur	8	15
6	Jajpur	3	35
7	Jharsuguda	3	38
8	Khordha	4	68
9	Koraput	1	12
10	Mayurbhanj	1	18
11	Rayagada	1	13
12	Sambalpur	1	25
13	Sundergarh	4	122
14	Baragarh	-	12
15	Bhadrak	-	4
16	Bolangir	-	5
17	Cuttack	-	45
18	Deogarh	-	2
19	Kalahandi	-	3
20	Keonjhar	-	35
21	Nayagarh	-	2
22	Malkangiri	-	4
23	Puri	-	2
	Total=	35	580

Source: Directorate F & B, Odisha

List of districts with type of hazards are given in the Table below.

Table:2.6

<b>Sl.</b>	<b>Area</b>	<b>District</b>	<b>Types of Hazardous Chemicals Handled</b>	<b>Type of Hazard</b>
1.	Paradeep	Jagatsinghpur	Ammonia, Phosphoric Acid, Sulphuric Acid, Petroleum Products	Toxic Gas Leak, Fire
2.	Rourkela	Sundargarh	Carbon Monoxide, Liquid Oxygen, Ammonia, Hydrogen,	Fire, Explosion, Toxic Gas

			Naphtha, Chlorine, Petroleum Products, Explosives (Secondary), Acids	
3.	Ganjam	Ganjam	Chlorine, Petroleum Product	Toxic Gas
4.	Cuttack	Cuttack	Chlorine, Petroleum Product	Toxic Gas, Fire
5.	Talcher	Angul	Ammonia, Carbon Monoxide, Naphtha, Chlorine, Petroleum Products, Explosives	Toxic Gas, Fire, Explosion
6.	Balasore	Balasore	Chlorine, LPG, Naphtha, Petroleum Products	Fire, Toxic Gas
7.	Jharsuguda – Belpahar	Jharsuguda	LPG, Petroleum Products, Explosives	Fire
8.	Rayagada	Rayagada	Chlorine	Toxic Gas

*(Source: State Pollution Control Board, Odisha)*

Odisha does not have any nuclear industry. 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.

### **XIII) Vulnerability to Accidents:**

Road accidents are major challenges 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.

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.

### **XIV) Fire Accidents:**

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

1. Individual housing with roof of straw and storage of straw/ hay in close proximity of the house.
2. Close proximity of houses in many areas leading to spread of fire and wider destruction.

3. Lack of availability of adequate water and nil or poor equipment for firefighting especially in rural areas and small towns.
4. Lack of awareness on basic do's and don'ts, when people live in houses that uses inflammable materials.
5. 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

#### **XV) 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.

#### **XIII) Vulnerability to Biological Hazards:**

##### ***(a) 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 favorable 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.

**(b) Epidemics amongst animals:**

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

- Poor disease surveillance system
- Lack of trained personnel, poor equipments and communication systems
- 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.

### **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.

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 roads, orchards 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 are rural artisans and weavers. Traditional equipments 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 38.5% 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 lives 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 have 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 marginalized sections also lead to poor access to information and hence are discriminated against during relief and rehabilitation phases after disasters.

**People need 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 for 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 are 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 –III**

### **Preventive Measures**

Prevention is an important aspect of disaster management. Prevention may be described as measures designed to prevent natural phenomenon from causing or resulting in disaster or other related emergency situations. Clearly, not all emergencies can be prevented, so the concept is taken to have a much broader meaning. Prevention actions concern the formulation of long-range policies and programs to prevent or eliminate the occurrence of disasters.

#### **3.1 Institutional Arrangements for Disaster Management:**

##### **3.1.1 National Disaster Management Authority (NDMA)**

The National Disaster Management Authority (NDMA) was constituted under the Sub-section (1) of Section (3) of National Disaster Management Act 2005. NDMA is the apex body for Disaster Management in the country headed by the Hon'ble Prime Minister of India to lay down policies, plans and guidelines to manage disaster and coordinating their enforcement and implementation for ensuring timely and effective response to disaster.

The Chairperson of the NDMA is the Hon'ble Prime Minister of India (ex-officio) and others members not exceeding more than nine may be nominated by him. The Chairperson may designate one of the members to be the Vice-Chairperson. (*Source-DM Act-2005*)

##### **3.1.2 National Executive Committee (NEC)**

The central government has constituted a National Executive Committee (NEC) under sub-section (1) of Section (8) of DM Act-2005 to assist the National Disaster Management Authority in the discharge of its function and also ensure compliance of the directions issued by the central government.

The Union Home Secretary is the Chairpersons (ex-officio) of NEC. The Secretaries to the Government of India in the ministries/departments having administrative control of the agriculture, defense, drinking water supply, environment and forests, finance (expenditure), health, power, rural development, science and technology, space, telecommunication, urban development, water resources and Chief of the Integrated Defence Staff of the Chiefs of Staff Committee are other members of NEC. (*Source-DM Act-2005*)

##### **3.1.3 State Disaster Management Authority (SDMA)**

The State Disaster Management Authorities (SDMA) has to be constituted by every state

government under the subsection (1) & (2) of Section 14 of Disaster Management Act 2005. The Hon'ble Chief Ministers of the state are the Chairpersons (ex-officio) of SDMA and other members not exceeding eight may be nominated by the Chairpersons. The other members are:

1. Hon'ble Minister, Revenue and DM -Member-cum-Vice Chairperson
2. Hon'ble Minister, Agriculture -Member
3. Hon'ble Minister, Finance -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 Chairman of the State Executive Committee (SEC), Chief Secretary of the State is a member and Chief Executive Officer (ex-officio) of 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.

The State Disaster Management Authority shall:-

- a) Lays down policies and plans for disaster management in the State.
- b) Approves the State Plan in accordance with the guidelines laid down by the NDMA.
- c) Coordinates the implementation of the State Plan, recommend provision of funds for mitigation and preparedness measures.
- d) Review the developmental plans of different departments of the State to ensure the integration of prevention, preparedness and mitigation measures.
- e) Lay down guidelines to be followed by the departments of the State Government for the purpose of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance there for.
- f) Review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government & issue such guidelines as may be necessary.

- g) Lay down detailed guidelines for providing standards of relief (Not less than the minimum standard of relief in the guidelines of NDMA) to persons affected by disaster in the State. (*Source-DM Act-2005*)

### **3.1.4 State Executive Committee (SEC)**

The State Executive Committee (SEC) has been constituted by the State Governments under sub-section (1) & (2) of Section (20) to assist the State Disaster Management Authority (SDMA) in the performance of its function and to coordinate action in accordance with the guidelines laid down by the SDMA and ensure the compliances of directions issued by the State Government under the DM act. The Chief Secretaries of the States are the Chairman of SEC (ex-officio). Four Secretaries of State Government are the other member's ex-officio. The Chairperson of SEC use powers delegated by SDMAs and state Governments.

- 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

The State Executive Committee shall-:

- a) Coordinate and monitor the implementation of the National Policy, National Plan and State Plan.
- b) Examine the vulnerability of different parts of the State to different forms of disaster and specify measures to be taken for their prevention and mitigation.
- c) Lay down guidelines for preparation of disaster management plans by the departments of the Government of the State and the District authorities and monitor the implementation of the plans.
- d) Evaluate preparedness at all government and non-government levels to respond to any threatening disaster situation or disaster and give all directions where necessary for enhancing such preparedness. (*Source-DM Act-2005*).

### **3.1.5 Revenue and Disaster Management Department:**

The Revenue and Disaster Management Department is responsible for providing immediate relief to the people affected by various calamities like 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.

**3.1.6 Special Relief Organization:**

The Special Relief Organisation was established under the Board of Revenue in 1965-66 for carrying out relief and rescue operation during and after various disasters. Since its inception, the scope of Relief Organisation has been diversified. Now it deals with disaster management i.e. response, relief and rehabilitation. 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 at the time of natural calamities is the hall-mark of Special Relief Organisation.

**3.1.7 Odisha State Disaster Management Authority (OSDMA):**

Odisha State Disaster Mitigation Authority (OSDMA) was established by the Government of Odisha as an autonomous organization vides Finance Department Resolution No. IFC- 74/99-51779/F dated the 28<sup>th</sup> 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 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:

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

**3.1.8 State Level Committee on Natural Calamities (SLCNC)**

A State Level Committee on Natural Calamity (SLCNC) has been constituted under the Chairmanship of the Hon'ble Chief Minister to oversee disaster preparedness and response activities.

The Function of the SLCNC is :-

- a) To advise the State Government regarding precautionary measures to be taken in respect of flood, drought and other natural calamities.
- b) To assess the situations arising out of such calamities.
- c) To recommend to Government, the nature and quantum of relief; and

- d) To recommend to Government, the Policy to be adopted in giving such relief in areas affected by such calamities. (*Source-DM Act-2005*)

### **3.1.9 District Disaster Management Authority (DDMA)**

Under the sub-section (1) of section 14 of DM Act 2005.District Disaster Management Authority has been constituted by the State Government. The District Disaster Management Authority (DDMA) consists of the Chairperson and such number of the other members, not exceeding seven, as may be prescribed by the State Government, and unless the rules otherwise provide, it shall consist of the following namely: -

- a) The Collector or District Magistrate or Deputy Commissioner of the District is the Chairperson (*ex-officio*) of DDMA.
- b) The elected representative of local authority is the Co-chairperson (*ex-officio*) of DDMA.

Provided that in the Tribal Areas, as referred to in the Sixth Schedule to the Constitutions, the Chief Executive Member of the district council of autonomous district, shall be the co-Chairperson, ex officio

- a) The Chief Executive of the District Authority, ex officio;
- b) The Superintendent of Police, ex officio;
- c) The Chief Medical Officer of the district, ex officio;
- d) Not exceeding two other district level officers, to be appointed by the State Government

The State Government appoints an officer not below the rank of Additional Collector or Additional District Magistrate or Additional Deputy Commissioner, as the case may be of the District to be Chief Executive Officer of DDMA.

The DDMA acts as the district planning; coordinating and implementing body for disaster management and take all measures for the purpose of disaster management in the district in accordance with the guidelines laid down by the NDMA and SDMA.

The District Disaster Management Authority (DDMA) shall:-

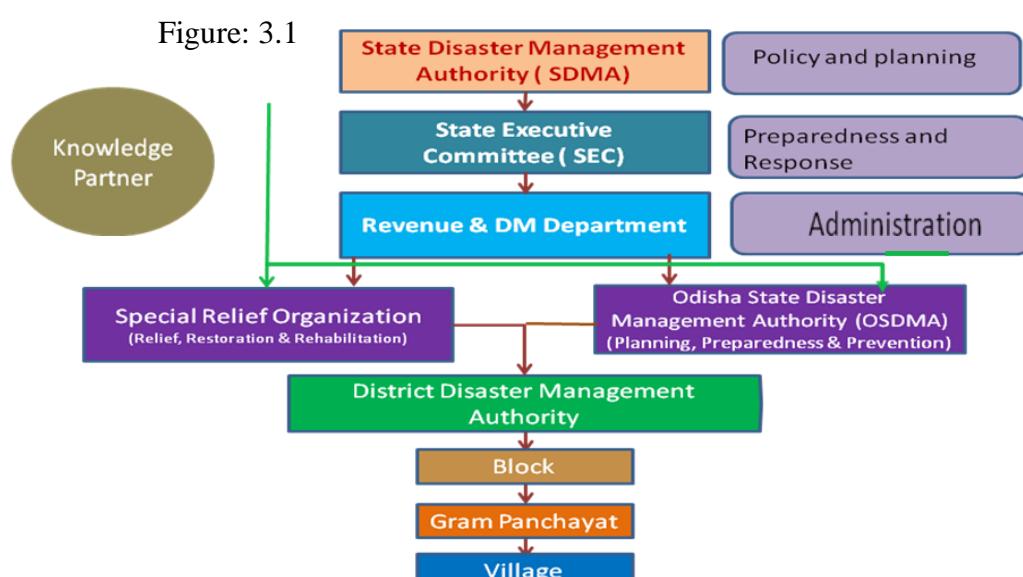
- a) Organize, coordinate and facilitate specialized training programmes and awareness programmes for different level of officers, employees, voluntary rescue workers and community members for prevention and mitigation of disaster with support of governmental and non-governmental organization and local authorities.

- b) Set up, maintain, review and upgrade mechanism for early warning and dissemination of proper information to public.
- c) Review development plans prepared by the departments of the government at the district level, statutory authorities with a view to make necessary provisions therein for prevention of disaster or mitigation
- d) Examine construction in any area in the district and ensure standards for prevention of disaster or mitigation laid down for such construction to be followed by the concerned departments and authorities.
- e) Identify buildings and places which could be used as relief centers or camps in the event of any disaster or disaster like situation and make arrangements for water supply and sanitation in such buildings and places.
- f) Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at short notice;
- g) Encourage the involvement of Non-Government Organization and Voluntary social – welfare institutions working at the grass root level in the district for disaster management.
- h) Ensure communication systems are in order and disaster management drills are carried out periodically.
- i) Perform such other functions as the State Government or State Authority may assign to. (Source-DM Act-2005)

### **3.1.10 District Level Committee on Natural Calamities (DLCNC)**

The Codal provision of Odisha Relief Code envisages the constitutions of District Level Committee on Natural Calamity (DLCNC) which is the apex committee at the district to monitor preparedness and suggests improvement in the response mechanism and finalizes the district disaster management plans.

### **3.1.11 Institutional Mechanism for Disaster Management in Odisha**



### **3.1.12 State Crisis Group (SCG)**

#### **3.1.12.1 Constitution of State Crisis Group**

1. The State Government shall constitute a State Crisis Group under the Chairmanship of Chief Secretary for management of chemical accidents in the State.
2. The State Crisis Group shall meet at least once in three months and follow such procedure for transaction of business as it deems fit.
3. The State Crisis Group may co-opt any person whose assistance or advice is considered useful in performing any of its functions, to participate in the deliberation of any of its meetings.

#### **3.1.12.2 Functions of the State Crisis Group**

1. The State Crisis Group is the apex body in the State to deal with major chemical accidents and to provide expert guidance for handling major chemical accidents.
2. Without prejudice to the functions specified under sub-rule (1), the State Crisis Group shall, -
  - a) Review all district off-site emergency plans in the State with a view to examine its adequacy in accordance with the Manufacture, Storage and Import of Hazardous Chemicals, Rules and forward a report to the Central Crisis Group once in three months;
  - b) Assist the State Government in managing chemical accidents at a site;
  - c) Assist the State Government in the planning, preparedness and mitigation of major chemical accidents at a site in the State;
  - d) Continuously monitor the post accident situation arising out of a major chemical accident in the State and forward a report to the Central Crisis Group;
  - e) Review the progress report submitted by the District Crisis groups;
  - f) Respond to queries addressed to it by the District Crisis groups; Publish a list of experts and officials in the State who are concerned with the management of chemical accidents.

(Source—Internet: <http://envfor.nic.in/divisions/hsmo/v3.html>)

### **3.1.13 District Crisis Group (DCG)**

#### **3.1.13.1 Constitution of District Crisis Group**

The District Crisis Group should be constituted under the Chairmanship of District Collector to deal with major chemical accidents and to provide expert guidance for handling chemical accidents

#### **3.1.13.2 Function of District Crisis Group**

The District Crisis Group shall, -

1. Assist in the preparation of the district off-site emergency plan;
2. Review all the on-site emergency plans prepared by the occupier of Major Accident Hazards installation for the preparation of the district off-site emergency plan;
3. Assist the district administration in the management of chemical accidents at a site lying within the district;
4. Continuously monitor every chemical accident;
5. Ensure continuous information flow from the district to the Centre and State Crisis Group regarding accident situation and mitigation efforts;
6. Forward a report of the chemical accident within fifteen days to the State Crisis Group; Conduct at least one full-scale mock-drill of a chemical accident at a site each year and forward a report of the strength and the weakness of the plan to the State Crisis Group. (*Source–Internet: <http://envfor.nic.in/divisions/hsmd/v3.html>*)

### **3.1.14 Local Crisis Group**

The Local Crisis Group is the body in the industrial pocket to deal with chemical accidents and coordinate efforts in planning preparedness and mitigation of a chemical accident;

The Local Crisis Group shall,-

1. Prepare local emergency plan for the industrial pocket;
2. Ensure dovetailing of the local emergency plan with the district off-site emergency plan;
3. Train personnel involved in chemical accident management;
4. Educate the population likely to be affected in a chemical accident about the remedies and existing preparedness in the area;
5. Conduct at least one full scale mock- drill of a chemical accident at a site every six months and forward a report to the District Crisis Group;
6. Respond to all public inquiries on the subject.

(*Source–Internet: <http://envfor.nic.in/divisions/hsmd/v3.html>*)

### **3.1.15 National Legal Services Authority (NALSA):**

The National Legal Services Authority (NALSA) has been constituted under the Legal Services Authorities Act, 1987 to provide free Legal Services to the weaker sections of the society. The Chief Justice of India is the Patron-in-Chief and the Senior most Hon'ble Judge, Supreme Court of India is the Executive Chairman of the Authority.

Public awareness, equal opportunity and deliverable justice are the cornerstones on which the edifice of NALSA is based. The principal objective of NALSA is to provide free and competent legal services to the weaker sections of the society and to ensure that opportunities for securing justice are not denied to any citizen by reason of economic or other disabilities, and to organize Lok Adalats for amicable settlement of disputes. Apart from the abovementioned, functions of NALSA include spreading legal literacy and awareness, undertaking social justice litigations etc.

With the aim of reaching out to the diverse milieu of people belonging to different socio-economic, cultural and political backgrounds, NALSA identifies specific categories of the marginalized and excluded groups from the diverse populace of the country and formulates various schemes for the implementation of preventive and strategic legal service programmes to be undertaken and implemented by the Legal Services Authorities at the various levels. In carrying out all these responsibilities, NALSA works in close coordination with the various State Legal Services Authorities, District Legal Services Authorities and other agencies for a regular exchange of relevant information, monitoring and updating on the implementation and progress of the various schemes in vogue and fostering a strategic and coordinated approach to ensure smooth and streamlined functioning of the various agencies and stakeholders.

### **3.1.16 Odisha State Legal Services Authority (SALSA):**

Odisha State Legal Services Authority is a Statutory Body established under the Legal Services Authorities Act, 1987. Hon'ble Chief Justice of High Court of Odisha is the Patron-in-Chief of the Odisha Legal Services Authority and the Sr. Judge of the High Court of Orissa is the Executive Chairman of the Odisha Legal Services Authority. To look after the legal services pertaining to the High Court, there is High Court Legal Services Committee, which is chaired by a sitting Judge of the High Court and the Registrar (Judicial), Orissa High Court is functioning as the Secretary of High Court Legal Services Committee. The State Legal Services Authority monitors and guides the District Legal Services Authorities and Taluk Legal Services Committees in achieving the aims and objectives of the Act. There are 30 District Legal Services Authorities in the State of Odisha and 81 Taluk Legal Services Committees functioning under them. The

District Legal Services Authorities are headed by District & Sessions Judges. An officer in the cadre of Senior Civil Judge functions as the Secretary of the District Legal Services Authority. The Taluk Legal Services Committees are headed by the senior most judicial officer posted at the station as the Chairman.

The general public who need any legal help / legal aid can directly contact the concerned Taluk Legal Services Committee / District Legal Services Authority, the High Court Legal Services Committee and the State Legal Services Authority, as the case may be, for their legal needs. Added to it, Front Offices have also been established in the premises of the District Legal Services Authority and Taluk Legal Services Committee manned by advocate retainers to offer legal advice to the beneficiaries and the general public as well and also to assist them in different Legal Services Activities.

The State Legal Services Authority has 15 Members which include the Hon'ble Chairman of High Court Legal Services Committee, Principal Secretaries in the Depts. of Law and Finance, Director-General and Inspector-General of Police, Advocate General, District Judges of Cuttack and Khurda at Bhubaneswar. Apart from that the State Authority has 5 nominated Members namely Hon'ble Minister, Law, Orissa, a Senior Advocate of Orissa High Court, an M.P., an M.L.A., and an eminent social worker who have experience in the field of Law, Finance, Social Service or Administration and who are engaged in the upliftment of the weaker sections of the society, including Schedule Castes, Schedule Tribes, Women, Children, rural and Urban Labour and who are interested in the implementation of the Legal Service Schemes.

### **3.1.17 National Disaster Response Force (NDRF)**

The Disaster Management Act 2005 has made the statutory provisions for the constitution of the National Disaster Response Force (NDRF) for the purpose of specialized response to natural and man-made disasters. The NDRF comprises of 12 units of Central Paramilitary Forces (CPMF) that includes 3 units each from Central Reserve Police Forces (CRPF) and Boarder Security Forces (BSF) and 2 Unit each from Central Industrial Security Forces (CISF), Indian Tibbet Boarder Police (ITBP) and Sahastra Seema Bal (SSB). Each battalion has 18 self-contained specialists Search and Rescue teams of 45 personnel. The NDRF team includes Chemical, Biological and Radiological Disaster (CBRN) emergency responders, S&A element, engineers, technicians, electricians, dog squads and paramedics. The NDRF battalions are strategically located at 8 different locations in the country based on the vulnerability profile to cut down response

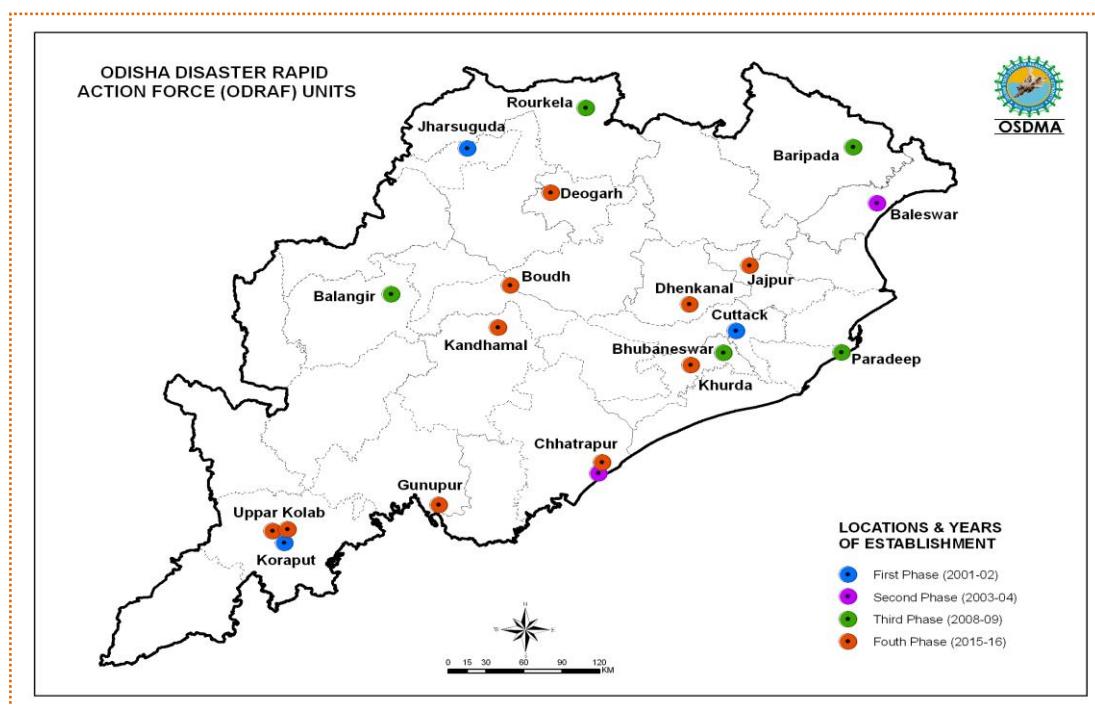
time for their deployment. During the threatening proactive deployment of NDRF is being carried out by NDMA in consultation with the State Governments.

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

In the post super cyclone reconstruction and preparedness phase, it was felt necessary to constitute a professionally trained group equipped with State-of-the-art emergency equipment to assist the civil administration in search and rescue operation and relief line clearance for effective management of disasters in the event of natural as well as human induced disasters. The Government of Odisha formed Odisha Disaster Rapid Action Force (ODRAF) vide notification no.939/CD dated 07.06.2001. ODRAF is a multi-disciplinary, multi-skilled, high-tech force for all types of disasters. ODRAF aims at reducing casualties, clearance of communication channels, quick deployment of personnel and equipments and minimize expenditure and time lag and support institutional arrangement. In 3 phases, ten units of ODRAF have been set up. The ODRAF units are strategically located throughout Orissa. Locations of these units are identified on the basis of vulnerability profile to cut down the response time for their deployment. The ODRAF Units do not have any geographical /territorial restrictions in terms of area of operation.

**Location of ODRAF units in Odisha**

Figure :3.2



## **3.2 State Emergency Operation Center (SEOC) and Early Warning Communication System**

### **3.2.1 State Emergency Operation Center**

The State Emergency Operation Centre has been made operational at Rajiv Bhawan, Bhubaneswar with state of art communication net-work. The State EOC functions round the clock throughout 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

### **3.2.2 Warning dissemination protocols:**

The warnings received at the state level are communicated to the district Collectors through telephone / fax / Wireless / E-mail. They in turn communicate the same to the Gram Panchayats and Villages through Tahsildars and Block Development Officers by means of telephones, VHF and by person. A four-stage warning system for tropical cyclones is followed by IMD since, 1999. Firstly, a special bulletin known as “**Pre-Cyclone Watch**” is issued 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. Secondly, “**Cyclone Alert**” is issued at least 48 hours in advance of the expected commencement of adverse weather over the coastal areas. Thirdly, “**Cyclone Warning**” is issued 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. Fourthly, “**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. After the weakening of the cyclone into a depression stage, a final message on **de-warning** is issued.

### **3.2.3 Existing infrastructure for warning dissemination:**

State Emergency Operation Centre is functioning in the Office of Special Relief Commissioner. District Emergency Operation Centres (DEOC) are functioning in the office of the Collectors under the supervision of a responsible officer. These EOCs have been provided with fax / telephone and wireless connectivity. Warning messages received

at the districts EOCs are communicated to field level through telephones, civil and police VHF networks. Satellites phones have also been provided to Collectors of the cyclone prone districts. Optical fibre telephone lines have been laid down in the coastal areas.

### **3.2.4 Early Warning Dissemination System (EDWS)**

Early Warning Dissemination System (EWDS) for Last Mile Connectivity is one of the Components (Component-A) of the National Cyclone Risk Mitigation Project (NCRMP) under World Bank assistance. It is implemented in 1205 villages of 22 blocks under 6 coastal districts (Balasore, Bhadrak, Jagatsinghpur, Kendrapara, Puri & Ganjam) within 5 km from coastlines of Odisha. The project aims at establishing a fool-proof communication system to address the existing gap of disseminating disaster warning up to the community level especially for cyclone and tsunami. EWDS comprises of technologies like Satellite Based Mobile Data Voice Terminals (SBMDVT) to be established in State Emergency Operation Center (SEOC) and six District Emergency Operation Center (DEOC), Digital Mobile Radio (DMR), Mass Messaging System, Alert Siren System at 122 locations and Universal Communication Interface (UCI) for interoperability among different communication technologies. People in the coastal areas are being alerted through these 122 alert siren towers and thereby will be able save their lives and property.

## **3.3 Coordination and Networking Mechanism**

Disaster Management is a multi-agency function. It involves actions by different departments, organization and agencies. In short, it involves almost all departments of the State Government, Central Government, Armed Forces, Civil Society, Corporate Sector, Traders' Organizations, Faith Based Organizations, International Organizations working in the field of disaster response and UN Agencies etc. It is therefore, important that 20 roles and responsibilities of each stakeholder are laid down during normal time and coordination mechanism worked out so that the same works during emergencies. Regular interaction with all the stakeholders is held at least once in a year. Key stakeholders are also associated with the mock drills to test their preparedness and clarity of roles and responsibility.

Coordination and Networking strengthens the disaster preparedness mechanism to deliver tangible results in a time bound manner. In disaster management, coordination could be on the basis of information, service, support and institutional framework. OSDMA works as the focal point for coordinates with different stakeholders for strengthening the disaster preparedness in the state.

### **Networking: Information**

Information dissemination is a crucial part of disaster management. From early warning to post disaster need assessment, information could be shared for effective management of disasters. Close coordination is maintained with the following organisations for information sharing.

- Odisha Space Application Centre (ORSAC)
- India Meteorological Department (IMD), Bhubaneswar
- Indian National Centre for Ocean Information Services (INCOIS)
- National Disaster Management Authority (NDMA)
- Regional Integrated Multi-Hazard Early Warning Systems (RIMES)
- Erath Networks

### **Networking: Service**

For service sector, networking with the following institutions is made:

- National Institute of Disaster Management
- National Disaster Response Force
- Indian Institute of Technology, Bhubaneswar
- Indian Institute of Technology, Kharagpur, (Bhubaneswar centre)
- Naba Krushna Choudhury Centre for Development Studies (NKCCDS)
- Xavier Institute of Management (XIMB), Bhubaneswar

### **Networking: Support**

- Defense/Armed Forces (Army, Navy and Air Force)
- NDRF
- Railways
- Fire Service
- Large industrial houses
- Medical Colleges & hospitals
- Multilateral and Bilateral institutions
- Bharat Sanchar Nigam Limited

## **3.4 Ongoing Projects-Prevention and Mitigation Activities**

Today, there is a paradigm shift in the approach to disaster management from a culture of relief and rehabilitation to that of preparedness and mitigation. Effective mitigation requires that we all understand local risks, address the hard choices, and invest in long-term community well-being. Without mitigation actions, we jeopardize our safety, financial security and self-reliance.

In the face of increasing menace of various hazards, mitigation would remain the key and the most effective strategy to reduce the risks of various hazards. **Structural mitigation** measures generally refer to capital investment on physical constructions or other development works, which include engineering measures and construction of hazard resistant and protective structures and other protective infrastructure.

**Non-structural mitigation** measures refer to awareness and education, policies, techno-legal systems and practices, training, capacity development, public commitment, and methods and operating practices, including participatory mechanisms, and the provision of information, which can reduce risk with related impacts.

### **3.4.1 Prevention and Mitigation Activities of different departments** Table:3.1

<b>Sl. No.</b>	<b>Departments/Directorate</b>	<b>Structural Measures</b>	<b>Non-structural Measures</b>
1.	<b>Animal Husbandry and Veterinary Services</b>	<ul style="list-style-type: none"> <li>1. Construction of community shelters for rehabilitation of livestock in the flood affected area.</li> <li>2. The size of the shelter may be 100ft x 30 ft. usually in an ideal situation 60 sq ft space for an adult cow.</li> <li>3. For emergency shake, at least 2 cows can be kept in that prescribed amount of space. In that respect, required numbers of shelters of 100 x 30 ft size can be constructed in each village of the vulnerable pockets for flood, during emergency 10-15 animal can be accommodated in a single shed.</li> </ul>	<ul style="list-style-type: none"> <li>1. Surveillance mechanism involving state, district and village level veterinary institutions for early detection of outbreaks. Chief Veterinary Officers at district level to report to state level control room on monthly basis.</li> <li>2. Identification of Nodal Officers at state, district and village level for coordination of activities.</li> <li>3. Coordination with revenue department for provision of temporary shelters for animals at identified shelter sites with provision for proper water and fodder.</li> <li>4. Provision of vehicles for immediate transportation of infected animals to veterinary hospitals.</li> <li>5. Preparedness plan for each veterinary hospital for handling the inflow of infected animals.</li> <li>6. Stock of required medicines and equipment.</li> </ul>

2.	<b>Health &amp; Family Welfare</b>	<p>All public buildings like, hospitals and health centres to be multi hazard resilient, built on raised grounds and platforms with retrofitting and having adequate exit gates and fire extinguishers in place.</p>	<ol style="list-style-type: none"> <li>1. Health Worker (M &amp; F), Supervisors (M &amp; F), PHEIO, Medical Officer should resort to Inter personal communication to propagate the messages as this is the most effective media with maximum reach. During field visit group discussions can be initiated &amp; emphasis should be given on preventive aspect.</li> <li>2. Signage in respect of Do's &amp; Don'ts of Heat Stroke need to be displayed in the strategic Places.</li> <li>3. Leaf lets to be distributed &amp; Poster displayed at strategic places of people.</li> <li>4. IEC campaign through print &amp; electronic media to be conducted through Deptt. of SIH &amp; FW.</li> </ol>
3.	<b>MSME</b>	<ol style="list-style-type: none"> <li>1. Multi-Purpose community shelters to be constructed in flood prone / cyclone prone areas.</li> <li>2. Designing &amp; construction of robust sheds for MSMEs to withstand disasters like Earthquake, Cyclone or, Floods.</li> </ol>	<ol style="list-style-type: none"> <li>1. Awareness Creation for availing Insurance Policy, Coverage under CGTMSE scheme of GoI.</li> <li>2. Awareness Creation for disaster proof MSME sheds.</li> </ol>

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4.	<b>Excise</b>	<p>1. Fire safety measures have been taken in the depots/ Distilleries. Grant of licence is not made unless the application comes with fire safety certificate from competent authority.</p> <p>2. Destruction of Hemp plant on regular basis by the Enforcement Squad of Excise Department from time to time, in those districts where Hemp Plantations are being carried on.</p> <p>3. Construction of new Excise Station/ Hazat &amp; Malkhana has been taken up in phased manner.</p>	<p>1. Mass awareness and sensitizations programmes are conducted <i>out of funds of OSBC</i> to highlight the disastrous consequences of consumption of spurious liquor and the hazards it poses for health, safety and life of consumers.</p> <p>2. All the Godowns are insured taking the stock value of 31<sup>st</sup> December of previous year and the Insurance covers the standard fire risk and other perils such as storm, cyclone, typhoon, tempest hurricanes, tornado, flood, inundation and RSMD, Earth quake, burglary, house breaking, theft, pilferage explosion and implosion etc. Such coverage of insurance begins w.e.f. each financial year.</p>
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5	<b>Factories and Boilers</b>		<ol style="list-style-type: none"> <li>1. Formation of District Crisis Group (DCG) / Local Crisis Group (LCG), convening meetings &amp; publication of Annual Activity Report thereof.</li> <li>2. Assessment of On-Site Emergency Plans &amp; verification of Dispersion Modeling.</li> <li>3. Awareness of General Public living in the vicinity of the MAH factories.</li> <li>4. Conduct of Off-Site Emergency Mock Drills.</li> <li>5. Preparation of Departmental Disaster Management Plan.</li> </ol>
6	<b>ST &amp; SC</b>		<ol style="list-style-type: none"> <li>1. Awareness generation among students of the educational institutions.</li> <li>2. Guidelines/ circulars and manual on chain of command and communication with regard to disaster prevention &amp; preparedness actions.</li> <li>3. Ensuring establishment and functioning of control room at the department level.</li> <li>4. Integration of disaster preparedness activities in the on-going development plans and projects.</li> <li>5. Mapping of necessary resources/ equipments for undertaking prevention/ rescue</li> </ol>

			<p>operations and identifying gaps therein.</p> <p>6. Yearly assessment of physical infrastructures and safety measures available.</p>
7.	<b>Panchayati Raj and Drinking Water</b>	<p><b>MGNREGA</b></p> <p>1. Utilization of MGNREGS funds to reduce the vulnerability of Panchayat vis a vis natural hazards such as landslide, drought, forest fire, cloud burst, flash floods, earthquake etc</p> <p><b>GGY/CC Road</b></p> <p>1. The Master Plan should be prepared in such a way that it should connect the vulnerable habitations.</p> <p>2. The technical guidelines should explicitly provide for suitable protection and inclusion of disaster risks.</p>	
8.	<b>W&amp;CD</b>		<p>1. Capacity building at all level in vulnerable areas of flood/cyclone.</p> <p>2. Public awareness through IEC_activities and display of DM plans in all AWCs and Institutions.</p> <p>3. Prepositioning of supplies and demarcation of areas and spaces where temporary services can be provided.</p>
9.	<b>Works</b>	<p>1. Construction of storage reservoir, detention tank, raising levees, digging of silted channels and dredging of sea mouth, slope protection etc. are generally executed for</p>	<p>1. For flood forecasting the department has established 56 standard rain gauge stations under Hydrology Project</p>

		<p>flood protection.</p> <p>2. The raising of the embankments, slope protection, channels excavation, mouth clearance to sea etc. works are also being carried out every year and before starting of the monsoon season.</p>	<p>(HP) and 34 non-HP stations. There are 12 Automated Rain Gauges, 44 Gauge Discharge sites, 12 water level recorder and 9 full climate stations also have been established in ten river basins of the state. Beside that 20 sedimentations laboratories, 11 water quality and sedimentation laboratories are also established on the basins.</p> <p>2. Round the clock (24x7) running flood cell disseminates the flood information to all the recipient bodies. The flood information is updated in the site <a href="http://www.dowrorissa.gov.in">http://www.dowrorissa.gov.in</a> every day during a period from 1<sup>st</sup> June to 31st October.</p>
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(Source: Departmental Disaster Management Plans of Animal Husbandry and Veterinary Services, Health & Family Welfare, MSME, Excise, Director of Factories & Boilers, ST&SC, Panchayati Raj and Drinking Water, W&CD, Works)

### **3.5 Long term strategic planning as per Sendai Framework for Disaster Risk Reduction (SFDRR) guidelines**

The Hyogo Framework for Action has provided a blue print for disaster risk reduction activities including promotion of culture of prevention, mitigation, preparedness and resilience at all levels. Since then, considerable progress has been made by investing resources and enhancing capacities in dealing with the disasters. However, much needs to be done in the future. The Sendai Framework for Disaster Risk Reduction 2015–2030 has provided with people-centered preventive approach to disaster risk. This would contribute

to the reduction of disaster risks and strengthen resilience of the poor and the most vulnerable. Mainstreaming disaster risk reduction in development programmes and community resilience building are some of the noteworthy features.

Recent events in India such as the landslides and floods of 2013 in Uttarakhand, cyclone ‘Phailin’ in Odisha in 2013, the floods and landslides in Jammu & Kashmir, cyclone ‘Hudhud’ in Andhra Pradesh in 2014, Typhoon ‘Haiyan’ in Philippines in 2014, Ludian and Yutian Earthquakes in China in 2014 have once again brought into focus the need for multiplying the efforts towards disaster risk reduction not only in India but also globally. The unplanned development of cities and lack of proper infrastructure are the major challenges of the future. While communities, exposed to these events, are trying to adapt to these conditions, the economic and social costs continue to mount. India has done a lot towards DRR system development with the passage of Disaster Management Act, Disaster Management Policy, establishment of Authorities at National, State and District levels, NIDM for capacity building and NDRF as a dedicated response force. NIDM also houses SDMC which caters to capacity building of stakeholders in South Asia region.

With the above statement in Third World Conference on DRR at Sendai, Japan in March 2015, Hon’ble Union Home Minister, Government of India has not only raised various issues faced by the country concerning DRR but also has highlighted the initiatives taken by India in the sphere of DRR. The Sendai Conference has agreed to achieve seven targets as indicated below. It was envisaged to develop indicators to achieve these targets by all Member States. The seven targets to be achieved are:

- Substantially reduce global disaster mortality by 2030, aiming to lower average per 100,000 global mortality between 2020-2030 compared to 2005-2015;
- Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 between 2020-2030 compared to 2005-2015;
- Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030;
- Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030;
- Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020;

- Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of this framework by 2030; and
- Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to the people by 2030.

In this context implementation of SFDRR in the State of Odisha requires long term planning. The SFA is a broad framework which provides 7 targets and 4 priorities area along with action points for each. To ensure that SFA's 4 priority areas and recommended action points are to be interpreted and contextualized in accordance with local realities and priorities of Odisha. The first draft of SFDRR Road Map for the State of Odisha has been prepared and now it is under the process of finalizations. 5 Regional level consultation were organized involving all the key stakeholders and their suggestions has been incorporated in the SFDRR Road Maps.

#### **Implementation of Sendai Frame Work in Odisha context**

Table: 3.2

<b>Sl No.</b>	<b>Priorities for Action</b>	<b>Activities to be done</b>
1.	<p><b>Understanding Disaster Risk:</b></p> <p>This priority encompasses all actions needed to ensure that policies and practices for disaster risk management are informed by an understanding of disaster risks in all its dimensions—vulnerability, capacity, exposure of persons and assets, hazard characteristics and the environment.</p>	<p>a) Creating Disaster Damage Data base at the Block and District level</p> <p>b) Building the knowledge of government officials, civil society, communities and volunteers, as well as the private sector. Organizing sensitization meetings and awareness programmes at the community level.</p> <p>c) Promoting the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery and rehabilitation, in formal and non-formal education,</p> <p>d) Enhancing collaboration among people at the local level to disseminate disaster risk information through the involvement of community-based organizations and non-governmental organizations.</p>

2	<p><b>Strengthening Disaster Risk Governance to manage disaster risk</b></p> <p>This priority builds on the guiding principle that governments have the primary responsibility of preventing and reducing risks. It encompasses all the actions necessary at different levels of governance (state, district, blocks/circles and local governance and institutions), including policies, plans, systems, mechanisms, capacity enhancement and coordination to manage disaster risks.</p>	<ul style="list-style-type: none"> <li>a) Strengthening local level resilience through enhanced role of local institutions (PRIs, ULBs) and communities in DRR.</li> <li>b) Urban local bodies and the Panchayats to follow building bye-laws.</li> <li>c) Effective system and procedure for quality monitoring and accountability.</li> <li>d) Identify flood prone/earthquake prone areas - future construction of buildings to be earthquake proof and flood resilient</li> </ul>
3	<p><b>Investing in Disaster Risk Reduction for Resilience</b></p> <p>This priority builds on the principal that addressing underlying disaster risk factors through disaster risk-informed public and private investments are more cost-effective than primary reliance on post-disaster response and recovery, and contribute to the sustainable development.</p>	<ul style="list-style-type: none"> <li>a) 10% of all funds at the District level must be devoted to schemes which will help in DRR</li> <li>b) Sensitize Private builders about the need for disaster resilient building construction.</li> <li>c) Train masons/contractors on disaster resilient building construction.</li> </ul>
4	<p><b>Enhancing Disaster Preparedness for effective Response</b></p> <p>This priority takes into consideration the facts that while we need to broaden disaster risk reduction actions from only preparedness and response, 1) there is still a lot to be done for strengthening preparedness for response, 2) creation of new risks necessitates preparedness for newer types of response and,3) recovery, rehabilitation and reconstruction processes offer actions needed to ensure same</p>	<ul style="list-style-type: none"> <li>a) Regular meetings of DDMA (once in 3 months) even if there is no calamity and discuss preparedness</li> <li>b) Meetings with the Forecasting Agencies like IMD during the monsoons</li> <li>c) Prepare Standard Drill for responding to Cyclone/Flood/Tsunami etc.</li> <li>d) Prepare for heat wave in summers and cold wave in winters as applicable.</li> <li>e) Conduct regular drills involving the Police, Civil Defence and Fire Services.</li> <li>f) Impart training to village level workers to promote disaster sensitivity.</li> </ul>

## **Chapter IV**

### **Mainstreaming Disaster Risk Reduction and Climate Change Adaptations in Development Planning**

#### **4.1 Mainstreaming DRR and CCA:**

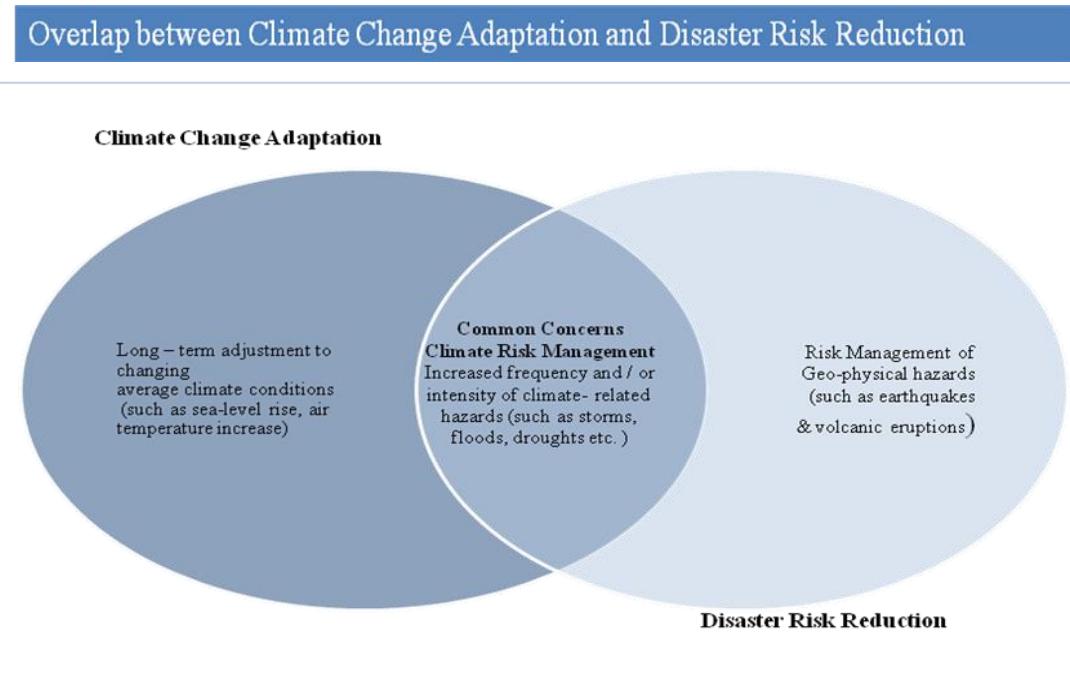
**“Disaster Risk Reduction (DRR)** is the concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events.”

**“Climate Change Adaptation (CCA)** is the adjustment in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities.”

#### **Link between DRR and CCA**

Devising appropriate policy for “Sustainable development” by factoring disaster risk concerns can help reduce disaster losses, protect existing development gains and avoid new risks. CCA and DRR, while not the same, have significant overlaps, including their need for mainstreaming into broader development. DRR and climate change mitigation and adaptation share common goals; both aim to reduce the vulnerability of communities and achieve sustainable development. While emphasis of DRR is on prevention, mitigation, preparedness and recovery from geological hazards such as earthquakes, landslides etc. as well as hydro-meteorological disasters such as floods, cyclones, CCA is mainly linked with hydro-meteorological disasters and aims at reducing vulnerability due to climate change/variability risk through adaptation to gradual changes in climate over a long period.

Figure:4.1



### **Mainstreaming DRR and CCA:**

Can be defined as “considering and addressing risks associated with disasters and climate change in all processes of policy-making, planning, budgeting, implementation, and monitoring.” This entails an analysis of how potential risks and vulnerability could affect the implementation of policies, programmes and projects. Concurrently, it also analyses how these, in turn, could have an impact on vulnerability to hazards. This analysis should lead on to the adoption of appropriate measures to reduce potential risks and vulnerability, where necessary, treating risk reduction and adaptation as an integral part of all programme management processes rather than as an end in itself.

Mainstreaming DRR involves incorporating disaster risk reduction into development policy and practice. It means radically expanding and enhancing disaster risk reduction so that it becomes normal practice, fully institutionalized within an agency’s relief and development agenda.

### **Mainstreaming has three purposes:**

- i. To make certain that all the development programmes and projects are designed with evident consideration for potential disaster risks and to resist hazard impact.

- ii. To make certain that all the development programmes and projects do not inadvertently increase vulnerability to disaster in all sectors: social, physical, economic and environment.
- iii. To make certain that all the disaster relief and rehabilitation programmes and projects are designed to contribute to developmental aims and to reduce future disaster risk.

**Procedure/ Methodology for Mainstreaming of DRR and CCA in Development Planning:**

**Project appraisal:** Consideration of disaster risk concerns as part of the project appraisal process is an essential step in:

- ensuring that development gains from individual projects are sustainable;
- ensuring that potential disaster risk reduction benefits of both dedicated risk reduction projects and other development projects are optimised; and
- highlighting related issues of responsibility and accountability.

Disaster risk concerns should be considered in all components of project appraisal analysis – financial, economic, environmental, social, institutional and technical – reflecting the fact that vulnerability to natural hazards is complex and multi-faceted and so needs to be viewed from all angles, incorporated into broader planning tools, such as logical framework analysis and results-based management frameworks, and reflected in the development of monitoring and evaluation indicators.

**Monitoring and evaluation of projects from DRR/CCA angle:**

The capacity to monitor and evaluate DRR initiatives, generate hard evidence on related inputs, outputs, results and impacts and learn lessons for the future is an essential component for mainstreaming. DRR initiatives can and should be monitored and evaluated. Problems relating, for instance, to potentially lengthy time lags in the realisation of benefits can be overcome to some extent by using leading or process indicators that provide a measure of progress towards the achievement of project objectives (e.g., the number of schools constructed to withstand earthquakes of a particular magnitude).

**Few key actions for mainstreaming of DRR and CCA in development planning**

- Adequate budget, dedicated staff, capacity development, a monitoring framework, and interdepartmental cooperation need to be in place for effective mainstreaming.
- More attention needs to be paid to the monitoring and measuring of mainstreaming. This should include an assessment of inclusion of gender issues and Below Poverty Line families in climate change planning.
- Risk diversification in the context of unpredictable climate patterns is necessary.

The options need to include effective programmes of contingency crop planning, crop diversification including the use of hazard resistant crops as well as promoting supplementary income generation from off-farm and non-farm activities.

- The main obstacle in the path of government departments being able to address climate change concerns is dedicated personnel. Officials need to be highly skilled and trained. Additional qualities that an official needs to have in order to function effectively include empathy and communication.
- Detailed procedures that list the precise steps that are to be implemented in case of an emergency and by whom need to be put into place. This will ensure that systems work irrespective of the calibre of the individual official in position at that time.
- Preparation for a disaster as well as risk reduction should be incorporated into school and college curricula. This step will ensure that citizens who are usually the first on the scene of a disaster are well-equipped to deal with emergencies and also reduce dependence on the NDRF and ODRAF.

Mainstreaming DRR into the developmental plans is an important mandate of the Disaster Management Act 2005. Integration of disaster risk reduction measures into ongoing flagship programmes is being used as an entry point for mainstreaming DRR in development plans. Steps for ensuring the incorporation of DRR into various ongoing programmes\plans are as follows:

- (a) Identification of key programme /projects.
- (b) Identification of entry points within the programme for integration of DRR (structural, nonstructural and other mitigation measures) at various levels viz. state, district and local levels

- (c) Close coordination with concerned departments such as State Planning Commission/ body and Finance Department for promoting DRR measures into development plans and policies
- (d) Allocation of dedicated budget for DRR within the departmental plans.
- (e) Preparation of guidelines for integration of disaster risk reduction measures into development plans of the department at the district and sub-district level.
- (f) Review & Incorporation of DRR provisions in the policies, rules & regulations

Some of the below mentioned flagship programmes could be used as an entry point for mainstreaming of DRR and CCA in development plans and the following steps may be undertaken.

***i. Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)***

The Scheme seeks to provide social protection for the most vulnerable, livelihood security for the poor through creation of durable assets, improved water security, soil conservation and higher land productivity, drought-proofing and flood management in rural India.

Utilization of MGNREGS funds to reduce the vulnerability of Panchayat against natural hazards such as floods, droughts, landslide etc. should be given priority. While identifying MGNREGS works, the hazard profile of the area should be taken into account. The plan for offering continuous employment opportunities in the event of disasters must be taken into account to ensure livelihood security in the event of disasters.

- Expand and strengthen drought proofing activities;
- Notify the areas within villages liable to threat/damage from natural hazards such as river incursion/erosion;
- Identify locations within the villages and prepare a list of appropriate works that could be undertaken to mitigate disaster and climate risks in the vulnerable locations as per HRVA;
- Prepare a list of work related to creation as well as strengthening of flood protection structures within the villages/Panchayat;
- Undertake works related to removal of river siltation.
- Undertake plantation works for preventing river erosion/incursion as well as landslide mitigation;
- Create structures to regulate flow of rainwater.

- Give priority to disaster mitigation works under the scheme which address hazards like flood, river erosion among others;
- Develop a checklist for the Gram Sabha on safe construction of various community assets/structures under the Scheme;
- Introduce mechanism of passing resolutions by Sarpanch in Gram Panchayat for disaster preparedness;
- Develop convergence strategy for DRR & CCA integration into programmes being implemented with the help of government as well as private funds;
- Undertake awareness for PRIs and community members on safe development;

***ii. Pradhan Mantri Awaas Yojana- Gramin***

PMAY- Gramin aims at providing pucca house, with basic amenities, to all houseless households and those households living in kutcha and dilapidated house, by 2022. The immediate objective is to cover 1.00 crore households living in kutcha house/dilapidated houses in three years from 2016-17 to 2018-2019

Inclusion of such measures like application of hazard resistant design in construction of PMAY (G) houses, appropriate sitting of PMAY (G) housing, development of model design for PMAY (G) houses, capacity building of rural masons on safe construction, capacity building of PRIs and community awareness are some of key actions to be taken under the Scheme.

- Design and popularize low cost multi- hazard resistant housing designs;
- Train masons and construction workers in multi- hazard-resistant construction practices;
- Demonstrate technology and designs for low-cost, eco-friendly and hazard resistant housing;
- Formulate a Panchayat level convergence plan and facilitate a joint platform for programmes pertaining to housing, water and sanitation, and rural roads, among others;
- Establish hubs that supply material required for green houses;
- Organize orientation programmes for beneficiaries/owners;
- Build capacity of Village/Panchayat level functionaries, PRI representatives, community- level resource persons;
- Put in place a mechanism to promote convergence of schemes for synergy and optimal utilization of resources;
- Motivate beneficiaries to put additional funds for incorporating hazard-resistant features;
- Develop and implement a strategy to create awareness about disaster risks and produce as well as disseminate appropriate IEC materials.
- Use the flexi fund to incorporate risk reduction features;
- Training of engineers and DRDA officials on safe rural housing;

***iii. Pradhan Mantri Gram Sadak Yojana (PMGSY)***

The Scheme seeks to connect villages by all weather roads by consolidating the rural road network. Roads are lifelines and must be functional in post disaster phase.

- Identify habitations that tend to get cut off during heavy rains as part of the village HRVA to prioritize build connecting roads to such habitations, with adequate safety measures.
- Villages that are vulnerable and lack road connectivity should be given preference over others;
- Give preference to establish road connectivity for critical facilities such as primary health centers (PHCs), schools and panchayat offices within the villages;
- Keeping in view the hazard proneness of the villages, roads construction under PMGSY must meet the technical specifications and geometric design standards given in the Rural Roads Manual of the Indian Roads Congress (IRC:SP20:2002) and the Hill Roads Manual (IRC:SP:48);
- Road design and surface for villages should consider soil type and rainfall as well as by the technical specifications laid down in the Rural Roads Manual (IRC:SP20:2002).
- Road for villages should be designed preferably as a cement road or with paved stones, besides being provided with appropriate side drains and cross drainage so that improper drainage does not damage the road or the dwelling units alongside;
- While approving road construction, additional provision should be made for hazards such as floods, landslides etc;
- Training of departmental officials and relevant stakeholders to ensure DRR integration while building rural roads under the programme;
- Village/Panchayat level functionaries, PRI representatives and community- level resource persons should be oriented on DRR
- Districts should formulate a plan at the block and GP level to bring convergence of the PMGSY with the MGNREGS and other schemes.

***iv. National Health Mission (NHM)***

The Mission seeks to attain universal access to equitable, affordable, and quality healthcare services, accountable and responsive to people's needs, with effective inter-sectoral convergent action to address the wider determinants of health.

Reaching health facilities in remote areas is a big challenge particularly in post disaster phase when infrastructure and connectivity would be down. Adequate capacity needs to be created at the local level.

- Undertake disaster mitigation measures for PHCs in the villages with focus on retrofitting, non-structural mitigation and medical emergency preparedness planning and training;
- Establish linkages with telemedicine to reach out to villages/households that are difficult to access;
- Ensure that all health facilities to be created in future are able to withstand disaster risks specific to their locations;
- Ensure training on structural safety for engineers and masons involved in execution of projects under the programme.
- Village Health Plan and the District Health plan should address the disaster risk reduction concerns in the vulnerable districts;
- Prepare Health Disaster Preparedness and Response Plan with focus on the training of PHC staff, ASHA Workers and ANMs;
- Formulate emergency response plan for health facilities being created under the programme;
- Prepare training module on disaster management for PHC staff, ASHA Workers, and ANMs;
- Impart training to PHC staff, community workers such as ASHA, ANMs and community members on first aid and emergency health response;
- Put in a mechanism for surveillance, detection and reporting outbreaks of diseases and issuing alerts and response tracking;
- Prepare IEC material showing the links between health aspects and DRR & CCA and create awareness among the community by dissemination of IEC material through community-level workers.

**v. *Samagra Shiksha Abhiyan (SSA)***

The Scheme seeks to attain Universal Elementary Education (UEE) in the country in a mission mode by ensuring that all children complete five years of primary schooling and eight years of elementary schooling of satisfactory quality.

Schools are key public assets and must be protected from known hazard risks as they play critical role in post-disaster phase. Assessment of structural and non-structural elements of schools buildings, undertaking vulnerability assessment and training & capacity building of school functionaries, parents, teachers, students and non-teaching staff etc. must be inculcated.

- Undertake disaster mitigation measures for schools in the villages with focus on retrofitting, non-structural mitigation and medical emergency preparedness planning and training;
- Undertake Structural & Non-structural Safety Audit of Schools and develop School Safety Plan
- Undertake structural and non-structural risk reduction/mitigation measures

- Undertake retrofitting of existing schools and provide for drinking water and sanitation.
- New school buildings to be constructed under the programme in future should ensure structural safety and demonstrate multi-hazard resistant design and construction to serve as a model for similar buildings in the area;
- Focus on the use of low cost and environment friendly construction material that is locally available;
- Designate school buildings for providing shelter during emergency situations. Ensure necessary facilities are built in to cater support to the evacuated.
- Give priority to seismic safety, the safety of boundary walls and furniture & fittings in the schools;
- Give emphasis on micro planning for school development at the village or village cluster level, with the formation of a core group comprising of teachers and parents, community leaders and NGOs;
- Undertake functional training of teachers and other stakeholders (PRI Members) involved in managing the school;
- Constitute Core Committee at village/panchayat level to oversee school safety and preparedness;
- Formulate and implement a School Disaster Management Plan and conduct preparedness drills;
- Prepare training modules on School Safety to train School Management Committee members, teachers and core committee members;
- Conduct specific trainings on school safety and management;
- Undertake training of children and school staff in basic first-aid, selected search and rescue methods;
- Organize rally and education programmes to raise awareness;
- Encourage student volunteers to participate in DRR activities;
- Undertake annual mock drill on fire, flood, and earthquake safety.

***vi. Rashtriya Krishi Vikas Yojana (RKVY)***

The Scheme seeks to incentivize the states to increase public investment in agriculture and allied sectors to ensure that local needs/crops/priorities are better reflected in the agricultural plans of states.

Agriculture is one of the key sectors affected by natural hazards which enhance vulnerabilities of farmers and often threaten their livelihood. Exposure to and losses resulting from climate induced disasters are increasing worldwide, affecting peoples' livelihoods and food security.

Preserving the natural resources and ecosystem against hazard risks and long-term climate variability would be key for rural communities. Uneven distribution of rainfall, occurrence of floods and dry spells, lack of infrastructure, difficulties associated with hilly terrains, poor economic status of farmers, very small land holdings, depletion of soil

nutrients, massive soil erosion due to high intensity rainfall events, lack of post harvesting facilities and marketing infrastructures are some of the challenges in villages.

Providing technological know-how to the farming community through agricultural extension services and educating farmers on soil and water conservation technologies and equipping them with knowledge and skills to deal with disaster and climate risk is the need of the hour. Undertaking skill up-gradation of farmers, generating awareness on hazards, establishing early warning mechanisms to gather information related to impeding floods, droughts or pest attacks etc. should be key interventions.

- Undertake construction of bunds along arable lands of villages to prevent river ingressions and soil erosion;
- Undertake locally appropriate solutions such as the construction of check dams/ minor irrigation tanks to regulate flow of rain water;
- Establishing storage and accessibility for quality/ hazard-resistant seeds; Undertake extension activities for training farmers;
- Set up mechanism for integrated pest management;
- Advise farmers on various agricultural issues free of cost in the local language.
- Impart training of farmers and for the creation of grain and seed banks;
- Create awareness about the likely impacts of climate change and adaptation measures;
- Involve community facilitators who can motivate farmers to use various technological innovations and appropriate practices;
- Strengthen market linkages to ensure remunerative prices to farmers;
- Establish a mechanism to track changes in weather patterns and their impact on agriculture, document and disseminate among farmers.
- Promote crop insurance for farmers.
- Establish a coordination mechanism with other departments that have an agricultural focus such as the irrigation department.
- Set up/ strengthen networks for transfer of knowhow from the laboratory to the field.
- A number of action research projects exploring varieties of flood and salinity – resistant seeds should be undertaken.

#### **vii. National Rural Drinking Water Programme (NRDWP)**

The Programme seeks to provide safe and adequate drinking water for all, at all times for drinking, cooking and other basic needs on a sustainable basis in rural India. Though water may be available, but quality of water could be an issue during post disaster phase.

- All drinking water facilities coming up under the programme should be hazard resistant.
- Safety of drinking water facilities and their operability in the event of disasters (for example; erection of hand pumps/ bore wells at the height above the highest

flood level) should be made a key consideration for appraisal of the proposals under the programme.

- Identify terrains that are vulnerable to flooding or drought or pose special challenges such as high fluoride content and develop appropriate solutions and designs.
- Identify areas with acute water scarcity on a regular basis or on a seasonal basis and design immediate as well as permanent solutions.
- Design and promote appropriate water conservation practices in locations facing an acute water scarcity.
- Ensure the use of appropriate technology to count, track and monitor the drinking water facilities created under the programme
- Assess drinking water challenges during disasters for the villages and provide solutions;
- Establish low-cost water treatment plants at the GP level;
- Create reliable drinking water facilities under the programme;
- Take measures to ensure sustainability of the water supply infrastructure;
- Take actions in convergence with sanitation programmes;
- Involve NGOs, CSOs and ASHA workers for addressing challenges of drinking water in post disaster phase.

#### ***viii. Swachh Bharat Mission (SBA)***

The Scheme seeks to accomplish the vision of clean India by 2019 by eliminating open defecation and changing people's attitudes to sanitation and create awareness.

- 1) Based on the sanitation and hygiene practices of the villages/panchayat, organize the orientation of key personnel
- 2) Prepare a village/Gram Panchayat Plan and IEC activities under the scheme;
- 3) Design and promote toilet models and sanitation infrastructure suited to local geo-climatic conditions;
- 4) Provide proper sanitation facilities in schools and community centers;
- 5) Encourage cost-effective and appropriate technologies for ecologically sustainable sanitation;
- 6) Develop community-managed solid and liquid waste management for overall cleanliness in villages;
- 7) Involve community-level staff such as teachers, ASHA and Anganwadi workers to motivate the community to adopt sanitation facilities;
- 8) Motivate PRIs and communities to provide sustainable sanitation facilities through awareness creation and health education;
- 9) Undertake capacity building of field-level staff including school teachers, ASHA and Anganwadi workers, NGOs and Community-based Organizations (CBOs) connected with toilet construction.
- 10) Develop appropriate sanitation strategies for disaster situations and include this in the Village/Gram Panchayat Disaster Management Plan.

#### **4.1.1. GOI- UNDP Project on Enhancing Institutional and Community Resilience to Disasters and Climate Change (2013- 2017):**

The GOI- UNDP project on “Enhancing Institutional and Community Resilience to Disasters and Climate Change (2013-2017)” aims to build capacities at different level to integrate disaster risk reduction concerns and climate change adaptation measures in development activities. In Odisha, the project is being implemented in 3 targeted districts viz. Puri, Ganjam and Kendrapada and two cities; Bhubaneswar and Cuttack.

Under the community resilience component of the project, which covers around 1000 villages in three project districts, training programmes are being organised for members of PRIs and CSMMCs & FSMMCs to make them understand CCA and DRR concerns at the local level and to equip them with knowledge and skills for assessing, delineating strategies and delivering their roles in relation to the risk mitigation/prevention and implementation of effective response to extreme events. So far 550 participants from 119 Gram Panchayats and 210 Cyclone/ Flood shelters of the project districts have been trained on mainstreaming DRR and CCA in local level planning and development programmes.

Training workshops are also being organized for members of District Planning Committees (DPCs) and other officials of the district administration on Mainstreaming DRR and CCA into district level planning. The objectives of these workshops are to orient the members of District Planning Committees (DPCs) and other officials of the district administration on concept, practices and procedure for mainstreaming DRR and CCA into developmental planning. During 2016, training programmes at DPMU level of all the three projects districts have been completed and draft action plans has been developed for sectors like agriculture, livelihood, water & sanitation, housing and infrastructure.

The project through its several activities created a sense of understanding and acceptance for Climate Change Adaptation as well as mainstreaming of DRR among the decision makers. The plan is to replicate the experiences gained from the programme throughout the state in coming years.

**4.2 Do No Harm Approach:** It indicates strategies and programmes to build disaster and climate resilience incorporating assessment of potential negative

impacts, including effects on the environment. In cases where potential harm is identified, measures to substantially reduce or remove them should be built into the strategy and program design. To avoid creating a false sense of security, or promoting mal-adaptation, programs should always be based on a multi-hazard, multi-effect assessment.

The mitigation projects taken up in the state for building resilience are guided by Do No Harm Approach. Steps are being taken to ensure that all programmes with a potential for causing a negative impact on the environment are properly assessed prior to implementation or, if they already exist, that they are screened for any negative environmental impacts. There is active consideration for the environmental impacts of all post-disaster reconstruction. “Building back better” means ensuring that responses do not negatively impact the environment and natural resources upon which people depend.

**Reducing vulnerability, strengthening resilience:** Consider the potential impacts of interventions on social dynamics and give preference to the interventions that effectively meet current needs and build longer term resilience.

**Disaster preparedness:** Consider the potential impacts of interventions on local communities’ increased dependence on external support.

**Disaster response:** Provide relief assistance in a way that helps meet the immediate needs of affected people and, at the same time, build their longer-term resilience to future disasters.

**Recovery:** Ensure that recovery programming does no harm either socially, economically or environmentally. Analyse proposed interventions in terms of their potential impact on disaster and climate change risk (current and future) and to make the results available to affected and at-risk populations.

### **4.3 The Legal Context:**

The statutory provisions of the Disaster Management Act, 2005 for mainstreaming Disaster Risk Reduction (DRR) are mentioned below.

- i. Section 18 (2) (d) provides that the SDMA may lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore;

- ii. Section 18 (2) (g) provides that the SDMA may review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein;
- iii. Section 23 (4) (c) provides that the State Plan shall include the manner in which the mitigation measures shall be integrated with the development plans and projects;
- iv. Section 30 (2) (viii) provides that the DDMA may lay down guidelines to be followed by the Departments of the Government at the district level for purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore;
- v. Section 30 (2) (xxii) provides that the DDMA may review development plans prepared by the Departments of the Government at the district level, statutory authorities or local authorities with a view to make necessary provisions therein for prevention of disaster or mitigation;
- vi. Section 35 (2) (b) provides that the Central Government may ensure the integration of measures for prevention of disasters and mitigation by Ministries or Departments of the Government of India into their development plan and projects;
- vii. Section 36 (b) provides that every Ministry/ Department of Government of India shall integrate into its development plans and projects, the measures for prevention or mitigation of disasters in accordance with the guidelines laid down by the National Authority;
- viii. Section 38 (2) (e) provides that the State Government may ensure integration of measures for prevention of disaster or mitigation by the departments of the Government of the State in their development plans and projects;
- ix. Section 38 (2) (f) provides that the State Government may integrate in the state development plan, measures to reduce or mitigate the vulnerability of different parts of the State to different disasters;
- x. Section 39 (b) provides that it shall be the responsibility of every department of the Government of a State to integrate into its development plans and projects, the measures for prevention of disaster and mitigation;
- xi. Section 39 (e) provides that it shall be the responsibility of every department of the Government of a State to review the enactments administered by it, its policies, rules and regulations with a view to incorporate therein the provisions necessary for prevention of disasters, mitigation or preparedness;
- xii. Section 40 (1) (a) (iii) mandates every Department of the State Government to prepare a disaster management plan which shall lay down the integration of

strategies for the prevention of disaster or the mitigation of its effects or both with the development plan and programmes by the department;

## **4.4 Financial Provisions:**

### **4.4.1 Flexi- Funds as a part of Centrally Sponsored Schemes (CSS):**

The Flexi- Funds component within Centrally Sponsored Schemes was first introduced in 2014 by the Ministry of Finance vides its O.M. No. 55(5)/PF-II/2011 dated 06.01.2014 to insist concerned Central Ministries to keep at least 10% of their Plan budget for each CSS as flexi- funds. In the year 2016, as per the instructions of NITI Aayog, Government of India vides its O.M. dated 06. 09.2016 have raised the flexi-funds available in each CSS to **25 %** of the overall annual allocation under each scheme. This will be applicable for Centrally Sponsored Schemes, except those which emanate from a legislation (e.g. MGNREGA), or, schemes where the whole or a substantial proportion of the budgetary allocation is flexible (e.g. RKVY, Border Area Development Program, Shyama Prasad Mukherjee Rurban Mission etc).

The flexi –funds component within the Centrally Sponsored Schemes can be used to achieve the following objectives:

- (i) To provide flexibility to States to meet local needs and requirements within the overall objective of any given scheme at the sub-head level;
- (ii) To pilot innovations to improve efficiency within the overall objective of any given Scheme at sub-head level;
- (iii) **To undertake mitigation /restoration activities in case of natural calamities** or to satisfy local requirements in areas affected by internal security disturbances.

The flexi- fund guidelines have already been circulated to all departments vide Government of Odisha, Finance Department Letter No. **26221 dated 26.09.2016**. As per the mandates of the original guidelines of 2014 the Planning & Convergence Department of the State Government have already constituted a **State Level Sanctioning Committee (S.L.S.C.)** vide Resolution No. 2057/P dated 14.02.2014 for sanction of projects under the Flexi-Funds Component of Centrally Sponsored Schemes (CSSs). The composition of the S.L.S.C. is as follows:

- |   |                     |
|---|---------------------|
| i. Development Commissioner-cum-Addl. Chief Secretary                             | - Chair Person      |
| ii Principal Secretary/ Commissioner-cum-Secretary of concerned Department        | - Member            |
| iii Special Secretary, Planning & Convergence Department                          | - Member            |
| iv Representative of Finance Department, Government of Odisha                     | - Member            |
| v Representative of concerned Ministry of Government of India                     | - Member            |
| vi Representative of Planning Commission, Government of India                     | - Member            |
| vii Director, (DF & C) - cum- Addl. Secretary, Planning & Convergence Department. | - Member- Secretary |

At present there are 66 Centrally Sponsored Schemes (CSSs) rationalized into 28 Umbrella Schemes. The departments of the State Government implementing CSS(s) as specified by the O.M. can utilize flexi-funds for taking up necessary mitigation /restoration activities in the event of natural calamity, where these are in line with the overall aim and objectives of the approved Scheme.

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## **Chapter – V**

## **Preparedness Measures**

### **5.1 Context:**

Preparedness is the knowledge-induced and capacitated pre-emergency measures developed to anticipate, forecast, effectively respond and recover from any unavoidable emergency situations. May it be the four priorities of the Sendai Framework for DRR or be the 17 Sustainable Development Goals or 10 points agenda for Disaster Risk Reduction of the Hon'ble Prime Minister of India declared in the Asian Ministerial Conference for Disaster Risk Reduction (AMCDRR), all emphasizes preparedness. Preparedness enabling activities like planning, awareness, education, exercises, regular testing of warning systems and plans for evacuation backed with clear-cut guidelines, allocation of responsibilities & budgetary provisions improves the response mechanism to a disaster in terms of timely and effective rescue and relief operations.

#### **5.1.1 Legal Context** (Provisions of the DM Act 2005):

- Section 39(a) mandates the Departments / Ministries of State Government to prepare disaster management plans keeping mitigation, preparedness and response elements into consideration.
- Sections 22(2)(f), mandates the State Executive Committee (SEC) to evaluate the preparedness at all level & give directions to enhance preparedness in the state.
- Section 24 indicates role of State Executive Committee in protecting & assisting the community in preventing or combating any threatening disaster.
- Section 30 (2) (IV) defines the role of District Disaster Management Authorities (DDMA) in the field of prevention, mitigation & preparedness for any threatening disaster.

- Section 34 postulates preparedness of the DDMA for the purpose of assisting, protecting or providing relief to the community, in response to any threatening disaster.

## **5.2 Institutional Framework**

Chapter-III provides an overview of the institutional arrangements covering all aspects of disaster management. Here is a brief of the institutions having key role for disaster Management in the State.

- Revenue & Disaster Management Department
- State Level Committee on Natural Calamities (SLCNC)
- Special Relief Organization (SRO)
- Odisha State Disaster Management Authority (OSDMA)
- Odisha Disaster Rapid Action Force (ODRAF)
- District Disaster Management Authority (DDMA)
- District Level Committee on Natural Calamities (DLCNC)
- Cyclone Shelter Management & Maintenance Committee (CSMMC) & Flood Shelter Management & Maintenance Committee (FSMMC)
- Fire & Emergency Services
- Civil Defence, Red Cross Volunteers etc.
- National Disaster Response Force (NDRF)
- Armed Forces

## **5.3 Protocol for Early Warning.**

State Emergency Operation Centre (SEOC) remains functional, 24x7, round the year in the office of the Special Relief Commissioner at Rajiv Bhavan, Unit-V, Bhubaneswar-751001. This acts as the nerve centre for coordination, centralized early warning dissemination for any emergency situation or disasters at the state level. SEOC works in close coordination with the National Emergency Operation Centre (NEOC) at the national level. Different national level agencies identified for addressing different types of disasters as are follows:

**GOI designated agencies**

Table- 5.1

<b>Sl.</b>	<b>Hazard</b>	<b>Agencies</b>
1	Avalanches	Snow and Avalanche Study Establishment (SASE)

2	Cyclone	India Meteorological Department (IMD)
3	Drought	Ministry of Agriculture and Farmers' Welfare (MoAFW)
4	Earthquake	India Meteorological Department (IMD)
5	Epidemics	Ministry of Health and Family Welfare (MoHFW)
6	Floods	Central Water Commission (CWC)
7	Landslides	Geological Survey of India (GSI)
8	Tsunami	Indian National Centre for Ocean Information Services (INCOIS)

(Source: National Disaster Management Plan-2016)

### **5.3.1 Early Warning:**

#### **Standard Operating Procedure (SOP)**

##### **Early Warning:**

- Early warning for natural disasters to be given by Revenue and DM Department through SEOC.
- Every mode of communication is to be utilized to make the early warnings. Radio, Television, Newspapers, Sirens, Public Address Systems, even beating the drums should be utilized to warn the public. Prerecorded messages may be utilized for the purpose.
- Public Address Systems mounted on a vehicle, vehicles—jeep, medium vehicles, tractors, motorcycles, three wheelers cycles are to be used. Even drums, megaphone may be used to alert public.
- Weekly markets can be utilized to give wide publicity for early warning.
- DEOC and other line department offices to ensure necessary support for vehicle, public address system and logistic if required for effective early warning.

##### **Early Warning: Timings**

- The principle followed should be “sooner the better”.
- No time would be wasted in drafting the message to be announced to the public.
- 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 should be made on a continued basis.

**Early Warning: Message**

- Early warning must be clear and specific regarding the threat of the disaster, type of disaster, probable time of disaster strike, severity etc.
- 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.
- Early warning also instructs public regarding their future plan of action.
- Talk to people as much as possible and convince them not to underestimate the disaster.
- Take the help of revenue officials, local NGOs, NCC, teachers, local public representatives to give wide publicity regarding necessary precautions.

**Early Warning: Coverage**

- Early warning should reach every area and to each individual.
- If required, services of field level offices of Government e.g. police stations, outposts and RI offices may be taken for giving early warning in their respective jurisdiction areas.
- Specific care must be taken to warn remote and inaccessible areas and more vulnerable pockets.
- Home Guards, Gramrakhis, must be briefed to disseminate the warning with immediate effect.

**Early Warning: Monitoring**

- The supervision of the early warning is carried out by the EOCs at different levels.
- Collector may send officers from the district headquarters to supervise the early warning along with public address system.
- Local officers to ensure proper early warning is disseminated to each and every corner and to each and every individual.
- District Headquarters to collect time to time information from blocks and other sources 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.
- The supervising officers are instructed to remain well informed about the impounding disaster.

## **5.4 Disaster Management Planning:**

Disaster Management Act 2005 emphasizes planning for disaster management at different levels. Further, Priority I & II of the Sendai Framework for Disaster Risk Reduction (SFDRR) i.e. “Understanding Disaster Risk” & “Strengthening Disaster Risk Governance” also suggests about well laid planning for implementation.

### **5.4.1 Strengthening State Disaster Management Authority (SDMA) & District Disaster Management Authority (DDMA):**

Odisha State Disaster Management Authority (OSDMA), since its creation in 1999 has been spearheading the planning, preparedness & prevention in the state. It has been bestowed with the responsibility of strengthening State, Districts & Departments in disaster management. However, with a view to further strengthening the State & District Disaster Management Authorities, State Project Officers have been placed in OSDMA & District Project Officers at the district level to carry out the following activities.

- Implementation of the provisions of the DM Act with regards to functioning of SDMA & DDMA
- Hazard, Risk and Vulnerability Assessment study of different parts of the state;
- Preparation, updation & review of State Disaster Management Plan (SDMP) in state as per NDMA guidelines.
- Facilitate the departments for preparation of their disaster management plans as per the Disaster Management Act and NDMA/ SDMA guidelines;
- Facilitate the review & updation of the District Disaster Management Plans and such plans at different levels;
- Coordinate with various organizations for conducting mock drills at different levels;

- Carry out different disaster management activities and programme for disaster risk reduction;

#### **5.4.1.1 Disaster Management Plan**

As per the section 11, 23, 31 & 40 of the Disaster Management Act 2005, disaster management plans have been prepared at different levels e.g. State, Department, District, Block /ULBs & Village. The details of plans for the financial year 2019-20 are as follows.

- State Disaster Management Plan for the whole state.
- District Disaster Management Plan of all the 30 districts.
- Village Disaster Management Plans for 10,000 most vulnerable villages of the state.
- City Disaster Management Plan for major cities of the state.

The disaster management plan templates have been standardized for the Departments and Districts with the following unique features.

- Efforts have been put in to make the plans more usable rather than an advisory or reference document.
- Standard templates for Departmental & District Disaster Management Plan have been devised.
- The District Disaster Management Plans with two volumes (Volume – I: main document & the Volume- II: reference document containing complete database of the district) have been made more comprehensive & user friendly.

### **5.5 Community Based Disaster Management (CBDM):**

Community, being the first to take on & respond to a disaster, is the prime unit of Disaster Management. Disaster management has been dealt by the central & state Govt. directly for a long period of time. However, with the change of time & enactment of DM Act 2005 & enforcement of DM policy 2009 as well as the international intervention, the involvement of community in the field of disaster management has been proclaimed. Some of the important proclamations towards community based disaster management are as follows.

- Section 41 of the DM Act 2005 emphasizes on the importance of Community Level Disaster Management.
- Section 5.3.1 & 5.3.2 of the DM Policy 2009 indicates the Community Based Preparedness.
- Sections 18 (d) of SFDRR 2015 -2030 aims at “substantial increase in the number of countries with national and local disaster risk reduction strategies by 2020”.

### **5.5.1 Community Preparedness in the State:**

In order to reduce the vulnerabilities in communities the Community Based Disaster Preparedness (CBDP) programme was implemented from 2002 to 2009 in 16 coastal districts with the support of the Government of India (Ministry of Home Affairs) and the United Nations Development Programme (UNDP) with a goal of “Sustainable Disaster Risk Reduction of communities in the most hazard-prone districts”. The programme components included

- Development of Disaster Management Plans at district, block, gram panchayat & village level
- Constitution of Disaster Management teams & committees at all levels with adequate representation of women in all committees.

**Community Based Disaster Preparedness**

Table 5.2

<b>Sl. No</b>	<b>Name of District</b>	<b>ULBs Programmed</b>	<b>Blocks Programmed</b>	<b>GPs Programmed</b>	<b>Villages Programmed</b>
1	Angul	3	8	209	1637
2	Balasore	4	12	289	2647
3	Bhadrak	2	7	193	1248
4	Cuttack	3	14	342	1844
5	Ganjam	13	13	292	1423
6	Jagatsinghpur	2	8	198	1232
7	Jajpur	2	10	280	1572
8	Kendrapara	2	9	230	1405
9	Keonjhar	4	3	68	496
10	Khordha	4	10	168	1527
11	Koraput	4	14	226	1915
12	Mayurbhanj	2	11	57	225
13	Nuapada	2	5	109	638
14	Puri	4	11	230	1589
15	Rayagada	3	11	171	2540
16	Sambalpur	4	9	148	1325

Total	58	155	3210	23263
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(Source: OSDMA website, DRM Programme)

### **5.5.1.1 Multipurpose Cyclone & Flood Shelters: resilient hubs for community**

879 shelter buildings are being constructed in 25 cyclone & flood prone districts. In addition to this, 65 MCS have been constructed by Indian Red Cross Society, Odisha State Branch in different cyclone prone villages. All the shelter buildings are stilted structures with sanitation facilities, separate halls for men and women. Both ramp & staircase have been provided for easy access to physically-challenged persons to the first floor during any emergency.

About 32 types of emergency equipment are provided to the cyclone and flood shelters. The equipment includes noise-less diesel generator set, inflatable tower light, power saws, search & rescue equipment, foldable stretcher, florescent jackets, life jackets, life buoy, First Aid kit, siren, mega phone, free kitchen utensils etc.

50 Taskforce volunteers, both male and female in the age group of 18 to 35 from each shelter are being trained for 11 days on Search & Rescue, First Aid and Operation & Maintenance of the equipment by master trainers from Civil Defense, St. John Ambulance, ODRAF personnel & District level Trainers. The training on effective Shelter Management to CSMMC/FSMMC members, training on Record Keeping & Standard Shelter Equipment Operational Skills are also provided.

In addition, five thousand seven hundred fifty-eight (5758) primary schools & 1152 high school buildings have been constructed with assistance from PMNRF, CMRF, MPLAD, NFCR, OBB, other State Governments & NGOs. 3132 primary school buildings have been constructed & handed over under DFID scheme. These school buildings will also be used as cyclone/flood shelters in emergency.

## **5.6 The Response Force**

### **5.6.1. Trained volunteers & Response force.**

Foreseeing the requirement of volunteers, & trained personnel at time of emergency, steps have been taken towards creating skilled force by imparting training to village volunteers & college students on disaster management. Here is a brief description of the volunteers trained on disaster management in the year 2016-17

**Trained Volunteers (Table 5.3)**

<b>Sl No</b>	<b>Target Group</b>	<b>Training (In Nos.)</b>	<b>Coverage (In Nos.)</b>
1	Student of Schools & Colleges, YRC, NSS volunteers & NCC on Disaster Preparedness & Survival	13	2700
2	Members CSMMC/FSMMC on Shelter Management	324	16200
3	CSMMC/FSMMC Task Force Volunteers on Search & Rescue & First Aid	5	250
4	Orientation of District level Officers on Preparation of District D.M. Plan.	3	81
5	Mason Training on Construction of Disaster Resilient Houses	61	2642
6	Govt. Officials, Response Forces, NGOs and other stakeholders on different aspects of Disaster Management	28	714
7	Civil Defence Volunteers on Relief Line Clearance & Tsunami	2	66
8	Aapda Mitra volunteers in Jagatsinghpur & Puri Districts	16	400
9	Training of community Volunteers of Gajapati on disasters response	03	92
10	Training to YRC & JRC counsellors on Disaster Management & Disaster Survival skills	04	115
	<b>TOTAL</b>	<b>459</b>	<b>23260</b>

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

ODRAF has emerged as a formidable opponent of disasters. The highly trained manpower of the ODRAF is capable of handling multifarious disasters. The Odisha Disaster Rapid Action Force (ODRAF) units have been carved out of the Odisha Special Armed Police (OSAP), Armed Police Reserve (APR) and India Reserve Battalions (IRB) & Special India Reserve Battalion (SIRB). The personnel of ODRAF are provided with comprehensive training in saving human lives and reaching out to the helpless population affected by disasters. At present, 20 ODRAF units are operating in the State.

The effectiveness of managing disaster depends on skilled manpower equipped with modern technology based equipment. The knowledge & skill of

ODRAF is refreshed, upgraded & assessed at a regular interval through various capacity building activities, outdoor drills & skill matrix respectively (Details are in chapter- VII). The modus operandi developed for strengthening the ODRAF will continue to carry the initiative on a sustainable basis. Similarly, the equipment's are tested in mock exercises, demonstrations & training programmes in order to ensure their functionality. The equipment, infrastructure, running cost, training & capacity building and maintenance are taken care of by OSDMA. The funding of the ODRAF is from the SDRF & State Budget. The list of standardized equipment designated for each ODRAF unit in the state is as follows.

**List of equipment for ODRAF units (Table 5.4)**

<b>Sl</b>	<b>Category</b>	<b>Equipment</b>	<b>Qty. Per unit</b>
1	<b>1. Flood Rescue Operation</b>	Life Jackets (Standard)	100 nos.
2		Life Jackets (Working)	50 nos.
3		Life Buoy (Ring)	30 nos.
4		3strand 14mm PP Rope for mooring (35 mtrs)	10 nos.
5		Inflatable Rubber Boat (10 men) accessories	10 sets
6		Out Board Motor (2 stroke) with accessories	10 sets
7		Air Pressure Provider	10 sets
8		Repairing kit for Boat	10 sets
9		Repairing kit for OBM	10 sets
10		Mini Fire Extinguisher for flammable Liquid	10 nos.
11		Blower for Inflation & Deflation	10 nos.
12		Stand for OBM	5 nos.
13		OBM carrier	10 nos.
14		SCUBA sets with communication & BCD & accessories for under water salvage Ops	3 set
15		HP Compressor for SCUBA & SCUBA	3 set
16	<b>2. Collapsed Structure Search &amp; Rescue</b>	CSSR Tools, Equipment & accessories	1 set
17		Concrete Cutter	5 nos.
18		Hydraulic Power Shore Unit	2 nos.
19		Self-contained Breathing Apparatus	8 nos.
20		Branch Cutting Saw (Electric)	5 nos.
21		Mountaineering Equipment	5 set

22	<b>3. Relief Line</b>	Telescopic Aluminum Ladder (40 ft)	5 nos.
23		30ft Extension Ladder	5 nos.
24		Rope Ladder	5 nos.
25		4.5kg CO2 Fire Extinguisher	8 nos.
26		Forceable entry tools	5 sets
27		Lifting Bags	2 set
28		Rope Deployment System	2 nos.
29	<b>4. Vehicle &amp; Machinery</b>	Chain Saw (one man operated)	20 set
30		Chain Saw (two man operated) with power pack	5 set
31		Lifting/ Pulling Machine/Come along	5 set
32		Hydraulic Combitools with power pack	1 set
33		Hydraulic Spreader with power pack	1 set
34		Hydraulic Cutter with power pack	1 set
35		Gas Cutting equipment sets	1 set
36		Bullet Chain Saw	10 nos.
37		Log carrier	10 nos.
38		Rope Nylon	300 Kg
39		Sisal Rope 12mm/24mm	300 Kg
40		Fire Axe	20 nos.
41		Axe	20 nos.
42		Crow Bar	20 nos.
43		Pick Axe	20 nos.
44	<b>5. MFR</b>	Spade	20 nos.
45		Traffic Cone	30 nos.
46		TATA Truck 12 ton capacity	2 nos.
47		TATA Truck 6 ton capacity (Troop Carrier)	2 nos.
48		Recovery Van/Wreckage Crane (Reputed Firm)	1 no
49		Backhoe Loader cum Excavator(Reputed Firm)	1 no
50	<b>5. MFR</b>	Medical First Responder Kit (25 man)	5 kit
51		Medical First Responder Kit (50 man)	1 kit
52		Folding Standard Stretcher	5 nos.
53		Spine Board Long with Strap	5 nos.
54		Spine Board short with Strap	5 nos.

55	<b>6. Communication</b>	Blanket	10 nos.
56		Computers & Multifunctional Printers	1 set
57		Hand held Megaphones	10 nos.
58		Walki talkies with Spare Battery & charger	15 nos.
59		Camera with recording provision	5 nos.
60		GPS	5 nos.
61		Satellite phone	2 nos.
62		HAM Radio	1 set
63		Mobile phone	2 nos.
64		Land Line Phone	1 no
65		Fax Line	1 no
66		E-mail ID with internet connection	
67	<b>7. Maintenance</b>	Air Compressor with Tire Inflator	1 set
68		Reciprocating Pump-cum-Vehicle Washer	1 No
69		Battery Charger	2 nos.
70		Chain sharpener	2 nos.
71		Small Tools	5 set
72	<b>8. Operational Support equipment</b>	Temporary Shelter (Flexi Tent) for six man	5 set
73		U.V Treated Polypropylene Tarpaulin	20 nos.
74		Cooking Utensil	2 set
75		G.I.Truck	20 nos.
76		Inflatable Tower Lighting system	10 nos.
77		LED High Beam Search Light	20 nos.
78		3 KVA Diesel Generators set with all accessories	3 set
79		Extension Cord and Board	5 set
80		Range Umbrella	5 nos.
81		Camp Items Folding Table & Tools	2set
82		Office Furniture	1 set

(Source: Mechanical Section OSDMA))

### **Requisition & Deployment of ODRAF**

For deployment of ODRAF unit, the Collector & District Magistrate files requisition with the Special Relief Commissioner/ Managing Director, OSDMA/ SEOC. However, telephonic requests are received by the State

Emergency Operation Centre/ identified officer in OSDMA to mobilize the ODRAF teams without delay.

ODRAF units are uniformed service borne in the police administration. They require a command from the competent authority for movement. The Addl. DG of Police (Law & Order) who is the apex authority in the State for movement of ODRAF is generally requested by the Special Relief Commissioner/ Managing Director of OSDMA for issue of deployment orders, which are non-negotiable. However, telephonic information for deployment of ODRAF is passed on simultaneously to the Commandants of the ODRAF units along with message to ADG of Police (Law & Order).

Since various types of state of the art mechanised and hydraulic equipment are used by ODRAF, the same are kept in fighting-fit conditions always. To reduce the complexities of repairing and maintaining the equipment, most of the equipment are under annual maintenance contract with the manufacturer/ supplier. The fast-moving spares are kept ready to replace the defective ones without delay. The critical equipment like OBM<sup>s</sup> are kept on standby so that the relief operations during floods will not be hampered by downed machines.

During large scale emergency operations in high intensity flood/ cyclonic situation in a geographically contiguous region, for operational ease and movement of men and machines, GATEWAY ODRAF is set up in the nearest ODRAF unit or any other suitable location for making camp arrangement where men and material resources of different ODRAF units are gathered and kept under the operational command of a single officer. The technical officers of OSDMA and maintenance staff of the AMC holders are stationed at the GATEWAY ODRAF.

## **5.7 Techno Legal Regime:**

Past disasters, that caused widespread damage resulting in loss of lives and properties, have exposed the vulnerability of our State. This has ultimately indicated requirement of a well laid techno legal regime to enhance the resistance of the infrastructure to withstand multi level disasters which in turn will minimize the loss of lives as well as property in the state. This needs to be binding on the functionaries of the state Govt. to ensure the effectiveness of

techno-legal and techno-financial provisions. It is the responsibility of all stakeholders concerned, to implement, monitor & verify these provisions at different levels.

Adoption of best management practices like self-certification, social audit, and an external compliance regime including audit by professional agencies, need to be encouraged in consultation with various stakeholders and knowledge institutions for adoption after due trial and validation. After having put the techno-legal and compliance system, enforcement of the same must be ensured by establishing an effective mechanism, under the provisions of the act. A list of disaster specific Acts, Rules and Regulations that can be brought under the concept of techno legal regime are enlisted below.

**I. General**

1. The Civil Defense Act, 1968.
2. Disaster Management Act, 2005.
3. Food safety and standards act 2006
4. The disaster management (National Disaster Response Force) rules, 2008

**II. Flood, dam burst, tsunami and cyclone, cloud burst**

1. Dam safety bill 2010
2. Coastal regulation zone notification 2011
3. The water (prevention and control of pollution) act, 1974
4. The water (prevention and control of pollution) rules, 1975

**III. Lightning**

1. Indian standard protection of buildings and allied structures against lightning code of practice 1991

**IV. Earthquake, snow avalanches/ landslide**

1. Indian standards on earthquake engineering
2. Model town and country planning act 1960
3. Model building by- laws 2004
4. National building code of India 2005

**V. Drought**

1. Manual for Drought Management 2016

**VI. Fire & Explosive**

1. The boilers act, 1923

2. The cinematograph film rule 1948
3. Oilfields (regulation and development) act, 1948
4. The cinematograph act, 1952
5. The inflammable substances act, 1952
6. The mines act, 1952
7. India electricity rules, 1956
8. The coal mines regulations, 1957
9. The coal mines (conservation and development) act, 1974
10. The mines rescue rules, 1985
11. Indian electricity act 2003
12. The mines and minerals (development & regulation) act, 2010
13. The oil mines regulations, 2011
14. The explosives act, 1884
15. The explosive substances act, 1908(amendment act of 2001)
16. Petroleum act, 1934
17. The atomic energy act 1962
18. The static and mobile pressure vessels (unfired) rules 1981

## **VII. Chemical/ industrial/ nuclear**

1. The factories act, 1948 as amended by the factories (amendment) act, 1987.
2. Public liability insurance act, 1991
3. The public liability insurance rules, 1991
4. Atomic energy (working of the mines, minerals and handling of prescribed substances) rules, 1984
5. Hazardous wastes (management and handling) rules, 1989
6. The gas cylinder rules 2004
7. The petroleum and natural gas regulatory board act, 2006
8. The explosives rules, 2008
9. Hazardous wastes (management, handling and trans boundary movement) rules, 2008.
10. Atomic energy (safe disposal of radioactive wastes) rules, 1987. 2. The Bhopal gas leak disaster (processing of claims) act, 1985
11. Calcium carbide rules, 1987

12. The manufacture, storage and import of hazardous chemical rules, 1989
13. Chemical accidents (emergency planning, preparedness, and response) rules, 1996
14. The major accident hazard control rules, 1997
15. Dumping and disposal of fly ash discharged from coal or lignite based thermal power plants on land rules 1999
16. The chemical weapons convention act, 2000
17. Atomic energy (radiation protection) rules 2004
18. Weapons of mass destruction and their delivery systems (prohibition of unlawful activities) act, 2005
19. The civil liability for nuclear damage act, 2010

### **VIII. Biological disaster**

1. Bio- medical waste (management and handling) rules 1998
2. The municipal solid wastes (management & handling) rules, 2000
3. Rules for the manufacture, use, import, export and storage of hazardous micro organisms genetically engineered organisms or cells 1989

### **IX. Poisoning**

1. The destructive insects and pests act, 1914
2. The poisons act, 1919
3. The drugs and cosmetics act, 1940
4. The prevention of food adulteration act, 1954
5. The insecticides act, 1968
6. The insecticides rules, 1971
7. The narcotic drugs and psychotropic substances act, 1985
8. The consumer protection act, 1986
9. The batteries (management and handling) rules, 2001.
10. Batteries (management & handling) amendment rules, 2010
11. E-waste (management and handling) rules, 2011
12. Plastics (manufacture, usage and waste management) rules, 2011

### **X. Accident**

1. The inland vessels act, 1917
2. The Indian carriage of goods by sea act, 1925

3. The aircraft act, 1934
4. Aircraft rules, 1937.
5. National highways act, 1956
6. The merchant shipping act, 1958
7. Carriage by air act 1972
8. The inland waterways authority of india act, 1985
9. Motor vehicles act 1988
10. The railways act, 1989
11. Central motor vehicles rules, 1989
12. The railway accidents and untoward incidents (compensation) rules, 1990
13. Railway (notices of and inquiries into accidents) rules, 1998
14. Statutory investigation into railway accidents rules 1998
15. Carriage by road act, 2007
16. Carriage by road rules 2011

#### **XI. Stampede: disaster from management**

1. A guide for administrators and organizers of events and venues of mass gathering- a guide for state government, local authorities, administrators and organisers, NDMA
2. Police act 186

#### **XII. Pest attack**

1. Destructive insects and pests act 1914
2. Insecticides act 1968
3. Insecticides rules 1971

#### **XIII. Epidemics**

1. Epidemic Disease Act 1897

#### **XIV Forest & Environment**

1. The wild life (protection) act, 1972
2. Forest (conservation) act, 1980
3. The air (prevention and control of pollution) act, 1981
4. The air (prevention and control of pollution) rules, 1982
5. Environment (protection) act, 1986
6. The Environment (protection) rules, 1986
7. The biological diversity act, 2002

8. Forest (conservation) rules, 2003
9. The protection of plant varieties and farmers' rights act, 2001
10. Cultural heritage conservation bill, 2010
11. National green tribunal act 2010
12. Wetlands (conservation and management) rules, 2010

**XV. NDMA guidelines (<http://ndma.gov.in/en/ndma-guidelines.html>)**

1. Guidelines for preparation of Action Plan –Prevention & Management of Heat wave -2017
2. Guidelines on Management of School Safety
3. Guidelines on Management of Hospital Safety
4. Guidelines on Minimum Standards for Shelter, Food, Water, Sanitation, Medical Cover in Relief Camps
5. Guidelines on Management of Earthquakes
6. Guidelines on Management of Tsunami
7. Guidelines on Management of Cyclones
8. Guidelines for Management of Flood
9. Guidelines on Management of Urban Flooding
10. Guidelines on Drought Management
11. Guidelines for diversion of forest lands for non-forest purpose under the forest (Conservation), act 1980
12. Guidelines on Landslides and Snow Avalanches
13. Guidelines for Nuclear and Radiological Emergencies
14. Guidelines on Chemical Disaster (Industrial)
15. Guidelines for Chemical (Terrorism) Disaster
16. Guidelines on Medical Preparedness & Mass Casualty Management
17. Guidelines for Management of Biological Disaster
18. Guidelines for Psycho-Social Support
19. Guidelines on Formulation of State DM Plans
20. Guidelines for Incident Response System.
21. Guidelines on National Disaster Management Information and Communication System.
22. Guidelines for Scaling, Type of Equipment and Training of Fire Services.

23. Guidelines for Seismic Retrofitting of Deficient Buildings and Structures.

## **5.8 Early Warning Dissemination System**

The SEOC receives alert from different designated agencies of GOI & GoO (Table- 5.3.1) & disseminate to all the relevant departments of the state Govt. & DEOCs functioning under the district administration through all possible methods of communication & public announcements. Both Terrestrial & Satellite network of communication are used for warning alert at different viz. State, Department, District, Block & Community level in the state. The detailed description of the network of communication is detailed in the table 5.5 below:

**Communication Method (Table 5.5)**

<b>Sl.</b>	<b>Network</b>	<b>Communication Method</b>
<b>TERRESTERIAL</b>		
1	Cellular	Voice Call, Data & Mass Messaging,
2	Landline	Voice call, Fax
3	Internet	Mail, Bulk mails
<b>SATELITE</b>		
4	HAM Radio	High Frequency & Very High Frequency
5	Satellite Phone	Voice call & messages, GPS locations.

### **5.8.1 Ensuring Early Warning in the Coastal Districts.**

Odisha coast stretching to a length of 480 KM along the Bay of Bengal in the eastern India covers six districts viz. Balasore, Bhadrak, Jagatsinghpur, Kendrapara, Puri and Ganjam is prone to multiple hydro meteorological hazards. In order to reduce the vulnerability of coastal communities from impending calamities like flood, cyclone and tsunami, Odisha, furthering a step ahead, has taken a first of its kind initiative in India to install multiple Early Warning Dissemination System (EWDS) for strengthening the dissemination of warning for the coastal people. The selected technologies were best suited for different purposes and can be used for different applications and groups. The major attributes of the EWDS are:

- The EWDS will be commissioned in districts and will be directly controlled from the SEOC.

- Siren will be activated much before the arrival of any calamity so as to provide adequate time to the administration as well as the community to face the eventuality.
- The Early Warning technologies includes **Mass Messaging, Alert Tower Siren System, Digital Mobile Radio (DMR) and Satellite-Based Mobile Data / Voice terminals (SBMDV)** Technologies for pre, during and post disasters.
- OSWAN, with strong Internet Broadband Connectivity, enables State Emergency Operation Centre (SEOC), District Emergency Operation Centre (DEOC) and Block Emergency Operation Centre (BEOC) for emergency coordination.

Under the Coastal EWDS network a total of 327 villages in 22 blocks under 6 districts are to be covered with 122 siren towers. The towers will be controlled from the SEOC functional in the SRC's office. With activating a button at SEOC warning siren will be disseminated in all the 122 or the targeted siren towers having a disseminating capacity of 3 KM diameter each.

The details of the locations of the tower are given below.

**EWDS (Table 5.6)**

Sl	District	Block	No. of Siren Towers	Villages Covered
1	<b>Balasore</b>	Balasore Sadar	10	18
2		Remuna	2	6
3		Bahanga	5	15
4		Bhogarai	5	15
5		Baliapal	6	9
Sub Total		<b>05</b>	<b>28</b>	<b>63</b>
6	<b>Bhadrak</b>	Basudevpur	4	17
7		Chandabali	11	24
Sub Total		<b>02</b>	<b>15</b>	<b>41</b>
8	<b>Kendrapara</b>	Mahakalpara	7	18
9		Rajnagar	11	46
Sub Total		<b>02</b>	<b>18</b>	<b>64</b>
10	<b>Jagatsinghpur</b>	Ersama	7	11
11		Kujanga	2	8
12		Balikuda	3	8
Sub Total		<b>03</b>	<b>12</b>	<b>27</b>
13	<b>Puri</b>	Brahmagiri	2	6
14		Gop	4	7
15		Astaranga	9	25
16		Kakatpur	2	7
17		Krushnaprasad	6	37
18		Puri Sadar	3	5
		Konark NAC	0	1
Sub Total		<b>06</b>	<b>26</b>	<b>88</b>

19	<b>Ganjam</b>	Chikiti	5	6
20		Rangeilunda	5	13
21		Chatrapur	4	10
22		Ganjam	7	15
Sub Total		<b>04</b>	<b>21</b>	<b>44</b>
	<b>GRAND TOTAL</b>	<b>22</b>	<b>122</b>	<b>327</b>

(Source: GIS/MIS Section, OSDMA)

### **5.8.2 Satellite phones**

The terrestrial telephones and mobile phones working close to capacity during normal times are prone to be affected by natural disasters & disrupt the connectivity when it is needed the most. The satellite phones or sat-phones operate directly through geo-stationery satellites and therefore can avoid this problem and provide failsafe communication in any eventuality.

OSDMA has provided 60 INMARSAT ISAT-2 satellite phones to the key disaster managers at the State and District level. Officers can move to the disaster site with the satellite phone and restore connectivity if other modes of communications have been disrupted or not available.

The list of satellite phone users with contact numbers is placed below:

**Allotted Satellite Phone Numbers (Table 5.7)**

Sl	District	Calling Numbers	Sl	District	Calling Numbers
1	Collector Angul	<b>8991118454</b>	30	Collector Sundargarh	<b>8991118483</b>
2	Collector Balasore	<b>8991118455</b>	31	ODRAF Cuttack, OASP 6th Battalion	<b>8991118485</b>
3	Collector Bargarh	<b>8991118456</b>	32		<b>8991118484</b>
4	Collector Bhadrak	<b>8991118457</b>	33	ODRAF Bhubaneswar, OSAP 7th Battalion	<b>8991118487</b>
5	Collector Bolangir	<b>8991118458</b>	34		<b>8991118486</b>
6	Collector Boudh	<b>8991118459</b>	35	ODRAF Baripada, OSAP 5th Battalion	<b>8991118488</b>
7	Collector Cuttack	<b>8991118460</b>	36		<b>8991118489</b>
8	Collector Deogarh	<b>8991118461</b>	37	ODRAF Rourkela, OSAP 4th Battalion	<b>8991118490</b>
9	Collector Dhenkanal	<b>8991118462</b>	38		<b>8991118491</b>
10	Collector Gajapati	<b>8991118463</b>	39	ODRAF Koraput, OSAP 3rd Battalion	<b>8991118492</b>
11	Collector Ganjam	<b>8991118464</b>	40		<b>8991118493</b>
12	Collector Jagatsinghpur	<b>8991118465</b>	41	ODRAF Jharsuguda, OSAP 2nd Battalion	<b>8991118495</b>
13	Collector Jajpur	<b>8991118466</b>	42		<b>8991118494</b>
14	Collector Jharsuguda	<b>8991118467</b>	43	ODRAF Chatrapur, OSAP 8th Battalion	<b>8991118496</b>
15	Collector Kalahandi	<b>8991118468</b>	44		<b>8991118497</b>
16	Collector Kandhamal	<b>8991118469</b>	45	ODRAF Balasore	<b>8991118499</b>
17	Collector Kendrapada	<b>8991118470</b>	46		<b>8991118498</b>
18	Collector Keonjhar	<b>8991118471</b>	47	ODRAF Bolangir	<b>8991118500</b>
19	Collector Khorda	<b>8991118472</b>	48		<b>8991118501</b>
20	Collector Koraput	<b>8991118473</b>	49	ODRAF Jagatsinghpur	<b>8991118502</b>

21	Collector Malkangiri	<b>8991118474</b>	50		<b>8991118503</b>
22	Collector Mayurbhanj	<b>8991118475</b>	51	State Fire Office	<b>8991118504</b>
23	Collector Nabarangpur	<b>8991118476</b>	52	Commissioner of Police	<b>8991118505</b>
24	Collector Nayagarh	<b>8991118477</b>	53	Revenue & DM Department	<b>8991118506</b>
25	Collector Nuapada	<b>8991118478</b>	54	Managing Director, OSDMA	<b>8991118507</b>
26	Collector Puri	<b>8991118479</b>	55	Office of Chief Secretary	<b>8991118508</b>
27	Collector Rayagada	<b>8991118480</b>	56	Office of Chief Minister	<b>8991118509</b>
28	Collector Sambalpur	<b>8991118481</b>	57	Special Relief Commissioner (SEOC)	<b>8991118510</b>
29	Collector Subarnapur	<b>8991118482</b>	58	Managing Director, OSDMA	<b>8991118511</b>

(Source: MIS Section, OSDMA)

## **5.9 Drought Management: State Drought Monitoring Cell**

Most of the cultivable land in Odisha depends on monsoon rain for irrigation & hence make the state prone to drought. This in turn led the state face severe drought in 2011 (19 districts), 2012 (four districts) and 2015 (27 districts). In order to combat drought, the State Govt. has set up State Drought Monitoring Cell (SDMC) in OSDMA. OSDMA has entered into a MoU with Karnataka State Natural Disaster Management Centre (KSNDMC) for technical collaboration for setting up the SDMC.

Under the SDMC, nearly 6000 Automatic Rain Gauge Stations & 320 Automatic Weather Stations to monitor rainfall on a daily basis are to be installed across the state. Special agriculture scientists and engineers would be appointed in the cell." The cell will help sensitize the farmers about the climatic condition and to take precautionary measures accordingly. Besides, a 24x7 call centre will be established along with the cell to respond to queries of the farmers. The project will help the State in

- Strengthening the network of weather monitoring system
- Devising appropriate drought management
- High value crops can be brought under the ambit of crop insurance.
- Empower the farmers in taking informed decisions in case of aberrant weather conditions.

### **5.9.1 Present Status of State Drought Monitoring Cell (SDMC)**

It was decided by State Executive Committee (SEC) in its meeting held on 5.01.2017 to set up State Drought Monitoring Cell (SDMC) in OSDMA for weather data monitoring as well as drought management related activities. The State Level Sanctioning Committee of RKVY under the chairmanship of Chief Secretary has accorded the setting up of the SDMC and the array of Automatic Weather Stations (AWS) and Automatic Rain Gauges (ARG) across the state.

**Drought Monitoring Cell:** State level Drought Monitoring Cell has been setup in the office of OSDMA with the following main objectives:

- a. To promote and enhance knowledge and human resource exchange between the institutes.
- b. To share experience, subject expertise and technical knowhow between the institutes.
- c. To undertake joint research programmes, as necessary for furthering the cause of disaster and risk reduction thereof.
- d. To undertake all such activities that the Governing Body of the institutes may permit from time to time.
- e. To optimize the utilization of available resources, so as to minimize the wastage of available resources of any type.

An Expert Committee has been constituted under SDMC to provide technical advice and recommendations to the Government for management of drought in the state, based on the technical and scientific inputs on drought monitoring, weather advisories and other related information. The committee comprises decision makers & scientists as follows.

- a. Managing Director, OSDMA- Chairman
- b. Director, Agriculture & Food Production-Member
- c. Director, Horticulture-Member
- d. Director, Soil Conservation and OWD -Member
- e. The Director, India Meteorological Department, Odisha -Member
- f. Prof OUAT, Agro-meteorology-Member
- g. Director, National Rice Research Institute (NRRI) -Member
- h. DGM, Agriculture Insurance Company-Member
- i. Representative from NABARD-Member
- j. Deputy Relief Commissioner-Member
- k. Engineer in Chief, Water Resources -Member
- l. Nodal Officer, SDMC -Member Convener

Further, different Departments of the State will provide the following information to the State Drought Monitoring Cell (SDMC) periodically as prescribed for effective management of Drought in the state.

**Periodical information from Departments to SDMC (Table 5.8)**

Sl No	Indices	Department/Organisations
1.	<b>Rainfall Related Indices</b>	IMD/SRC/Agriculture/DoWR to provide the rainfall data recorded in the Manual/telemetric weather stations
	i. Rainfall data/ deviation	IMD
	ii. Dry Spell	IMD
	iii. Standardised precipitation index	IMD
2.	<b>Remote Sensing based Vegetation Indices</b>	Agriculture & FE department will collect information from NRSC and provide to SDMC
3.	<b>Crop Situation Related Indices</b>	Agriculture & FE department/ Directorate of Agriculture
	i. Area under showing	
	ii. Soil moisture	
4.	<b>Hydrological Indices</b>	
	i. Reservoir Storage Index	DoWR
	ii. Ground Water Drought Index	DoWR/ Central Ground Water Board
	iii. Stream flow Drought Index	DoWR

### **5.9.1 Lightning & Cloud Burst warning: Doppler Radars**

Observing the weather and timely prediction of severe weather conditions to warn the public in due course is very vital to mitigate as well as prevent losses. Weather radars are the most important and critical instruments for observing weather and early warning systems. Radars provide real time and accurate information on hazardous weather phenomena such as strong wind, heavy precipitation and hail in large scale area. The whole area of Odisha has been planned to be put under surveillance of 4 Doppler Weather Radar (DWR) stations i.e. in **Paradeep, Gopalpur, Sambalpur & Balasore**. DWRs have been installed in Paradeep & Gopalpur and are functional. The salient features of the DWR are as follows:

- DWR is a digital Radar
- It is capable to find internal motions of hydrometeors within a sample volume and provide real time accurate data on velocity, turbulence information, intensity, rain rate, vertical extent, drop size distribution etc. of weather systems around DWR site.

- Used for cyclone tracking and forecasting task
- Gives data of maximum velocity inside a Cyclonic storm precisely which helps in improving the intensity and storm surge
- Helps in Tornado/Thunderstorm/Hail-storm forecasting

## **5.10 NGO and other stakeholders**

Over the last couple of decades it has been observed that NGOs play an important role in disaster preparedness, response and mitigation efforts in different regions. Many international NGOs specifically focus on providing humanitarian aid to disaster affected people. Local NGOs in Odisha have also played a dynamic role in disaster management in the last decade and during Cyclone Phailin and Hudhud.

The Disaster Management Act, 2005 defines the roles and responsibilities of different government bodies and recognizes the prime responsibility of the state to be prepared for disaster response and the role of the humanitarian agencies and NGOs is to supplement the efforts of the government to help communities in coping and providing effective recovery from the disaster.

NGOs /INGOs have worked together to raise public awareness on disasters and worked towards greater consensus on various issues and challenges related to disaster management. Such initiatives have facilitated sharing of problems, challenges, and vision building for collaborative steps for disaster reduction initiatives in the state. NGOs and other stakeholders may help in:

- Awareness and sensitization on disaster management
- Monitoring and Information sharing between Government and NGOs.
- NGOs' perspective on coordination during different phases of disaster cycle
- Strengthen the coordination platform during non-emergency times with appropriate linkages to the NDMA, SDMAs/ DDMAs.
- Develop a road-map with short, medium and long term operational strategies and plans.
- Evolve mechanisms to ensure coordination during response operations and in planning and operationalizing strategies.

- Strengthening district level coordination Mechanism & timeline for development and Training.

## **5.11 Departmental Preparedness**

### **5.11.1 Nodal Ministries for different Disasters**

Departments need to prepare their specific disaster management plans & update them every year as per the provisions of Disaster Management Act 2005. As such 19 Departments have prepared their Departmental Disaster Management Plans for the year 2019 in a standard template prescribed by OSDMA. Government of India designates specific departments with the nodal responsibilities for coordinating disaster-specific responses (Table 5.9) to curtail the constraints of location, nature of disaster and, most regrettably, inadequate preparedness. This will help the first responders and relief reach the affected areas in the shortest possible time.

**Nodal Ministries for different Disasters (Table 5.9)**

<b>Sl</b>	<b>Disaster</b>	<b>Nodal Ministry/ Dept./ Agency</b>
1	Biological Disasters	Ministry of Health and Family Welfare (H&FW)
2	Chemical Disasters and Industrial Accidents	Ministry of Forest, Environment, and Climate Change (FECC)
3	Civil Aviation Accidents	Ministry of Civil Aviation (MoCA)
4	Cyclone, Tornado, and Tsunami	Ministry of Home Affairs (MHA)
5	Disasters in Mines	Ministry of Coal; Ministry of Mines (MoC, MoM)
6	Drought, Hailstorm, Cold Wave and Frost, Pest attack	Ministry of Agriculture and Farmers Welfare (AFW)
7	Earthquake	Ministry of Home Affairs (MHA)
8	Flood	Ministry of Home Affairs (MHA)
9	Forest Fire	Ministry of Forest, Environment, and Climate Change (FECC)
10	Landslides and Avalanche	Ministry of Home Affairs (MHA)
11	Nuclear and Radiological Emergencies	Dept. of Atomic Energy, & Ministry of Home Affairs (DAE,MHA)
12	Oil Spills	Ministry of Defence/Indian Coast Guard (MoD/ICG)
13	Rail Accidents	Ministry of Railways (MoR)

14	Road Accidents	Ministry of Road Transport
15	Urban Floods	Ministry of Housing & Urban Development

(Source: National Disaster Management Plan-2016)

## **5.12 India Disaster Resource Network (IDRN)**

Pre-positioning of human resources & materials is essential for quick response thereby saving time, resource & minimizing severity of any emergency. This again depends upon the organization, readiness & availability of manpower & materials, within and in the neighboring areas, to face any impending disaster. To manage disasters effectively, organizing human & materials from the local to the national & beyond is equally important. The India Disaster Resource Network hosted in the NIC at <http://www.idrn.gov.in> by MHA is a right platform that inventorises the resources at the district, state & nation level and provides a user friendly interface to get a list of available resources at different levels. But for its effectiveness, the information on the site must be updated at a regular interval. The state makes it mandatory for the departments & respective stakeholders at the district to upload the available resource in the portal. Once the resource data base in the IDRN portal is created it will be updated in a regular interval as prescribed.

## **5.13 Awareness and Sensitization on Disaster Management**

Massive awareness programmes were taken up throughout the state.

- 29<sup>th</sup> October is being observed as the State Disaster Preparedness Day & National Day for Disaster Risk Reduction.
- Video films have been developed for awareness of community on Heat Wave, Cyclone Shelter Management, Health care & sanitation, Food & nutrition, Community Based Disaster Preparedness & functioning of ODRAF.
- Short films on Search & Rescue, First-Aid techniques, preparedness to different disasters also have been developed & circulated across the State.
- Posters, leaflets, handouts & booklets with information & safety tips relating to different hazards have been prepared for information of people.

- School safety programmes have been taken up & disaster Management themes have been included in the school curricula.
- NGO coordination cells have been promoted at district & state level for awareness generation & regular interaction with the civil society for improvising preparedness & awareness on disaster management.
- Community level volunteers have been trained & competitions among volunteers are organized on the occasions of Disaster Preparedness Day.

## **5.14 Mock Drill**

Mock drill is a mechanism to enhance & assess emergency planning to deal with various disasters at the State, District and Community level. As such, Odisha State Disaster Management Authority (OSDMA) in collaboration with different departments and district administrations coordinates Mock Drills for different disasters every year. This helps in generating substantial awareness among all the stakeholders. The aim of Mock Drill is to inculcate a culture of preparedness amongst the stakeholders, to evaluate the resources available with various districts of the state, to coordinate the activities of various agencies and use the feedback to identify the gaps and improve upon them.

### **5.14.1 The objectives of the Mock Drill are:**

- Generate public awareness on disaster preparedness
- Revitalize the response mechanism to remain in readiness to face any eventuality arising out of calamities
- Strengthen the emergency communication procedures and system;
- Augment the capacity of the Govt. officials and other stakeholders for better response.
- Familiarize community with the procedures of evacuation, shelter, Search and Rescue (SAR) and First-Aid skills etc.
- Assess the readiness of the NDRF, ODRAF, Odisha Fire Service, CSMMC task forces and other stakeholders
- Ensure readiness of MCS/MFS for evacuation of the vulnerable population.
- Ensure & assess readiness of emergency equipment for use

### **5.14.2 Different Mock Drills conducted:**

The under mentioned Mock Drill are being conducted in State, District, Block and Shelter level from time to time:-

- Mock Drills on Chemical Disaster
- Partial Emergency Exercise at Airport
- Mock Drill on Flood & Cyclone in all the 30 Districts
- Mock Drill on Stampede for Rathayatra
- Tsunami Mock Drill in 6 coastal Districts
- Disaster Management Exercise on train accidents

## **5.15 Integrated Decision Support System (IDSS)**

### **5.15.1 Operational Systems for Integrated Disaster Risk Management for Odisha**

OSDMA entered into a Memorandum of Understanding (MoU) with Regional Integrated Multi-Hazard Early Warning System (RIMES) for a project “**Operational Systems for Integrated Disaster Risk Management for Odisha**” to strengthen the decision support system of the state by developing a one-stop Risk Management System to effectively respond, mitigate & manage different disasters the state is prone through development of various information technology & machine learning led Decision Support System (DSS) tools. The Project envisages the following objectives:

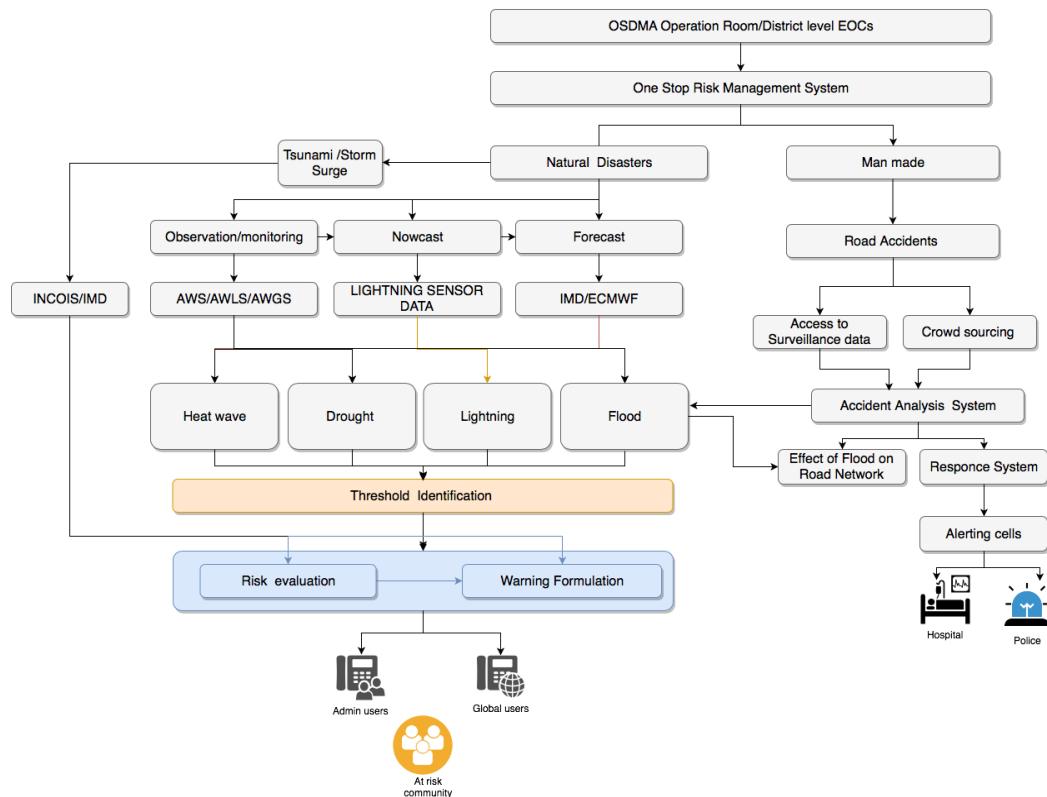
- Assess the current capacities of OSDMA
- Integrate best practices & cutting-edge forecast technologies into OSDMA operations
- Transfer these technologies and practices to ODSMA
- Continued support to integrate emerging technologies into OSDMA

The DSS tools shall be designed to have multiple layers of user access control and limit the roles and responsibility of the different category of users. The tools are expected to assist OSDMA and the line departments in decision making to help the target users basically who are directly affected by the disasters. A list of target users for different hazards has been delineated in the below table.

Hazard	Decision Support System	Target Users of the Tools
Heat wave	Heat Wave Advisory System	OSDMA and Public Health Department
Drought	Drought Risk Monitoring and Management System	OSDMA and Department of Agriculture
Lightning	Forecasting of Lightening Accidents and Striking Hazard (FLASH)	OSDMA
Road Accidents	Road Accident monitoring and reporting system for Prevention of incidents of road Disasters (RAPID)	OSDMA
Flood	Flow forecast and flood early warning system	OSDMA and CWC
Tsunami	Internet-based Simulation Platform for Inundation and Risk Evaluation	OSDMA

The project components are intended to be developed over a period of 3 years and then put to operation for the next two years. During this time the tools also will undergo evaluation, improvements and refinements based on feedback from the users at different levels. Finally, all tools and technologies shall be transferred to OSDMA and relevant departments of Government of Odisha. A model of the One-Stop Risk Management System is depicted below:

**Figure 1: Integrated platform for one stop Risk management System**



## **5.15.2 Severe Weather Early Warning based on total Lightning detection of the state of Odisha**

OSDMA entered into a Memorandum of Understanding (MoU) for a period of three years with Earth Networks (EN) for a project “Severe Weather Early Warning based on total Lightning detection of the state of Odisha” to support & provide data services that will enable the state to provide timely alerts to its citizen for lightening and severe weather caused due to convective storm systems. The Project will enable the state to get:

- Real-time severe weather and lightning monitoring and reliable and timely emergency alerting
- Providing dangerous thunderstorm alerts that provide region with at least 45 minutes of advance warning where there is thunderstorm activities
- The dissemination of early warnings to mobile platforms via SMS & app through an API
- A state of the art severe weather visualisation.

Total Lightning detection will enable severe weather detection for identification, tracking, prediction of dangerous weather activity, including Severe thunderstorms, High winds, Hail storms, Microbursts and wind shear, Tornadoes, Cloud-to-ground lightning etc.

### **Dangerous Thunderstorm Alerts (DTAs)**

Through innovative detection of in-cloud lightning & proprietary Dangerous Thunderstorm Alerts (DTAs) under the project, the state will be able to provide organizations around the world with the most technologically-advanced alerts. The perfect solution for minimizing any severe weather risk are .

- Time-sensitive alerts issued ahead of approaching severe storms
- Measure cell IDs, cell time, cell area and cell latitude and longitude
- Provide approximately 45 minutes of advanced warning
- 50% faster than other severe weather alerts

# **Chapter - VI**

## **Response**

### **6.1 Response in brief**

Response refers to activities done for handling disaster to bring the situation to normalcy as per the decision of Government. The onset of an emergency creates the need for time sensitive actions to save life and properties, reduce hardships and suffering, and restore essential life support and community systems, to mitigate further damage or loss and provide the foundation for subsequent recovery. Effective response planning requires realistic identification of likely response functions, assignment of specific tasks to individual response agencies, identification of equipment, supplies and personnel required by the response agencies for performing the assigned tasks. A response plan essentially outlines the strategy and resources needed for search and rescue, evacuation, etc.

### **6.2 Standard Operating Procedure (SOP) for Emergency Operation Centers (EOCs)**

As one or more of the major natural calamities like drought, flood or cyclone occur every year and bring in its trail much loss and suffering, precautionary arrangements should be undertaken to meet the eventualities and minimize the impact of these calamities. A common feature of such preparations is the functioning of the Control Room at different levels.

The State Emergency Operations Centre (SEOC) and District Emergency Operation Center (DEOC) play an important role in effectively and efficiently coordinating multi-agency, intergovernmental responses to disaster events. The SEOC functions in the office of Special Relief Commissioner all round the year. Similarly, DEOC of six coastal districts of State of Odisha normally function in the offices of Collectors round the clock and DEOCs of rest 24 districts functions from the 1<sup>st</sup> of May to the 30<sup>th</sup> of November during which there is likelihood of occurrence of major natural calamities like floods and cyclones. The Emergency Operation Centers (EOCs) are to be under the operational command of a senior officer to be nominated by the concerned head of office. Drought conditions may also develop in case of erratic and inadequate rainfall in which case the EOCs may function also beyond November.

The function of the EOCs is to collect and disseminate information regarding matters relating to the natural calamities and for processing and communicating all such data to concerned quarters. The EOCs are manned round the clock during the peak period of emergency till the relief operations are over. The officer-in-charge of the EOC, usually known as the Officer-on-Special Duty, maintains a station diary and such other records as may be prescribed by the Head of Office. The particulars of all information received and actions taken are entered in the Station Diary hour by hour for every date. The officer-in-charge 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.

Departments of Government and Heads of Departments connected with Relief measures also open Control Rooms in their Departments and Offices and issue instructions for the functioning of such Control Rooms in their sub-ordinate offices where necessary. If necessary detailed instructions may be issued by the Board of Revenue / Special Relief Commissioner for running of Control Rooms in offices of Heads of Departments and in all sub-ordinate offices in the State.

## **6.3 SOP of Departments to respond to various disasters**

### **6.3.1 Agriculture and Farmers Empowerment Department**

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. Further, about 4 lakh hectares is exposed to saline inundation, 3.54 lakh hectares to flooding and 0.75 lakh hectares to water-logging, particularly in the deltaic areas. With more than 2/3<sup>rd</sup> of crops grown rain fed, a good harvest is much dependent on a favourable monsoon.

The climate of the State is tropical characterised 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, drought and cyclone visit regularly with varying intensity. The frequent occurrence of these natural calamities badly affects the production of Khariff rice,

the major crop of the State. Similarly, in drought years, there is considerable loss in production of Pulses and Oilseeds both during Khariff and Rabi. These, stand as stumbling blocks in the way of enhancing crop production and productivity. 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.

#### **6.3.1.1 Disaster Specific Response Plan**

Table: 6.1

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

Crop production in the state is much dependent on the Monsoon. Thus everyday rainfall is recorded at the block headquarters and evaluated for impact on crop stand. Natural disasters are closely watched, especially during kharif season, since 2/3<sup>rd</sup> of the crops are grown rainfed. Weekly crop weather watch reports are generated on-line and transmitted by each district to the Control Room at the Directorate. The Control room functions every day from 8 AM to 8 PM and such incoming reports are monitored. Regular monitoring of crop weather reports at least once every week at the state level gives a first-hand indication of occurrence of natural calamities. However, in case of flash floods/ cyclones/ hailstorms etc the entire reporting system is activated almost immediately and first hand (eye estimate) reports of damage generated within 24 hours. Basing on the reports from the respective districts the response mechanism as regards technical support, agri-input supply, pest and disease outbreak measures are kept in readiness. The amelioratory measures start as soon as possible after the extent of damage is assessed in real time basis. The extension functionaries at the grass root level take a note of the damages and report them almost every day during such an emergency.

### **6.3.2 Water Resource Department**

Pre-flood maintenance of flood infrastructure and flood preparedness before the onset of monsoon plays a vital role in the smooth management of high flood situations. When the river is in spate, the embankment requires close and constant watch and unremitting day and night supervision by adequately trained staff and officers. Efficient and constant patrolling with timely warning and timely action alone can avert a situation leading to disaster. During this period inspection by the senior officials will have to be carried out systematically and all the officers concerned and staff will have to remain alert to meet any emergent situation. The establishment required for this purpose will vary depending upon importance of the embankment and behavior of the river. The temporary headquarters of the Junior Engineer, Assistant Engineer, Assistant Executive Engineer and Executive Engineer are to be located near the vulnerable and important reaches of the embankment under his/her charge.

#### **6.3.2.1 Duties and responsibilities of the officers for smooth management of the flood**

##### **Assistant Engineer/Junior Engineer.**

An Assistant Engineer/ Junior Engineer (AE/JE) is responsible for efficient flood management within his/her jurisdiction. A high level of alertness and resourcefulness are

expected from the AE/J E 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.

**Pre-flood measures**

- 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/She 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/Her 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 to be checked, repaired if necessary by 1st week of June. Mock drill operation should be carried out by the dam owners by 2<sup>nd</sup> week of June.
- The JE 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 AE/JE 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/She is responsible for the proper custody of the monsoon period materials stacked at strategic locations. Accordingly he is to arrange necessary watch and ward for the purpose till their utilization during flood watching.

- He/She 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**

- AE/JE concerned with his/her field staff will keep a round the clock vigil on the embankments during flood.
- He/She will prepare a duty chart for each embankment under his jurisdiction.
- He/She 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/She 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/She will always remain in touch with the Assistant Executive 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 Executive Engineer.
- The AE/JE is to keep contact with the local bodies and NGOs for flood management in their respective jurisdictions.
- He/She has to keep his mobile phone in operative mode during high flood for instant communication.
- He/She has to record all the piping points in the register for permanent repair before the monsoon of the next year.
- He/She has to mark the high flood level of the year and keep record of it's for reference.

### **Post-flood measures**

- As soon as the flood approaches, the Junior/Assistant Engineer concerned has to open the sluice gates for release of drain water.
- He/She has to assess the damages due to flood immediately through personnel verification, prepare the flood damage report and submit the same to the Assistant Executive Engineer as promptly as possible, not later than one week in any case.

### **Assistant Executive Engineer (AEE)**

An Assistant Executive 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 Executive Engineer in flood management are as follows:

#### **Pre-flood measures**

- The Assistant Executive Engineer concerned will inspect the embankments in his jurisdiction to suggest to the AE/JE, 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 AE/JE for preparation of all the flood preparatory estimates. He/She shall ensure that the above estimates are prepared and submitted to the Executive Engineer by 30th April.
- His / Her 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 / She will see that all the ongoing temporary / permanent flood protection works are completed by 1st week of June.
- He / She 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/She 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 Executive Engineer will certify in the log book of gates maintained by the AE/JE 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 AE/JE 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 Executive Engineer concerned will remain in touch with the local bodies, NGOs for community participation during flood fighting.

- His/Her establishment during flood watching consists of Junior/Assistant Engineers, Work Mistries, Work Sarkars, Mates and Khalais.
- He/She will arrange proper distribution of patrol establishment for due discharge of duties keeping in view to various needs at different points.
- He/She will remain in contact with his Junior/Assistant Engineers and keep himself in touch with up-to-date conditions of the embankments and river in his charge.
- During high floods the Assistant Executive 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/she will keep one or two teams reserved at convenient place for employment when emergency arises.
- It is the duty of the Assistant Executive Engineer to inform about the situation to the Executive Engineer everyday and to make suggestions for the efficient management of flood.
- The Assistant Executive Engineer will encourage the participation of N.G.Os and local bodies for watch and 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. Executive Engineer has to verify and consolidate the flood damage reports submitted by the AEs/JEs and submit the same to the Executive Engineer immediately.

#### **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 15th June. He will satisfy himself about the arrangement and report to the Superintending Engineer.
- He will check some of the gates at random and countersign on the certificate of the log book and submit copies of the same to the Superintending Engineer before 1st 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 to 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. and 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.

### **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 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 required 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 at an 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.

**Chief Engineer / Chief Engineer & Basin Manager (CE & BM):**

The Chief Engineer & Basin Manager, Lower Mahanadi Basin 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 or 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 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.

### **6.3.3 Department of Health & Family Welfare**

#### **6.3.3.1 Emergency Response at State & District level**

Table: 6.2

<b>Immediate (0-2 hrs)</b>	<b>Intermediate Response (2- 6 hrs) Rapid Assessment</b>	<b>Intermediate Response (6-12 hrs)</b>	<b>Extended Response (12-24 hrs)</b>
State/District Disaster response steering committee meeting, State/District Technical task force meeting	-Activation of chain of commands from state to village level. -Activation of Health surveillance systems control rooms & State, District & Block RRTS	Collection and analysis of information available through health surveillance control rooms, Casualty and laboratory systems, 108 service centers at Block/District/State/ MCH	Address local emergency case management, early referral, relocation of resources, mental and behavioral health support needs
Assessing the magnitude of impact	Activation of OT,LR,ICU, SNCU,NCU, X-ray unit, Blood Bank, Laboratory functionality at CHC/ SDH/ DHH/ MCH/ PVT Hospitals (accredited)	Prepare and update information for shift change and executive briefings. -Quick assessment of the available resources and proposal and supply of the requirement as per need to the affected area.	Prepare for transition to extended operations or response disengagement
Resource mapping	Population at risk including vulnerable population	Prepare for state / National / international assistance	Planned distribution of available resources and the assistance obtained
Sharing of information with other concerned departments (RD, H&UD, PRI, School & ME, W&CD, Revenue,	Coordinating risk communication messages, Networking with other hospitals/ related Depts., agencies, Health related volunteers Org	-Assess and acquire health resources as per need -Proposal for specific assistance and need based interventions in the affected area	Roles & responsibilities of each department needs to be defined

Food & supplies, Industry, Mines, Works, transport, Fire, Police, RWSS,OSDMA, Civil Defenses, Red Cross, UNDP, Surface transport, National Org).			
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### **Health facility Level**

- As soon as any information 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 or ADMO (Med) Office. ADMO (PH) is second in command or the operation Chief in Charge supported by a team assigned with different roles and responsibilities during flood cyclone/epidemics. While ADMO (Med) is the second in command supported by ADMO(PH) and other team members such as for Transportation in charge, Store – in charge, Liasoning Officer, Logistic chief, Planning & coordination chief etc. during any disaster with mass casualty.
- Immediately one ambulance with a team of MOs, Pharmacist, Staff Nurse, attendant 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 Depts.( 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 preposition of drugs/logistics/other supplies, deployment of MOs & Paramedics, status of basic life support equipments, Operation Theater are being kept in readiness.

**On Site:**

- The cases are triaged by the attending doctor team 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/Private/School/Panchayat Office for immediate management
- Mobile Medical Units with advanced life support systems & team of Doctors are being sent to the site.
- Ambulances, 108 ambulances, other mode of transports are being used for transportation of cases 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 affected patient arrives doctor on duty at casualty receives and attends to them. After examination the case is re triaged and send to the ward or given treatment for minor injuries and discharged or else referred to the next higher health facility if required by the attending doctor team.
- The OPD /IPD Deptt. is being 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 (seriously injured) patients are treated and stabilized immediately.
- Patient Observation area is located in the casualty where priority patients are kept for some time 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 Superintendent 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 treated is transferred to higher secondary/tertiary care hospital/accredited hospital by 108 ambulances for further treatment.

**Operational Planning at Hospital**

Table: 6.3

<b>Area</b>	<b>Person responsible / Consumables/logistics</b>	<b>Work assigned</b>
Registration area/ Triage Area	<ul style="list-style-type: none"> <li>-Registration Officer on desk</li> <li>-Triage Doctors/Nurses</li> <li>- Adequate nos. of MOs in Emergency room</li> <li>-Adequate trolleys/stretchers/wheel chairs</li> <li>- Hospital attendants</li> <li>- Stocks of essential &amp; life saving drugs, IV fluids</li> </ul>	<ul style="list-style-type: none"> <li>- Registration of case</li> <li>-Screening by Triage Criteria (1,2,3)</li> <li>1. Severe injury</li> <li>2. Moderate Injury</li> <li>3. Mild injury</li> </ul>
2.Emergency Deptt	<ul style="list-style-type: none"> <li>- Casualty MO/Doctor in Emergency Charge</li> </ul>	Retriage, Emergency case management, referral of

	- Oxygen, IV Fluids, lifesaving drugs	cases to related Deptt/ higher referral Centers
3.Definitive Care (OT ICU, SNCU, LR, NCU , WARDS)	Surgeon Special/Ortho. Specialist /Neuro Surgeon/Cardiac Surgeon/other clinicians	Case management & referral to higher center
4.Intensive Treatment area Activation (ICUs)	Head of Anesthesiology / Critical Care/Medicine	Case management
5.Minor Treatment Areas	Nurses, attendants familiar with first aid, splinting & dressing	First Aid &Discharge
6. Holding areas for relatives/Non injured	Social service providers/NGOs/CBOs	Counseling and support in case referral, crowd management
7.Decontamination Area	If needed as per Protocol	As per guideline BMWM
8. Essential ancillary services (Lab, Radiology, Pharmacy, radiology services, blood bank)	-Deployment or reallocation of HWs, Staff Nurses, radiographer Lab Tech, Pharmacist/ nursing staff from Other non-affected areas	
9.Mortuary Service	Mortuary In Charge, & a forensic Personnel	-Dead body preservation (Dead On Arrival),Disaster tagging -Record maintenance
10. Hospital Dietary System	Kitchen staff	Diet Provision to ambulatory in house patients
11. Sanitation Services	Ward attendants/Sweepers	Clean hospital linen, sterile dressing
12. Hospital Laundry & Sterile Supply	Laundry in charge	Clean hospital linen, sterile dressing
13. Water/electricity	Public Health Engineering Deptts. Electricity Department	Maintenance of Water & Electricity Supply
14 Staff education & Trg.	MOs, ADMO PH, State Health officials	
15. Disaster drills	DPH/CDMO/ADMO PH	

### **6.3.4 Factories and Boilers**

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 stake 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 information 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 Departments.
- 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 alteration.

**Members of State Incident Response Team:**

Table: 6.4

<b>Sl. No.</b>	<b>Officer</b>	<b>Role</b>
1.	Director of Factories & Boilers, Odisha	Chairman
2.	Jt. Director of Factories & Boilers, Level-I	Vice-Chairman
3.	Jt. Director of Factories & Boilers, Level-II	Member

4.	Dy. Director of Factories & Boilers, Safety, Headquarters	Convener
5.	Asst. Director of Factories & Boilers, Safety	Member
6.	Asst. Director of Factories & Boilers, Headquarters	Member
7.	Asst. Director of Factories (Medical)	Member
8.	Establishment Officer	Member

### **6.3.5 Food Supplies and Consumer Welfare Departments**

#### **6.3.5.1 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 room 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. Civil Supply Officer 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 headquarters 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. The 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. 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 is constituted at State and District level to tackle any disaster.

**Role of the District Incident Response Team are:-**

- To coordinate with Department, OSCSC, Food Aid Agencies (WFP) and District Authority
- To activate Disaster Management Plan.
- To prepare Food Aid plan and procure required resources as per incident specific action plan.
- To manage the overall response activities in the field.
- To deploy adequate staff for the response and monitor effectiveness.
- To develop the media messages regarding up to date status of disaster mitigation and response work.
- To procure necessary food stock necessary for response measures.
- To collect and store disaster related information for post incident analysis.
- To visit the affected areas to assess the extent of damage.

**Role of the State Incident Response Team are:-**

- To coordinate with State Government, Central Government, Food Aid Agencies and other concerned Departments.
- To facilitate execution of orders for declaring the disaster.
- To prepare a status report regarding the disaster.
- Visit the spot and assist the District Response Team for pre disaster planning.
- Assess the staff and other logistic requirement for field operation and monitor effectiveness.
- To ensure availability of funds at District and block level to meet contingency expenses
- To develop the media messages regarding up to date status of disaster mitigation and response work
- To arrange necessary food stock necessary for response measures
- To monitor and guide the district response team
- To maintain an inventory of all related guidelines, procedures, action plans, district maps and Contact numbers.
- 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: 6.5

<b>Sl. No</b>	<b>Post</b>	<b>Role</b>
<b>1</b>	M.D., OSCSC Ltd.	Chairman
<b>2</b>	Addl. Secy., FS & CW Deptt.	Member
<b>3</b>	Controller, Legal Metrology	Member
<b>4</b>	Joint Secy., FS & CW Deptt.	Member
<b>5</b>	Dy. Secy., FS & CW	Member -Convenor
<b>6</b>	GM-PDS, OSCSC	Member
<b>7</b>	Dy. Director, FS & CW Dept.	Member
<b>8</b>	Dy. Controller, Legal Metrology	Member
<b>9</b>	Manager, Storage, OSCSC	Member
<b>10</b>	Manager, Procurement	Member

IRT at State level meets at least twice in a year. 1<sup>st</sup> meeting in 2<sup>nd</sup> week of December and 2<sup>nd</sup> meeting in 2<sup>nd</sup> week of May.

**IRT at each District level for FS& CW Deptt.**

<b>Sl. No</b>	<b>Post</b>	<b>Role</b>
<b>1</b>	DM-cum-CSO	Chairman
<b>2</b>	ACSO, Hqrs.	Convenor
<b>3</b>	Accounts Manager, OSCSC	Member
<b>4</b>	Selected ACSOs and Inspector of Supplies (5)	Members

### **6.3.6 Forest and Environment Department**

The response to forest fire can be generated after a steady detection of the fire which is generally through methods such as voluntary reporting by VSS members, fire protection squad or villagers

- **Ground patrolling**
- **Fire watch towers**
- **Aerial detection and remote sensing-** The national remote sensing agency sends reports by acquiring the MODIS data daily during the day time depicting the topo-sheet number, latitude, longitude, district, date of occurrence etc to facilitate field verification immediately(INFFRAS- Indian Forest Fire Response and Assessment system).
- **Communication through wireless messages, mobile phones, fire messengers etc-**  
After reaching the spot as fast as possible, the fuel type, values at stake, rate of spread must be determined for most economic and adequate control of the Forest Fire. Fire Control Planning is actually a process of continuous revision and refinement as per lessons learnt. A held line is formed faster than the fire makes perimeter. Then the fires extinguished by the following processes.

**By fire broom and green boughs-** Designed for beating the fire and made up of stainless steel wires reinforced with a steel cup connected to a club with an adjustable handle.

**Fire Beater-** It is used to put off fire hidden in lumps, made up of fire proof material with wooden adjustable handle.

**Fire Rake-** Used for cutting of fire lines. Consists of peg toothed blade with adjustable handles.

**Indian Fire Pump-** It is portable back pack fire pump and holds about 23 liters of water which can be filled quickly and easily. It can throw water up to 13 meters and has an adjustable spray straight stream tip.

**Back pack blower-** It is a portable blower which can blow air 360 km/hr blast from the nozzle. It consists of petrol driven motor. It is used for backfiring and creation of fire lines.

**Use of Chemicals-** Chemicals such as Sodium Carboxyl methyl cellulose, Bentonite Clay, Potassium Chloride, sodium Bicarbonate, Ammonium Phosphate, Ammonium Sulphate, Boric Acid, Sodium Acetate, Calcium Chloride, Phosphoric Acid etc are used as SUPPRESSANTS and RETARDANTS for reducing the flame and rate of spread of fire respectively. The latter is applied ahead of the fire to reduce its spread.

**Use of Water and Fire tender-** Sometimes during severe fires on forests situated at road sites, fire tender is used to extinguish forest fire & prevent them from spreading. Water is sometimes sprayed through water tankers to extinguish the fire and check its spread. But it is seldom used by spraying it parallel to the fire at road points.

**Use of Wet Gunny Sack-**This is used for the cooling of the edge of the fire in advance of fire line construction.

**Nodal Officers for emergency support operations-** Each Division is headed by a Divisional Forest Officer, who will act as the nodal officer at the district level for the Emergency support operations in case of Forest Fire. He will be responsible for drafting the Divisional Fire Management plan and will seek the assistance of the District Administration and other line departments in case of an emergent situation. Funds will be placed to the DFOs for various activities for combating the forest fires and the aftermath. A forest Fire Control room will be in operation at the State level in the office of the Principal Chief Conservator of Forests from the month of February till May of each year. The Addl. Principal Chief Conservator of Forests (Protection and Sustainable Management) will act as the nodal officer on behalf of the Principal Chief Conservator of Forests at the State level-and closely monitor the functioning of the Control room and render necessary assistance in case of an emergent situation.

#### **Incident Response Teams (IRTs):**

**At Division level-** will comprise of the following officers-

- Divisional Forest Officer- Team leader
- Chief District Medical Officer- Member
- Asst. Conservator of Forests (Hqrs)- Member

- Dy. Collector Emergency- Member
- Dist. Fire Officer- Member

**At Range level-**

- Range Officer- Team Leader
- Dy. Range Officer- Member
- Forester- Member
- Forest Guard- Member

### **6.3.7 Fisheries and ARD Department**

#### **6.3.7.1 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 functions of the Control Room are

- 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 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 SDRF 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 SDRF 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.

**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 of 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 of 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.

**xii) 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 anthelmintic. 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 visits 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-foot 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 to take steps for removing animal carcasses likely to become health hazards. Necessary arrangements are to be made for prompt and easy disposal of carcasses during the Disaster and Post-Disaster period. The veterinary teams must advise the local administration i.e. Panchayati Raj 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.

- I. Local PRI member
- II. Revenue Inspector
- III. Village Level Workers
- IV. 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.

### **6.3.8 Home**

#### **6.3.8.1 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, which plays an active role in handling the disaster along with the police forces. Home Secretary contacts MHA/ NDMA/ UN Agencies/ PRC, New Delhi seeking emergency support like air support, communication support, and manpower support to fill up the gap for effective relief and rehabilitation measures.

#### **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.

## **HORIZONTAL**

- The Fire Services
- The Ambulance / Hospital Services
- The Para-Military Forces
- The Military, Navy, Air forces
- The Coast Guard Agencies
- NDRF, Munduli
- BSNL Authorities,
- SIB (Subsidiary Intelligence Bureau), Bhubaneswar
- The Civil Defence
- District Magistrate and Revenue Officials
- The Voluntary Organizations
- Nearby Industrial / Commercial Organizations etc.

## **Impact Phase:**

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

- Protect self, police personnel, police families
- Citizens taken shelter in the police station
- Protect – equipment – Communication
- Batteries charged
- Alternate VHF mast 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 detainees 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 be 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 should be carried out as soon as possible after the disaster is passed. The first 72 hours is called the golden hours. All efforts should be made to rescue the victims. The following point should be kept in my mind while carrying out the search and rescue operation.

**Traffic regulation:**

Traffic control is important in a rescue and relief operation. It can facilitate quick movement of relief and prevent accidental deaths. 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)
- Have a separate traffic VHF channel to control traffic movements
- Keep life line roads clear for movement of essential items.
- Remove road blocks caused by accidents, bed 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 patrol's, 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 re-fuelled by the govt. authorities and at Block Hqrs. Ware houses, where they load and unload relief items.

### **6.3.9 Department of Steel and Mines**

#### *i) 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 for the Disaster Management unit of the mine. In the event of any disaster the nodal officer 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.

#### *ii) 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 Nodal 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 convener 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, 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 data and post cyclone/flood data to the District Level Disaster Management Cell for management of the event.

**Standard Operating Procedure (SOP)**

Table: 6.6

<b>Stages</b>	<b>Prevention Strategy (Before)</b>	<b>Response Strategy (During)</b>	<b>Recovery Strategy (After)</b>
Stage-I	Identification of all vulnerable sites prone to various disasters	In the event of any disaster related to mining activities, the nodal officer of the concerned mine will immediately contact the nodal officer of the concerned District Level Disaster Management Cell intimating him about the intensity of the disaster and mitigation actions initiated by him.	Assessment of Damage in terms of life and property including livestock.
Stage-II	Detailed study of disaster prone sites and suggesting preventive action	The nodal officer of the District Level Disaster Management Cell will mobilise the Quick Response Team (QRT) to the spot of disaster with adequate instruction for appropriate assistance to the disaster victims and actions as demanded by the situation.	The District Level Disaster Management Cell will prepare an action plan for reconstruction of the disaster affected area. This action plan will be forwarded to the State Level Disaster Management Cell for their appraisal.
Stage-III	Steps will be taken for mitigation of the effects of such hazards by undertaking geo-technical studies in these areas at the Directorate level and	The QRT will render all emergency support to the mine officials and take preventive measures for avoiding proliferation of the disaster to the surrounding areas, if possible. He will also intimate the Head of the District Level Disaster Management Cell	The Director of Mines will also send the report of a multi disciplinary team on the assessment of damage and reconstruction thereof.

	advising the concerned Department to take up appropriate ameliorative measures.	for mobilising the Incident Response Team (IRT) for further assistance to the disaster affected persons and to the area under disaster.	
Stage-IV	A disaster preparedness plan can also be prepared by the Directorate depending on the nature of hazard involved and transmitted to appropriate authority.	The IRT will take actions for providing further relief and recovery support. This will include evacuation to safer places, rescue, temporary shelter, medical assistance to the affected persons, supply of food and drinking water and other necessary technical support.	The State Level Disaster Management Cell will finalise the reconstruction process after assessing the proposals of District Level Disaster Management Cell and multi-disciplinary team of the Director of Mines and accordingly respective departments will be mobilised for reconstruction.
Stage-V		The IRT will also take up technical analysis of the need for disaster mitigation and, if required seek assistance from the State Level Disaster Management Cell.	The entire process should be completed within a period of one month from the date of disaster.

### **6.3.10 Panchayati Raj and Drinking Water Department**

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.

### **Standard Operating Procedure**

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:

#### **Primary Tasks**

- To coordinate with Government of Odisha and State Disaster Management Authority.
- To coordinate the Relief Recovery operations in the wake of disasters.
- To declare and notify Disaster Situation.

#### **Preparedness Functions**

- Establish infrastructure at the district level in working order and all inventories updated.
- Train personnel on operations.
- Ensure basic facilities for personnel who will work at district level for disaster response.
- To coordinate the preparedness functions of all line departments.
- Establish disaster management funding mechanisms to ensure adequate resources 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.

### **Roles and Responsibilities**

The flow of information before, during and after disaster is defined in the diagrams below. Before the disaster, the SRC will instruct the Secretary, PR Department who will direct the PD DRDA. PD DRDA will instruct the BDOs and BDOs will instruct the Sarpanch at the GP level. At the GP level volunteers, local NGOs may be directed by the BDO to take precautionary measures before the disaster. The flow of the information is same during the disaster also. But after the disaster it is the role of Department only to repair and reconstruct the damaged assets. Instruction will move from PR Department to PD DRDAs who will instruct the respective BDOs to repair and reconstruct the assets damaged by the disaster using the existing scheme funds.

**SOP at District, Block and GP level**

Table: 6.7

Activities	Responsibility	Timeline				
		Flood/ Cyclone	Drought/ Heat Wave	Tsunami/ Lightening	Manmade	
<b>Preparedness</b>					Fire	Others
Mock Drill	Sarpanch	May	January	Quarterly	Quarterly	Quarterly
Communication from Block to GP	BDO	T-3 days	T-10 days	Immediate	NA	NA
Communication from GP to Block	Sarpanch	NA	NA	NA	Immediate	Immediate
Awareness campaign for disaster preparedness	Sarpanch/ EO	April	December	Quarterly	Quarterly	Quarterly
<b>Pre-Arrangement for evacuation</b>						
Coordination with Inspector of schools to use school building as cyclone shelters	BDO	T-3 days	T-10 days	Immediate	NA	NA
Assessing the medical facilities	Sarpanch	T-3 days	T-10 days	Immediate	NA	NA
Arrangement of flood/Cyclone shelters	Sarpanch	T-3 days	T-10 days	Immediate	NA	NA
Resource Mapping & Gap Analysis to prevent calamity	BDO/ Sarpanch	April	December	NA	NA	NA
Medical Stock at BNRSK	BDO/ Sarpanch	Monthly	Monthly	Monthly	Monthly	Monthly
Insurance Cover for Assets & Livestock	Sarpanch/ EO	Annual	Annual	Annual	Annual	Annual
Response					Fire	Riots/others

Communication from GP to Block	Sarpanch/ EO			Immediate	Immedi ate	Immediate
Evacuation to temporary shelters	BDO/ Sarpanch/ EO	T-0 days	T-0 days	T-0 days	T-0 days	T-0 days
Ensuring drinking water, Sanitation & medical facilities	BDO/ Sarpanch/ EO	T-0 days	T-0 days	T-0 days	T-0 days	T-0 days
Mobilising of relief distribution	BDO/ Sarpanch/ EO	T-0 days	T-0 days	T-0 days	T-0 days	T-0 days
Communicate with the district administration for assistance	BDO	T-0 days	T-0 days	T-0 days	T-0 days	T-0 days
<b>Post Disaster</b>					<b>Fire</b>	<b>Riots/ Others</b>
Identification of victims for compensation	Sarpanch/ EO	T+7 days	T+7 days	T+7 days	T+7 days	T+7 days
Arrange work under MGNREGS, SGSY & NRLM	BDO	T+7 days	T+7 days	T+7 days	T+7 days	T+7 days
Meeting fund requirements for Social Security, Consumption and economic activities through loans from Community Investment Support Fund (CISF)	PD/Collector/B DO/ Sarpanch	T+7 days	T+7 days	T+7 days	T+7 days	T+7 days
Reconstruction of houses through rural housing Schemes	BDO	T+30 days	T+30 days	T+30 days	T+30 days	T+30 days
IAY – 95% allocated for construction of houses						

5% allocated for BPL families affected by natural calamities						
BPGY – 10% is reserved for household affected due to Fire, Flood, Riot and Elephant Menace.						
Reconstruction of local infrastructures through the following Schemes	BDO	T+30 days				
GGY - to fill critical gaps in Bijli Sadak & Pani infrastructure for 30 districts						

### **The Response Team**

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 C committee at the village level.

### **Role of the Response Team**

Table: 6.8

Institution	Response System			
	Preparedness	Pre- Disaster	During Disaster	Post Disaster
<b>District Control Room (DCR)</b>	<ul style="list-style-type: none"> <li>• Setting up control room and ensure round the clock functioning</li> <li>• Assigning responsibilities to PD, DRDA, Sub Collectors and BDOs</li> <li>• Vehicle arrangement</li> <li>• Coordination with NGOs</li> <li>• Early warning to fishermen</li> <li>• Ensure functioning of warning and</li> </ul>	<ul style="list-style-type: none"> <li>• Monitor functioning of DCR</li> <li>• Coordination with officials</li> <li>• Assigning duties to NGOs</li> <li>• Holding DDMC meetings</li> </ul>	<ul style="list-style-type: none"> <li>• Dissemination of information regarding status of the disaster and submission of reports to PR Department</li> </ul>	

	communication systems • Ensure Muck Drill			
<b>DDMC</b>	• 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	
<b>BDMC</b>	• Assign responsibilities to all concerned officials at the Block level	• Ensure all BNREGSK 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 evacuation	
<b>GPDMC</b>	• 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 evacuation	• Report to Block

Immediately after receiving information about the disaster that strikes any area, the trigger mechanism is activated and the following actions will be initiated:

- Generation of event scenario report to be sent as per the trigger mechanism.
- Preparation of current status on life line facilities and infrastructure.
- Rapid visual assessment of damage to buildings.
- Assessment of Causalities.
- Assessment of number of displaced persons.
- Assessment of Transport requirements.
- Assessment of requirement of shelters.
- Assessment of basic need requirement of displaced persons.

- Status of search and rescue operations.
- Details and listing of missing persons.
- Assessment of type & extent of medical support for undertaking emergency operation.
- Status of identification of stakeholders and role players for providing supporting response and recovery operations.
- Status of activating call center for providing multiple pieces of information to callers and relatives of victims.

Primary tasks during this phase would be:

1. Proper need assessment through village response
2. BDOs shall deploy resources to all affected sections in an equitable manner
3. Besides food, cloth and shelter facilities such as public health and sanitation is to be provided in shelters or camps.
4. Ensuring total transparency in distribution of relief material
5. Putting in place an objective method of assessing damage

### **Role of Panchayati Raj Department**

Panchayati Raj Department shall assess the situation and give directions to the district Collectors. The Department shall;

- Assess the situation by taking into consideration reports from all formal and informal sources and decide upon the level of the disaster.
- Issue necessary direction for handling the response, relief & restoration measures
- Call for outside support if necessary
- Raise demands for support and assistance
- Assess the resource availability and issue necessary direction for pooling resources for speeding an effective response.
- Coordinate with civil society for supplementing the efforts of the Department
- Monitoring and reviewing the situation on a regular basis.

In the following sections the role of DRDA, Block and GPs are highlighted in the context of pre- disaster, during disaster and post disaster.

### **Role of DRDAs**

- Identifying the resource gaps both physical and manpower and replenish the same through capacity building
- Establishing synergy with local agencies including NGOs/ CBOs
- Dovetailing Risk Reduction into various development programs of state government.
- Provision of temporary shelters for those who have lost their houses completely, till construction of permanent housing is completed.
- Providing minimum household utility goods for all those who lost everything.
- Provision of food and clothing.
- Making alternate arrangements for drinking water if the existing facility has been completely damaged.
- Restoration of road, transport, electricity and communication (where minor repairs are needed and temporary arrangements in the case of those need reconstruction, which takes long time).

### **Role of BDOs**

- The Block Development Officer to immediately have a meeting with all the GP/PS members and update the block disaster preparedness and mitigation plan and clearly specifying the roles and responsibility of each group.
- Ensure that all the resources needed immediately as per the plan are readily available.
- Ensuring function of control room and alert all line dept. and DMTs for disaster.
- Early warning dissemination in the villages especially the vulnerable groups like the fishing community, villages vulnerable to that particular hazard.
- Stock piling of food grains for human and bovine population, medicines like (ORS, Halogen tablets, bleaching powder) etc.

- All the resources available to be kept ready like (polythene, tarpaulins, boat, generator, diesel/ petrol/ kerosene, transportation and communication aids available and other necessary equipment listed in the GPs.
- Human resources like the boatman, specially trained taskforce, swimmers, and civil defence personnel.
- Supporting GP/PS members for rescue and evacuation, stock piling and carry out their activities effectively.
- Telephone and address of the local as well as the district and state level functionaries is available.
- Supporting GP for their relief activities.
- Supporting for rescue and evacuation.
- Monitoring of the relief distribution.
- Coordination among various Disaster Management Teams (DMTs) at the block level.
- Coordination between block and various line departments and DMTs.
- Coordination between the district administration and the Gram Panchayats
- Coordination between the NGOs and the CBOs working in that area
- Arrangement for relief distribution.
- Weather tracking if possible and sharing of information to GPs.
- Sending information to district.

### **Role of community**

The plan envisages constituting village response committees in each Panchayat comprising Sarpanch, Panchayat Secretary and Ward Members. The village committees will constitute response teams from amongst the villagers by taking in to consideration local needs vis-a-vis the hazard and vulnerability assessment. These response teams will be trained as first responders to garner disaster response in the absence of outside emergency responders. The plan envisages covering all 6801 Panchayats. The capacity building would involve awareness raising (about hazard, risks, disaster response) organising training (medical First-Aid, Search & Rescue, extrication from damaged buildings, road clearance, firefighting) equipping (First-Aid kit, radio, extrication equipment) and networking.

The plan also envisages establishing and strengthening local warning systems holding community drills. The committee would be responsible for:

- Developing the Village Disaster Mitigation Plan
- Keeping contact with Block and all other agencies related with the issue.
- Constituting response teams for Search & Rescue, medical aid, extrication of bodies, firefighting or for any other purpose as per village specific needs.
- Ensuring house hold preparedness to village specific hazards.
- Identification of safe locations for temporary shelters.
- Training and capacity building of all teams.
- Resource inventory and gap identification with respect to the needs.
- Identification of vulnerable groups.

### **Role of Civil Society Organizations**

NGOs can play a very important role in mobilizing communities and the strong linkages which NGOs have with grassroots communities can be effectively harnessed for creating greater public awareness on disaster risk and vulnerability, initiating appropriate strategies for strengthening the capacity of stakeholder groups to improve disaster preparedness, mitigation and improving the emergency response capacities of the stakeholders. In addressing the emerging concerns of climate change adaptation and mitigation, NGOs can play a very significant role in working with local communities and introducing innovative approaches based on the good practices followed in other States. NGOs can bring in the financial resources from bi-lateral and multilateral donors for implementing pragmatic and innovative approaches to deal with disaster risk.

The department shall develop a database of NGOs and CBOs at all levels working in the field of disaster management and emergency response and other focusing on geographic outreach and thematic capacities of the organizations. At the State level the capacity of identified NGOs may be built up in disaster management and emergency response.

### **Role of PRIs**

The PRI members can play a role of leadership in Disaster Management at all stages. Right from the preparatory stage up to the handling of the long term development activities for risk reduction, PRI can lead in several ways. A broad outline may include activities like:

### **Pre-Disaster**

- Organising awareness campaign and promoting community education on disaster preparedness
- Articulation of community need for developing preparedness plan through community involvement and Panchayat ownership
- Identifying the resource gaps both physical and manpower and replenish the same through capacity building
- Establishing synergy with local agencies including NGOs/ CBOs
- Dovetailing Risk Reduction into various development programs of national and state governments
- Encouraging people to insure assets and livestock
- Establishing convergence with local institutional structures created for implementing education, health, livelihood, and social justice and so on.
- Activating the DM Plans with the participation of the community
- Formation of Task forces and their capacity building

### **During Disaster**

- Arranging emergency communication through available resources
- Evacuation to temporary shelter and running relief camps
- Supplementing rescue and relief efforts in coordinating different agencies
- Monitoring of Relief distribution
- Safe disposal of carcass and arranging safe drinking water and sanitation

### **Post Disaster**

- Damage assessment particularly assisting in identifying victims for compensation and its distribution
- Formulating rehabilitation and reconstruction plan of houses and other local infrastructures
- Enforce minimum specification for safe reconstruction
- Supervise and monitor long term reconstruction and mitigation projects

- Mobilising special funds to use disaster resistant construction technology in vulnerable areas

**Role of PRIs during different phases of disaster**

Table: 6.9

Phase—I: Pre- Disaster			
	<b>Gram Panchayats</b>	<b>Block/ Panchayat Samitis</b>	<b>District/ Zilla Parishads</b>
1	Convening meetings of ward members to ensure proper information regarding the warning signal searched the people through all media modes.	Supervise preparedness of the Gram Panchayats.	Before the onset of monsoon (May) and likely periods of cyclone (May-June & Oct-Nov), the District Collector should have a meeting of all District Heads of the sectoral, Departments and the Members of the ZP for preparedness.
2	Updating information on Civic amenities, Population Government and Panchayat properties, Housing and cattle /livestock population	Consolidate village wise information on items listed under GP	All the concerned departments, specially Roads &Buildings, Major and Minor Irrigation, PDS, Communication Police, Revenue Electricity, etc., to take up necessary repair and maintenance and related works for preparedness to counter Flood & Cyclone Disasters.
3	Selection of location for shifting people/livestock to safer places	<ul style="list-style-type: none"> <li>• Arrangements for transport to assist Gram Panchayats for evacuation</li> <li>• Keep Cyclone shelters/ safer buildings like schools in ready condition for temporary shelter for the people</li> <li>• Arrangements for establishing relief and rehabilitation centers and materials required thereof.</li> <li>• Arrangements for supply and storage of food and other items of basic necessities</li> </ul>	To organize 'Task Force' at District, Block and the Village levels.
4	Special arrangements for evacuation of handicapped, children and expectant mothers	Engineering staff at the Block levels should repair drainage /canal/ roads etc.	To identify and enlist NGOs who are useful in extending help during disasters

5	Medical sanitation requirements relief camps	Contacting Ex-army /Security forces personal /volunteers to organize a task force to assist people in emergency	Check the inventories of items required at a short notice for rescue and relief operations during the impact of disasters.
6	Arrangements disconnecting lines during winds/gales	Procure and keep rescue materials including boats ready	At the first warning alert all concerned at Block and Village levels.
7	Stocking food grains, drinking water and other necessities	Function as link between the district and village level counter disaster activities	All the members of the DDMC should be asked to keep their personnel preparedness, at all levels down the line
8	Arrangements disconnecting lines during winds/gales	Procure and keep rescue materials including boats ready	Ensure the control room functioning round the clock during the crisis.
Phase-II: During Disaster			
1	At the on-set warning of a disaster, the Gram Panchayat Leaders, with the help of District and Block Level officers start preparations for countering Disaster. Establishment of temporary shelters relief camps should start immediately.	With the final warning of cyclone, flood disasters, identify the villages likely to be affected and send teams of Task Forces /Volunteers to the villages to supervise counter disaster measures.	In the event of on-set of a cyclone or monitor the situation, identify the Blocks and villages most likely to be affected and issue warnings at close intervals to all concerned.
2	With the final warning, operations for the evacuation of people and the livestock to safer places before the disaster strikes.	Arrange transport facilities to evacuate people from villages likely to be affected and help GPs to shelter them in temporary relief camps	Activate control room and keep full watch on the situations
3	Along with evacuation of people and livestock, storage of food and water for the people and the livestock to be made.	Arrange for emergency communication facility through wireless etc.	Arrange emergency communication system

4	The Volunteers and the task forces to be kept in full readiness to take rescue operation at the shortest notice.	Arrange and assist GPs to establish temporary shelters/relief camps.	Put the DDMC on job for assisting Block and GPs for taking counter disaster measures.
5	Medical and other relief teams from the district and Block to be asked to take position at strategic points and coordinate with the volunteers.	Arrange for the supply and transport of necessary food and other items to relief camps inadequate quantities.	Arrange transport for the evacuation of the people and livestock

**Phase III: Post Disaster**

1	Assist in the identification of the victims of the disaster and eligible for various types of compensations and assist in the distribution	Assist in Planning and Implementation of Rehabilitation of affected people; Repair and reconstruction of damaged house, physical infrastructure etc and return to normal economic activities including farming etc	Planning and Implementation of Rehabilitation of affected people, repair and reconstruction of damaged houses, physical infrastructure, etc and return to normal economic activities including farming etc
2	Formulate reconstruction plan for individual houses, community and Department buildings, roads and other physical infrastructure within the jurisdiction of the GP with the assistance of the technical departments from block and district levels.	Assist GPs in identification of persons eligible for different types of compensation and its distribution.	Compensation for loss of lives, properties of individuals to begin
3	Enforce minimum code or specifications for the construction of individual houses, community and Government buildings, roads and other physical infrastructure.	Based on hazard and vulnerability prepare village and block level mitigation plan and consolidate and integrate into block plan	Mapping of hazard and vulnerability to be initiated, if it is not available detailed maps to be prepared for each block and district.

## **6.4 Incident Response System (IRS)**

The Incident Response System or IRS broadly refers to a management system to be used for incidents of various kinds and sizes such as earthquakes, floods, cyclones, landslides etc. or emergencies caused by train accidents, epidemics. The system provides scope to organize various functions, tasks and staffs within the overall response process while emphasizing greater coordination and communication among different organizations involved. IRS as a system is flexible and adaptable to suit any scale of natural as well as man-made emergency/incidents. It can be useful for routine emergencies such as road and train accidents and for large, complex multi-jurisdictional disasters such as the recent tsunami. In fact, IRS as a management system draws its strengths from its applicability to different kind of incidents/disasters of varying scales. Through Incident Response System (IRS), the main intention is to transform the confusion during the early stage of an emergency situation into a well managed response process by providing answers to vital questions such as “who’s in charge? “ & “what’s my job?”

The relevance of IRS can be easily understood if we analyze response to some of the disasters/incident such as Orissa super cyclone 1999, Gujarat earthquake 2001 or recurring hazards such as flood and drought experienced every year. The response to these emergencies requires involvement of number of organizations/ departments such as Health, Revenue, Public Works, Communications, Home, Finance, Rural Development, Roads, Agriculture, Animal Husbandry etc.

Achieving coordination among these agencies during emergency time create unique challenges such as line of authority, supervision, resource management, differences in terminology and other communication problem, span of control etc. Often it is found that as a result of these difficulties, the response process suffers leading to poor incident management. How better can we coordinate among these responding agencies which have different organizational structures, line of authority, communication patterns? How can we ensure that personnel involved in such responses do not get overwhelmed by the incident and have the ability and competence to function well during such crucial hours?

To address such issues, Incident Response System (IRS) provides a framework, which makes use of management concepts such as unified command indicating clear line of authority, organizational flexibility for different scale of emergencies, standard

terminology for better communication, resource management procedures for efficient use and systematic guidelines for an effective incident response. National Institute of Disaster Management which had played a key role in HPC work was involved in consultations.

This was one of the important components of GOI-USAID Disaster Management Support Program. Accordingly, Lal Bahadur Shastri National Academy of Administration (LBSNAA), Mussoorie was initially designated as the nodal training Centre for this purpose. NIDM is the Nodal institution for all training and development on such matters. It is important to note here that the IRS does not seek to supplement the existing administrative structure, which is an outcome of organic evolution over a long period of time. It rather tries to strengthen this structure through integrating various IRS principles and through training of key personnel for specialized functions during time of emergencies.

Management of such incidents will also involve other line departments for example, Power, Communication, Health, Public Works, Police etc. Achieving coordination and communication among these departments is often found to be very difficult. IRS in such context operates through the basic principle of providing prior training to the administrators within a specific framework with an objective of making response process much more effective.

Further, if an earthquake is of more severe nature causing heavy damages, the normal existing practice is to depute Senior Officials from the state head quarter or other departments for managing the situation. IRS in these conditions tries to ensure adequate training of such personnel for emergencies at different levels i.e. District, State and National level. The use of common framework, which means use of common terminologies, standardized methods etc. ensures that not only a smooth transfer of authority takes place but also continuity in the on-going efforts is maintained. The responding personnel who may be drawn from different departments and backgrounds when operate in an IRS environment have a common objective of stabilizing the incident and restoring normalcy.

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## **Chapter-VII**

## **Capacity Building**

Capacity is defined as the ability of individuals, organizations, organizational units and systems to perform functions effectively and in a sustainable manner. It is also defined as “the process through which individuals and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time”. Simply put, if capacity is the means to plan and achieve then capacity development describes the way to those means (UNDP). Capacity development covers strengthening institutions, mechanism, and capacities at all levels of all stakeholders. The United International Strategy for Disaster Reduction (UNISDR) defines Capacity Development for DRR as the process by which people, organization and society systematically stimulate and develop their capability over time to achieve social and economic goals, including through systems, and institutions-within a wider social cultural enabling environment. Capacity Building is an important component of investing in Disaster Risk Reduction. In the domain of disaster risk management, the Sendai Frame work emphasizes the need for enhancing the technical, financial and administrative capabilities of institutions, governments, and communities to deal with the identified risks at different levels, The Framework calls for reinforcing the capacity to implement and enforce risk reduction measures. Capacity development commonly refers to a process that is driven from inside and starts from existing capacity assets. The Sendai Framework underlines the need for capacity development of women in disaster management and building their ability to participate effectively in managing disaster risks. Building capacity for reducing risks is also necessary for achieving the Sustainable Development Goals (SDGs).

### **7.1 DM Act Provision for Capacity Building**

Section 2 (b) of DM Act, 2005 delineates the Capacity Building measures to be undertaken. As per the Sub-Section (i) of Section 2 (b) Capacity Building includes identification of existing resources and resources to be acquired or created. As per Sub Section (ii) of Section 2 (b) acquiring or creating resources identified under Sub-Clause (i). Sub Section (iii) emphasizes on organization and training of personal and coordination of such training

effective management of disaster. Sub Section 2 (i) of Section 3 of DM act, postulate that National Disaster Management Authority take Capacity Building measures for dealing with threatening disaster situation or disaster. Under the sub section 2 (j) of Section 10, the National Executive Committee plan and coordinate specialised training programme on disaster management for different level of officers, employees and voluntary rescue workers. As per the Section 11 (1), Sub-Section 3 (c), The National Disaster Management Plan shall include measures to be taken for preparedness and capacity building to effectively respond to any threatening disaster. (*Source: DM Act-2005*)

**Table 7.1 Training Institutions in Odisha**

<b>Name of Institution</b>	<b>Areas of Intervention</b>	<b>Activities –Level</b>
Gopabandhu Academy of Administration Bhubaneswar	DM and DRR approaches, integration and mainstreaming, adaptation; planning needs and strategies, coordination, strategic and analytical tools, regional local cooperation, human resource planning, ground action evaluation and monitoring, disaster reporting, institutions, incident management, etc.	Training of IAS officers (all levels) and other civil service officers, and faculty members
State Institute of Rural Development (SIRD) – Disaster Management Cell Bhubaneswar	DM and DRR approaches, integration and mainstreaming, adaptation; mitigation strategies, risk analysis and impact assessment, multi-hazard risk analysis and management, climate-change and natural resources related disasters, food security and livelihood issues in disaster management, rural institutions, and community participation in DRR	Training of officials from government departments in rural development, water, environment, land-use, agriculture, etc. and faculty from institutes of government and outside, NGOs, PRIs, etc.
Institution on Management of	DM and DRR approaches for agriculture, food and	Training of officials of deptt. agriculture/ forestry, land

Agricultural Extension (IMAGE) Agriculture Dept. Bhubaneswar	natural resources, integration and mainstreaming, climate change adaptation; mitigation strategies, multi-hazard risk analysis and impact assessment, agrochemicals, GMOs, biotech and microbial disasters, coastal and forest hazards; plant protection, land-use, rural livelihood, DRR, etc.	use, environment, KVKS, WALMI, faculty of related institutes/ colleges, NGOs, etc.
Regional Institution on Training and Extension (RITE) -Agriculture Dept. (Mahisapat, Dhenkanal, Bolangir, Rangeilunda, Ganjam)	DM and DRR approaches for agriculture, food, and natural resources, integration and mainstreaming, climate change adaptation; mitigation strategies, multi-hazard risk analysis and impact assessment, agrochemicals, GMOs, biotech and microbial disasters, coastal and forest hazards; plant protection, land-use, rural livelihood, DRR, etc.	Training of department officials from agriculture/ forestry, land use, environment, KVKS, WALMI, faculty of related institutes/ colleges, NGOs, etc.
Centre for Environmental Studies, Forest Department, GoO	DM and DRR approaches, integration and mainstreaming, adaptation; educational, training and research needs and strategies, risk analysis and impact assessment, forestry sector and disaster management, forest fire management, etc.	Training of IFS officials, state forest service officials, faculty members/ scientists in forestry/ environment, S & T, agriculture institutes, etc.
Fire Training Institute	Safety and risk reduction in technical education/ institutes, lab safety, electrical and chemical safety, earthquake safety, pandemic control, disaster risk reduction, awareness, etc.	Diploma course on Safety Risk Management, Occupational Health and Safety, Response Preparedness, Short-courses for government officials, etc
National Institute	DM and DRR approaches;	Training of faculty

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of Technology, Rourkela	integration and mainstreaming; adaptation; educational; training and research needs; mitigation strategies; risk analysis and impact assessment; multi-hazard risk analysis and management; EIA; auditing; chemical disasters; climate change; coastal and forest related disasters; disasters related with water, sanitation, and health; waste management; climate-change; law and policy, vulnerability, planning and management, etc.	members of universities/ management /technical institutes, senior officials/ executives from government, corporate or NGOs, professional and management development courses, etc.
Utkal University Departments of Climate Concerned Studies-Sponsored Orientation programmes in University Departments	DM and DRR Approaches, Integration and mainstreaming, Adaptation; Educational, training and research needs and strategies, Risk analysis and impact assessment, Regional and local cooperation, Planning and preparedness, Role of NSS, NCC, Infusing DM and DRR into higher education, etc.	University department heads/ deans, college/teachers, technical staff, etc.zonal/ state level courses under UGC refresher/orientation course under environment studies and sponsored by other ministries NDMA/MoEF/DST, etc.
Odisha University of Agriculture and Technology (OUAT), Bhubaneswar	DM and DRR approaches, integration and mainstreaming, adaptation; educational, training, and research needs as well as strategies, risk analysis and impact assessment, regional and local cooperation, planning and preparedness ,role of NSS, NCC, Infusing DM and DRR into higher education, etc.	Training of department officials in agriculture/ forestry, land use, environment, KVKS, WALMI, faculty of related institutes/ colleges, NGOs, etc.

*Source: Training Need Assessment on DRR and Climate Change Adaptation, December-2014, prepared by All India Disaster Mitigation Institute with support of OSDMA)*

## **7.3 Departmental Capacity Building Plan**

### **7.3.1 W &CD and Mission Shakti Department**

#### **State level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Additional Secretary, Joint Secretary, Deputy Secretary, Under Secretaries, SOs/ASOs	Training cum awareness programme at state level for better supervision, monitoring and taking preventive measures.

#### **District Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
DSWOs, CDPOs, Supervisors, Superintendents of CCIs & other Institutions/Homes	Training programmes on effective management of disasters

#### **Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
AWWs, ASHAs, SHG members, GKS members, members of Jaanch Committee/Mother's Committee, village volunteers	Public awareness programmes. Distribution of relevant posters, leaflets, pamphlets in simple Odia language.

### **7.3.2 Commerce & Transport Department**

#### **For the Staff:**

<b>Training Programmes on</b>	<b>Key Components/Topics</b>	<b>Target Audience</b>
First-Aid	1. Providing First-Aid to the road accident victims. 2. How to shift the victim to the nearest hospital. food grains during floods, drought, cyclones, tsunami	All RTOs, Inspectors / Jr. Inspectors of Motor Vehicles, all Traffic Inspectors / Sub-Inspectors, Constables of Transport Department.

**For Other Stakeholders**

<b>Sl No.</b>	<b>Training Programme on</b>	<b>Key Components</b>	<b>Target Audience</b>
1	Driving Training in Heavy Vehicle Category	Theory and Practical training on driving skill	Interested youths
2.	Driving Training in Light Vehicle Category	Theory and Practical training on driving skill	Interested youths
3.	Road Safety Awareness	About traffic rules and safety norms to be followed while on road	General Public.

**State level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Additional Commissioners of Transport, Joint Commissioner Transport, Asst. Directors	Training cum awareness programme at state level for better supervision, monitoring and taking preventive measures.

**District Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
RTOs., MVIs, Jr. MVIs, TIs, TSIs, Constables	Training programmes on effective management of disasters like cyclone/floods, road accidents, Bus / Truck Operator's strike.

**Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Awareness programmes on road safety for general public	Public awareness programmes. Distribution of relevant posters, leaflets, pamphlets in simple Odia language.

### **7.3.3 Electronics & Information Technology Department**

**Electronics & Information Technology**

<b>Training Programmes on</b>	<b>Key Components/Topics</b>	<b>Target Audience</b>
Awareness and Sensitization towards Cyber Security	Awareness and sensitization of all Government officials of Odisha towards impacts of Cyber Security and importance of its knowledge.	Officials of E&IT department, OCAC, SeMT, SDC Composite Team, Other department officials of Odisha, DeGMs and other district level officials

**State level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Additional Secretary, Joint Secretary, Deputy Secretary, Under Secretaries, SOs/ASOs	Training cum awareness programme at state level for better supervision, monitoring and taking preventive measures during Cyber Crisis.

**District Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
DeGMs, DEOs, & other district level officers	Training programmes on effective management of Cyber Security, Disaster Management, Physical Security measures for IT Infrastructures etc.

**Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
DeGMs, IT Associations members, Manufacturers & Dealers of electronic products	Public awareness programmes. Distribution of relevant posters, leaflets, pamphlets in dual languages.

### 7.3.4 Excise Department

<b>Training Programmes on</b>	<b>Key Components/Topics</b>	<b>Target Audience</b>
Prevention mitigation & preparedness plan for prevention of Disasters if occurred due to consumption of spurious liquor	To conduct massive raids on suspected places, cases to be booked & accused persons are to arrest persons involved in illegal liquor trade.	-
	The duty and execution of work of Multidisciplinary Squad constituted in the district of excise raids consisting of officials of Excise, Forest, Revenue, Health & Police under the supervision of Excise Superintendent.	Excise Officials starting from Constables to Deputy Superintendents of Excise
	To check spread to ID & spurious liquor	
	Nature of public awareness against the illegal liquor trade/ ID liquor consumption	
	Mechanism for early warning and dissemination thereof, trigger mechanism for response. Rescue operation of the affected people at the	Excise officials starting from Constables to Inspectors of Excise

	district level.	
	Arms and ammunition training to Excise Officials	S.I. of Excise & Inspectors of Excise.
Anticipation of fire accident due to storage of alcohols.	Fire safety measures to be taken in Depots & Distilleries	BM of OSBC Depot/ OIC
To recoup loss if any due to occurrence of nature calamity like fire accident, storm, earthquake etc.	Coverage of insurance of OSBC Godowns	BM of OSBC Depots
Precaution for leakage of molasses in the factory, it is apprehension of tank, bust resulting to damage to factory boundary wall, spread of store molasses in the surrounding area including in the public road creates death of persons	Submission of environment pollution control certificate from the concerned Board before issuing licenses to the distilleries.  All the factory units, OSBC Depots to follow industrial guidelines.	Excise Officials including distilleries  The OICs engaged by Excise Deptt., the Factory Officials & Depot managers

#### **State level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Additional Secretary, Deputy Secretary, Under Secretaries, SOs/ASOs	Training cum awareness programme at state level for better supervision, monitoring and taking preventive measures.

#### **District Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Superintendent of Excise , Dy Superintendent of Excise, Inspector/ S.I./ A.S.I/ Constables	Training programmes on effective management of disasters like Liquor Disaster.

### **Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Local Communities and NGOs	Public awareness programmes. Distribution of relevant posters, leaflets, pamphlets in simple Odia language.

### **7.3.5 Fisheries & ARD Department**

#### **7.3.5.1 Capacity Building Framework for ARD Sector:**

<b>Sl. No.</b>	<b>Title Programme</b>	<b>Programme Objectives</b>
1	Disaster Preparedness for Livestock management	To Analyse implications of disasters on livestock sector Describe the different phases of disaster management State Odisha Relief Code provisions, notifications pertaining to ARD sector Acquaint with Standard Operating Procedures laid down in Disaster management Plan for ARD
2	Climate Change effects on Livestock	To State various factors of Livestock sector contributing to global warming To describe the effect of Methane to increase Green house gas To describe the ways to reduce green house gas emission from Livestock
3	Orientation programme on Disaster response & mitigation at Regional level for District IRTs	To describe the role & functions of IRT at District and Block level
4	Training workshop for NGOs/CBOs/Animal welfare organizations at district level	To orient about the rescue, rehabilitation, preparedness, Carcass disposal
5	Training on Community Preparedness regarding livestock management in the event of Disaster	To sensitise the Community Volunteers regarding preparedness in relation to livestock sector to mitigate Disaster
6	Master Trainer Training on Disaster management relating to ARD Sector	To create a pool of Master trainers on ARD Sector

#### **7.3.5.2 Capacity Building Plan for Fisheries Sector**

<b>Sl.No</b>	<b>Particulars</b>	<b>Measures required</b>
1	Capacity building at all level in vulnerable areas flood / cyclone	<b>State level</b> –For better supervision, monitoring and preventive measures one day training-cum-awareness programme may be organized at state level. All Dy. Directors, District Fisheries Officers, Addl. Fisheries Officers will attend. This may be organized at Directorate, Cuttack with the help of OSDMA and

		<p>other related organizations.</p> <p><b>District level</b> – District Fisheries Officer/ Addl. Fisheries Officer/Asst. Fisheries Officer/ Sr. Technical Assistant &amp; Jr. Fisheries Technical Assistant may be trained to effectively manage flood, cyclone etc. OSDMA and District Disaster Cell will organize the workshop.</p> <p><b>Community level</b> – 29<sup>th</sup> October of each year is observed as the disaster mitigation day in fisheries sector. In this particular day public awareness program will be organized in each village to sensitize the community. Village volunteers / fish farmers &amp; fishermen will be trained regarding rescue and protection of their tanks / ponds and shifting of boats &amp; nets to a safer place and carcass disposal etc.</p>
2	Public awareness through IEC activities	Mass awareness programme may be done through different audio-visual media to sensitize fishermen and fish farmers
3	Installation of bore well	During drought most of the tanks and ponds are dried out. There will be heavy mortality of fish due to inadequate water in the ponds so bore well facilities should be given to the farmers with 50% subsidy by RWSS Department to maintain the optimum water level. Further, permission may be given to the fish farmers to intake water from the irrigation channel.

### **State level Capacity-Building Plans**

For better supervision, monitoring and preventive measures one day training cum awareness programme is to be organized at state level. In this programme Director / Addl. Director will chair and Jt. Directors, Dy. Directors, District Fisheries Offices along with personnel involved in the training activity will participate. Event will be managed by Directorate.

### **District Level Capacity-Building Plans**

Similarly, a capacity building programmes are to be organized in the district level to sensitize the field staff working at the grass root level. In this programme the person trained in the state level programme will facilitate at district level. Here the participants are Addl. Fisheries Officer, Asst. Fisheries Officers, SFTA, JFTA. Depending upon the number of participants the training will be decided. The number of participants should not exceed more than 50. This event will be managed by the District Fisheries Officer of the respective district.

### **Community Level Capacity-Building Plans**

PRI members need to participate. Trained technical people from district / block will coordinate the programme with the help of village contact person. Event may be managed by AFO/NGO of the block. In this public awareness campaign the relevant poster, leaflets, pamphlets in Odiya language will be distributed to all participants. The resource person from OSDMA may be called for this training.

### **7.3.6 Food Supplies and Consumer Welfare Department**

<b>Sl. No</b>	<b>Particulars</b>	<b>Measures required</b>
1	Capacity building at all level in vulnerable areas flood/cyclone	<p><b>State level –</b> For better supervision, monitoring and preventive measures one day training cum awareness programme will be organized at state level. Managers of OSCSC / CSOs/ACSOs/ will attend. This may be organised at Conference Hall of the Consumer Forum, Bhubaneswar.</p> <p><b>District level-</b> ISs/PIs/ AMs will be trained to effectively manage flood, cyclone etc. OSDMA and District Disaster Cell will organize the workshop in Collector's Conference Hall.</p> <p><b>Community Level-</b> During October of each year, a public awareness program will be organized in each village to sensitize the community. Village volunteers will be trained regarding rescue and shifting of food grains to safer places.</p>
2	Public awareness through IEC activities	Mass awareness programme shall be done through different audio-visual media to sensitize people.

#### **State level Capacity Building Programme**

For better supervision, monitoring and preventive measures, a daylong training cum awareness programme will be organized at state level. In this programme MD-OSCSC will Chair and senior officials of the FS & CW Dept. and OSCSC along with personnel involved in the training activity in the training institute will participate. Event will be managed by OSCSC ltd. with the support from Legal Metrology.

#### **District level Capacity Building Programme**

A similar capacity building program will be organized in the district level to sensitize the field staff working at the cutting edge. In this programme personnel who had attended state

level programme will facilitate at district level. Here the participants will be CSO/ACSO/IS/PI. Depending upon the numbers of the participants the training batch will be decided. A batch size for a programme should not exceed 50 participants. Event will be managed by CSO of the respective District.

The fund required (18 lakh) for prevention of disaster, mitigation, capacity building and preparedness has been proposed by the Dept. for financial approval by Special Relief Commissioner (SRC).

### **7.3.7 Housing and Urban Development Department**

#### **State level Capacity-Building Plan**

<b>Training for</b>	<b>Programmes</b>
Training for Community Organizers and Executive Officers of ULBs	Awareness generation among community members on various aspects of disaster. Training programmes on preparedness measures. Training programmes on Relief and Restoration. Training programmes on documentation and reporting,

#### **Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Slum dwellers/ULBs	Awareness programme on various aspects of disaster management more importantly on urban flooding.

#### **Capacity-Building of Stakeholders and Beneficiaries of the department**

Training of the stakeholders is one of the key requirements of any disaster management planning. The H&UD department will ensure regular training of the officials from urban local bodies. As per the Disaster Management Act, the State Disaster Management Authority (SDMA) and the state disaster management plan are mandated to provide direction and coordination to ensure the implementation of all disaster management policies and plans.

Training needs have to be identified for each department, appropriate training programs need to be designed and conducted at all levels involving broad spectrum of stakeholders (from government, NGOs and civil society) to fully realize the needs of sensitization, knowledge/information management and skill development of personnel involved in the disaster management functions.

### 7.3.8 MS & ME Department

Sl. No.	Training Programmes on	Key Components/Topics	Target Audience
1.	How to be prepared for Natural disasters like Floods, Cyclones, and Earthquakes and reduce losses.	<ul style="list-style-type: none"> <li>✓ How to construct robust building / sheds which are prone to earthquakes</li> <li>✓ The importance of insurance.</li> <li>✓ Fund management i.e; provisions for Disaster management.</li> </ul>	Entrepreneurs / Promoters of MSMEs
2.	Damage Assessment	Various methods of estimation in terms of quantity & value.	All Officers of Directorate of Industries, All GM, RICs/ DICs, All IPOs & Industrial Supervisors.
3.	Supervision & Monitoring and Taking preventive measures	Training cum awareness programme at State level for better supervision, monitoring and taking preventive measures.	Addl. Secy., Jt. Secy., Director of Industries, Addl. DI, JDI, Spl. Officer, ADI, SO.

#### State level Capacity-Building Plans

Training for	Programmes
Additional Secretary, Joint Secretary, Deputy Secretary, Under Secretaries, Additional Directors / Joint Directors / Special Officers / Deputy Directors / Asst. Directors of Industries / SOs	Training cum awareness programme at State level for better supervision, monitoring and taking preventive measures.

#### District Level Capacity-Building Plans

Training for	Programmes
GM, RICs / DICs,	Training programmes on effective management of disasters like cyclone/floods.

### **Block level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
IPOs , IS	Methods of assessment of damage and reporting.

### **7.3.9 ST & SC Department**

<b>Sl No.</b>	<b>Training Programmes on</b>	<b>Key Components/Topics</b>	<b>Target Audience</b>
1	Safety of Students & Boarders residing in Schools & Hostels of ST & SC DevDept Educational Institutions	Securing boarders residing in Hostels during incidences of flash floods& safe evacuation during disaster emergencies	Headmasters/ Wardens of Schools & Hostels of St & SC DevDept, District Welfare Officers (DWOs) Welfare Extension Officers,(WEOs)
2	Safety of Civil Structures & construction activities like Water Harvesting Structures (WHS), Check-Dams, Diversion Weirs, Gravity flow Irrigation projects undertaken in the TSP areas	Awareness regarding vulnerability of these structures to natural disasters like flash floods, cyclones,	Project Administrators, Asst Executive Engineers, Local communities, NGOs,
3.	Safety measures of Livelihood projects running under the Focus Area Development Programme (FADP) like WADI, Fisheries programme, Vegetable Cultivation, Poultry, Coffee, Goat rearing, Rubber & Lac Cultivation, Cold Houses for storage of farmers' produce	Awareness regarding comparative vulnerability of certain activities like fisheries, poultry, vegetable cultivation and preventive steps to be taken minimizing the risk during Disasters like floods, saline water ingress during floods, cyclone etc. Since death cases due to lightning strikes has intensified over the years, it is required to be included alongside other natural disasters.	Field staff of Odisha Tribal Development Society (OTDS) like Project Administrators (PAs) ITDA; Project Managers (PMs), Subject Matter Specialists (SMSes), FNGOs
4.	Action Plan for safety of the Particularly Vulnerable Tribal Groups (PVTGs) (Primitive Tribal Population) in their habitat areas coming under 17 Micro Projects	Awareness regarding the overall topography, remoteness & lack of proper accessibility to those areas & the requirement of the preparedness of a special nature for these areas.	Special Officers of Micro Projects, NGOs, local communities

	situated in extremely remote regions of 12 districts		
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### **State level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Additional Secretary, Joint Secretary, Deputy Director-cum-Deputy Secretaries, Deputy Secretary, Under Secretaries, D.O., S.O. ASOs	Training cum awareness programme at State level for better supervision, monitoring and taking preventive measures.

### **District Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
PA, ITDA, DWOs, ADWOs, WEOs, Spl. Officers of Micro Projects, Project Managers & Subject Matter Specialists of OTDS, Staff of District Units of TDCCOL, OSFDC, OTELP, ITDAs	Training programmes on effective management of disasters like cyclone/floods

### **Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Facilitating NGOs of OTDA, Micro Projects, Village Committees, , Village Volunteers	Public awareness programmes. Distribution of relevant posters, leaflets, pamphlets in simple Odia language.

### **7.3.10 Steel and Mines Department**

#### **State level Capacity-Building Plans**

<b>Training for</b>	<b>Programme</b>
Additional Secretary, Joint Secretary, Deputy Secretary, Under Secretaries, SOs/ASOs	Training cum awareness programme at state level for better supervision, monitoring and taking preventive measures.

### **Zonal/Circle Level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
JDGs, DDGs & DDMs, Geologists & Mining Officers, Supervisors, Surveyors, Asst. Mining Officers, Technical Assistants, Field Officers	Training programmes on effective management of operational disasters in the mines and natural disasters

### **Community level Capacity-Building Plans**

<b>Training for</b>	<b>Programmes</b>
Personnel of respective mines	Training programmes on effective management of operational disasters in the mines and natural disasters.

<b>Training Programmes on</b>	<b>Key Components/Topics</b>	<b>Target Audience</b>
Mines Disaster	Exploring ways to introduce sustainable practices to combat: Fire Inundation Subsidence Slope failure Explosion Diseases related to Mining	Officials of Steel and Mines Department, Mines, Mining Communities, NGOs
Natural Disaster	Sensitization towards practices which are more resilient to natural disasters, provide prompt relief and rescue after a disaster event. Management of men and materials to provide relief from impact natural disasters and rescue and recovery operations.	Officials of Steel and Mines Department, Mines, Mining Communities, NGOs

### **7.4 Cyclone Shelter Maintenance and Management Committee (CSMMC) and Flood Shelter Maintenance and Management Committee (FSMMC) level Training Programmes**

50 Taskforce volunteers both male and female in the age group of 18 to 35 from each shelter are being trained for 11 days on Search & Rescue, First Aid and operation & maintenance of the equipment's by master trainers from Civil Defense, St. John Ambulance, ODRAF personnel & District level Trainers. The training on effective Shelter Management to CSMMC/FSMMC members, training on Record keeping & standard Shelter Equipment operational skills are also provided. The detail is as follows:

**Table: 7.5**

<b>Sl No.</b>	<b>Training Programmes on</b>	<b>No. of days</b>	<b>Participants</b>
1	Effective Shelter Management and Maintenance	1 day	CSMMC/FSMMC members, community members
2	Search & Rescue	4 days	Task Force Member (25 members, between 18-35 years of age, Male/Female )
3	First-Aid	2 days	Task Force Member (25 members, between 18-35 years of age, Male/Female )
4	Record keeping at shelter level	2 days	CSMMC/FSMMC members
5	Handling of equipments provided to shelters.	2days	Task force members (25 members)

## **7.5 NCRMP, Component-C (Technical Assistance for Cyclone Hazard Risk Mitigation, Capacity Building and Knowledge Creation)**

The activities under National Cyclone Risk Mitigation Project, Component C are to assist thirteen vulnerable coastal states and UTs to improve their understanding of natural disaster risks and vulnerabilities, and strengthen their institutional capacity to address such risks and vulnerabilities. The component supports pilot activities to be implemented by NDMA. The total budgetary outlay of this component is Rs. 22.4 Crs.

## **7.6 “Apada Mitra: Training of Community Volunteers in Disaster Response in India”**

Apada Mitra is a NDMA scheme aims to train community volunteers in disaster response in the selected most flood prone district of India. In case of any disaster or emergency, before any government machinery & support reaches or outside help gets galvanized, it is the Community which has to respond immediately. As the Community plays the role of First Responder, it is critical that there is adequate awareness and preparedness at the Community level especially amongst people residing in the most vulnerable areas of the country.

Floods have been a recurrent phenomenon in India and cause huge losses to lives, properties, livelihood systems, infrastructure and public utilities. India’s high risk and vulnerability is highlighted by the fact that 40 million hectares out of a geographical area of 329 million hectares is prone to floods. On an average every year, 75 lakh hectares of land is affected, 1600 lives are lost and the damage caused to crops, houses and public utilities is Rs. 1805 Crores due to floods (National DM Guidelines on Management of Floods 2008). The

frequency of major floods is more than once in five years. The devastation caused by floods in recent years like the Mumbai Deluge -2005, Kosi Mega Flood-2008 in Bihar, Uttarakhand Flash floods 2013, Jammu Kashmir Floods -2014 and Chennai Floods -2015 highlight the critical need of strengthening local community capacity for response to minimize loss of precious lives.

When a disaster happens, volunteers from the affected community are normally the first to act. The impact of volunteers in disaster response can be tremendous, as the extent of damage – in terms of economic and human loss – is greatly influenced by the initial response to a disaster. Therefore, there lies a critical need to train these volunteers in certain basic skills in disaster management so that they are able to respond in an informed and prompt manner as well as assist the concerned agencies in rescue and relief operations. Over the years, the National Disaster Response Force (NDRF), State Disaster Response Forces (SDRF) and other State responders have successfully contributed towards saving of lives and securing of assets in disaster situations in India. In a similar manner, it would be important to train the volunteers drawn from Civil Defence, Home Guards, Youths and members of the communities etc. so that they are able to assist the community in effective disaster response. The said NDMA scheme is to provide the community volunteers with the basic skills that they will need to respond to their community's immediate needs in the aftermath of a disaster (with a focus on flood). These trained volunteers can assist in saving lives using the basic techniques of disaster response, coordination and management.

#### **Objectives of the Scheme:**

- To train able-bodied community volunteers in disaster response (flood relief and rescue) at the taluka/block level in each of the project districts. These trained volunteers will be called as AapdaMitra.
- To develop standardized training modules for the set of trainings under the scheme.
- To train the volunteers in life saving skills of disaster response, coordination and assistance, and provide personal protective equipment and emergency responder kit.
- To create a Community Emergency Stockpile/Reserve at the district/block level containing essential light search and rescue equipments, medical first aid kits, etc.
- To disseminate training and education tools developed under the project to more number of flood prone districts in subsequent phases of the scheme.

In the State of Odisha two most flood prone districts viz. “Puri” and “Jagatsinghpur” have been identified for implementation of the Scheme. 400 Community Level Volunteers

have already been trained in both the project districts of Puri and Jagatsinghpur. The Apada Mitra Volunteers have done remarkable work during the Extremely Severe Cyclonic Storm FANI in the month of May-2019. They assisted the District Administration of Puri and Jagatsinghpur districts in evacuating the vulnerable people to the safe shelters, disseminated the early warning messages and distributed relief to the affected people. They also provided first-aid to the injured persons at the shelters. They helped the response forces like ODRAF and Odisha Fire Services in road clearance and search & rescue. The Apada Mitra volunteers have also done wonderful work during the world famous Car Festival (Ratha Yatra) in the districts of Puri and Jagatsinghpur.

## **7.7 Civil Defense**

Civil Defense has been functioning in Odisha prior to the commencement of Civil Defense Act-1968 i.e since pre-independence era under the ARP Act and subsequently under Defense of India-1962. In accordance with the Civil Defense Act, rules, regulations and directives issued by the Government of India in the Ministry of Home Affairs, Civil Defense has been strengthened in Odisha. At present Government of India has declared Civil Defence to function in the following Districts.

Angul (Talcher), Khorda (Bhubaneswar), Koraput, Sundergarh (Rourkela), Jagatsinghpur (Paradip), Kendrapada, Bhadrak, Balasore, Dhenkanal, Ganjam, Puri. The first five districts have been declared on the basis of their strategical vulnerability while the districts like Kendrapada, Bhadrak, Balasore and Dhenkanal have been declared as Multi Hazard prone districts by GoI, MHA under the revamping scheme in the year 2011 and further added districts like; Ganjam and Puri as Multi Vulnerable districts.

The Organization is functioning under the Home Department of the Government of Odisha. The DG & IG/ Additional DG & IG of Police, Fire Services, Commandant General, Home Guards has been declared as the Director of Civil Defense of the State to coordinate the activities of the Controllers of Civil Defense i.e. the District Magistrate of the district concerned. They are being assisted by the Deputy Controllers of Civil Defense placed in full time basis or on ex-officio capacity.

The strength of the Organization vests in its trained, disciplined and dedicated young volunteers being raised/identified from different walks of life and enrolled as volunteers under CD Act Rules & Regulations. They are often called for training and exercises duty as and when required.

Training is the hall mark of Civil Defense and has also been planned in 3 tier basis. Training, if it is to be successful, must be progressive. Hence each step of training is well consolidated before the next stage is attempted. The training proceeds from simple to complex and more advanced stages. The various stages in which the training has been planned are outlined below:

- Basic Training
- Service and Team Training
- Combined Training

These training are conducted at levels Local, District, State and National level

In addition to that, OSDMA has been taking up capacity building activities of community members, task force members of cyclone shelters and flood shelters, civil defence volunteers and others for disaster preparedness and response activities. Search and Rescue (SAR) and First-Aid (FA) are the foundation of any capacity building initiative in disaster management. Though a host of activities are being taken for capacity building in search and rescue, there is no standardisation for this category of training in the state till now. The First-Aid training has been standardised by St. John Ambulance at the national level in to three levels, i.e. **Senior, Voucher, Medallion**. Different formats and curricula have been defined by St.John Ambulance for different levels of capacity building in First-Aid.

In line with it, it is proposed to standardise the community level capacity building activities in **Search & Rescue** for better identification of the skill level of the youth at the grass root level and effective utilisation of their skill in disaster response activities. The matter was discussed with civil defence and other experts who have been long associated with community level capacity building activities in the State. The following levels in community level **Search & Rescue** are suggested for consideration:

**SAVIOUR**

**ACHIEVER**

**RESCUER / RESCUE FIRST RESPONDER (RFR)**

**MASTER TRAINER**

1. The stage one would be “**Savior**” where the community volunteers will be trained on basic/ elementary courses of Search and Rescue & First Aid after which the trained volunteers can protect themselves and support the rescuers.

2. The second stage would be “**Achiever**” where the trained volunteers will refresh their training skills and in addition, would upgrade their skills and knowledge on advancement of the elementary aspects of Search and Rescue/ First Aid. The Achievers will work in rescue teams under the guidance of the team leaders.
3. The third stage would be “**Rescue First Responder**” (**RFR**)/ “**Rescuer**” under which the CD volunteer would be trained on different facets of search and rescue along with the leadership skills. After completing the training successfully, the community volunteer can operate rescue operations independently and or lead /manage the team efficiently. After this stage, the trained volunteers will be recognized as permanent rescuers and eligible to participate in the higher level trainings in the state and outstate.
4. The fourth and final level would be “**MASTER TRAINERS**” and “**EXAMINERS**” for the trainers who have completed the minimum level of “Rescuer/ First Responder” training successfully.

## **7.8 SDRF Capacity Building Component**

The State Disaster Respond Fund (SDRF) is a fund constituted under section 48 (1) (a) of the Disaster Management Act, 2005 (53 of 2005). These guidelines are being issued under section 62 of the DM Act, 2005.

As per the provision of the SDRF (5%) of the annual allocation of the SDRF may be kept for Capacity Building Activities by the State. These activities are as under

- a) Setting up/strengthening of Emergency Operation Centers (EOCs) in the State.
- b) Training/Capacity building of stakeholders and functionaries in the State.
- c) Supporting disaster management centers of State and Administrative Training Institutions.
- d) Preparation of Disaster Management Plans based on Hazards, risk and Vulnerability Analysis.
- e) Strengthening of SDMAs and DDMAs.

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## **Chapter – VIII**

### **Knowledge Management**

#### **8.1 Partners of OSDMA in different activities of disaster management.**

Knowledge Management (KM) is a multidisciplinary approach to achieve the desired objectives by creating, sharing, using and managing information as well as technology of an organization. Thrust must be given towards exploring all possible opportunities of knowledge requirement for augmenting potentials like physical assets, human resources & services. Implementing a complete knowledge management takes time and money. However, with a sound knowledge network risks can be minimized by taking a phased approach that gives beneficial returns at each step & tangible results quickly with enhanced efficiency, better decision making and greater use of tested solutions across the state. Strengths of Knowledge Networks in Disaster Management are like

- Better response.
- Empowered Government Disaster Management Departments.
- Better valuation of Resources and services
- Integration into mainstream development.
- Effective monitoring of initiatives.
- Promoting fair practices among the disaster management community.

Partnership is inevitable for effective knowledge management & Odisha being a key player in disaster management at national as well as international domain has a healthy network of partners in a varied field of disaster management as detailed in the table no. 8.1 below

### **Partners of OSDMA (Table 8.1)**

<b>Sl No.</b>	<b>Theme</b>	<b>Partners</b>
1	Implementing Partners	UNDP, UNICEF, World Bank, OCAC, IAG, CRS,
2	Knowledge Partners	UNDP, UNICEF, NRDC, AIDMI
3	Financial Partners	UNDP, UNICEF, World Bank
4	Strategic Partners	KSNDMC, BSDMA, GSDMA, CSR
5	Networking Partners	Inter-Agency Group
6	Technical Partners	IIPH, IIT, IITM, INCOIS, IMD, BMTPC
7	Coordination Partners	Inter-Agency Group, UNDP, UNICEF, WB
8	Research Partners	TISS, RMSI, DCS, TARU

## **8.2 Media Management /Partnership: Protocol**

The present day media can most effectively be used to disseminate the information during all stages of disaster. Disaster cannot be managed by one and needs involvement of various bodies working for the society. The media is a strong link between States/Centre /Countries and whole of the World to bring in the desired involvement of various stakeholders. If the media has to discharge its role it is necessary to work in co-ordination with the Government & Non – Government Agencies. The Disaster management needs a permanent structure to mobilize resources and for that media, naturally becomes a sharp tool. The media is not only powerful, it has the inner reach to the lowermost tier and the topmost tier. The media should not only play an important role in publicity during disasters but also actively participate in the disaster management process.

### **Role of Media:**

The role of media involves the following stages and activities:-

#### **Pre disaster:**

- Awareness and information to people.
- Promotion of training aspects.
- Planning and encourage people to face the situation.
- Removing fear of unknown & of all false perceptions.

- Building partnerships between media and other organizations.

**During disaster:**

- Announcements of the disaster and the preventive measures.
- Broadcast for the assistance of the Medical, Police, Civil Defence and food, water, medicines & other materials of immediate need.
- Media organizations take lead in broadcasting damage assessment & details of measures being taken towards relief and rehabilitation.
- Establishing contacts, informing and assuring the affected ones of the assistance and the measures of relief.
- Appeal for help to the masses for the victims in cash and services.

**Post Disaster**

- Monitoring re-settlement.
- Mobilizing technical and material aid in reconstruction.
- Providing financial aid, arrest panic and provide the true picture.
- Mobilization of State, National and International resources.

**Role of Print Media**

It has been our past experience that Government Organizations, NGOs, District Authorities feel helpless, as disaster snaps away the communication. During this period, it has been noticed that the Print Media and the Electronic Media becomes most helpful. Newspaper is accessible to each and every corner of the country. News big or even small is published in the newspaper. This automatically spreads to the remotest village through a word of mouth. The credibility of the print media can play a big role in disaster management and preparedness. The print media have rather a qualitative role to play in preparing the community and other stakeholders for better management of disaster.

**Role of Electronic Media**

Electronic Media can play an important role in dissemination of warning to the public prior to disasters. A continuous contact and cooperation is to be maintained with the national and local TV and radio stations by the Authorities. Activities for effective role of electronic media during a time of disasters are as follows.

- Active involvement of professionals and specialists in these broadcasts is recommended.
- On TV screen, scrolling script could give warning messages and even briefly interrupt programmes for urgent cases.
- TVs could use sophisticated images, graphics like radar and satellite images, GIS maps, etc.
- Also, live interviews and panel discussions can be arranged.
- Internet, SMS via mobile phones, etc., should be actively employed.
- Dedicated sites could be launched and information could be provided with graphics, detailed measures, and response events.

## **8.3 Media Management**

### Objective

- To provide factual information to public with respect to the latest development regarding disaster or any threatening situation.
- To provide specific information to relatives/dependents of dead and injured persons.
- To create a constructive public opinion.
- To create a healthy relationship with the press and electronic media.

### **8.3.1 Duties of Administration & Nodal Department**

- Administration, Nodal Department concerned and its team will collect information available and release it to the media at the earliest.
- The information shall include telephone numbers of Helpline/ Enquiry Booths. Photographers with digital and video cameras should also be taken to the site of disaster.
- Duty Officer / Public Relation Officers should be deputed during night shift for interacting with the media, if necessary.
- Duty Officer / PRO will organize press briefings at fixed timings.

- Emergency Control Room shall monitor various important media channels to keep track of media reporting. Suitable corrections/clarifications may also be issued, if required.

### **8.3.2 Spokesperson/Press Briefing/Authorized person**

Only concerned Minister/Secretary of the Department at the State level and District Collector at the District level are competent to interact with press and electronic media. Apart from the above, any other officer authorized by the Competent Authority is allowed to interact or give interview to the press and electronic media. These persons should ensure that only factually correct and confirmed information is shared with the media. No exaggerated version of any event should be relayed to the media. Nobody should express or voice any criticism, or express his personal opinion or views about the occurrence of disaster, at any point of time.

### **8.3.3 Information to be relayed to Press and Electronic Media**

Information to be given to media can be broadly segregated in to following categories:

#### **A) Occurrence of Disaster**

- Date, time & exact location
- Prime cause of the occurrence will be relayed to media only with the approval of competent authority.
- Extent of damage & loss.
- Regular reports regarding progress of Rescue and Relief work.
- Expected date and time of restoration.

#### **B) Injured persons**

- Steps taken by Administration to render immediate medical help.
- Number of persons rescued/injured persons under treatment in different hospitals.
- Name of the hospitals where injured are being treated.
- Approximately number of patients that have been admitted in different hospitals.

- Names of injured persons.
- Communication facilities like cell phones, STD phones provided at these hospitals.
- Payment of ex-gratia.
- Facilities offered to relatives/dependents of victims.

**C) Helpline Enquiry Booths & Control Room**

- Setting up of Helpline Enquiry Booths
- Details of Helpline Enquiry Booths & Control Room:
- Places where these have been opened.
- Telephone & Fax Nos.
- State Control Room
- District Control Room

**D) Casualty figures**

- There is always a difference between casualty figures given by the administration and casualty figures given by the media.
- During press briefings, latest figures on recovery of dead bodies should be shared with media & likely rise in the toll considering the ground realities.
- Number of dead bodies recovered and number of bodies identified.

**E) Press/Media briefings at disaster site**

- Authorized officer shall collect factual information from the site and relay the same to the media and State Headquarters. Thus a regular communication channel will be established to keep media informed of all the important details.
- PRO should be available during press briefings in HQ.
- There should be a fixed time for press briefings so that there is no confusion regarding different versions given to separate channels at various points of time.
- Simultaneous press briefings should be held at disaster site, at District Headquarter and at the State level, as per the time intimated, so that the same version is given by all concerned.

- The information release to various media are as follows:
  - TV Channels
  - News Agencies
  - Print Media
- Convenience of media shall be taken care of by PR personnel with assistance of representatives of administration at site.
- Tour of media persons should be conducted to hospital where injured are being treated.

## **8.4 Media Cell**

Media Cell is a body responsible for collating and disseminating content and implications of significant research and development output on disaster management by the Government to the general public through various media outlets.

### **8.4.1 The Need**

The research and developmental activities do not have periodic and professionally written releases to the general public. With faculty and research scholars engaged in deep research and its communication to journals or conferences in narrow areas (albeit of high impact in that area), only a very few find the time and patience to write an article intelligible to a general audience. On the other hand many are more willing to talk about their research, in general seminars or when interviewed. The Media Cell is an initiative to actively seek and create popular press /media releases to the public & reaching to the public about the developments in the field of disaster management.

### **8.4.2 Benefits of the Cell**

1. Public dissemination of output (How well public funded programs benefit the society).
2. High visibility of the research group and the work in the NIC & State Portal and in popular social media.

### **8.4.3 How to Submit Articles**

1. Research articles to be published every month.
2. Faculty and Students have to notify recent and high impact research or developmental work to [osdma@osdma.org](mailto:osdma@osdma.org). A brief note of why it is considered high impact is essential as this will benefit the Media Cell in understanding the significance and to prioritise interviews.
3. Media Cell will conduct an interview and create a draft article and appropriate graphic, which will be reviewed by the research group for factual accuracy.
4. The article will be finally reviewed for style and presentation by a professional journalist/editor, before publishing it publicly.

### **8.4.4 Constitution of the Cell**

The Media Cell consists of Editors, Graphic Designers and Writers. In the initial learning phase of the cell, all the articles will also be reviewed by a professional journalist/editor acting as a Consulting Editor, who will advise on the art of writing well to better connect with the audience. Apart from this there are two faculty advisors to provide broad guidelines and to liaison with I & PR department. The PRO will also help in disseminating the articles through print, electronics & social media outlets.

## **8.4 Lessons Learnt – “Super Cyclone” & Best Practices of “Phailin”**

Lesson learnt is a practice which needs to be documented indicating the processes undertaken in carrying out certain activities. This documentation will be a guide in managing such activities in future & can be replicated. Odisha being a pioneer player in the field of Disaster Management has learnt a lot from its past experiences while Managing Disasters like Super cyclone of 1999 & Very Severe Cyclonic Storm - Phailin of 2013.

## ***State Disaster Management Plan-2019***

The practices undertaken in managing Super Cyclone of 1999 has not been documented which could have been a guiding document during management of Phailin-2013. However, after successful management of Phailin in the year 2013, the process of managing the disaster was documented under the title “Managing Phailin 2013”. The document will be useful in handling similar disasters in the future within or outside the State. Documentation of successful management of such unseen emergencies will surely change the disaster management scenario in the State.

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# **Chapter- IX**

## **Financial Arrangement**

Disaster management at the State level is mostly supported by the State Disaster Response Fund. Funds from other sources like State Budget, Chief Minister's Relief Fund, External Assistance and loans from International Development Agencies like World Bank etc. are also used for disaster management.

### **9.1 National Disaster Response Fund (NDRF)**

The National Disaster Response Fund (NDRF) has been constituted by the Government of India as per the sub-section (1) of section (46) of Disaster Management Act, 2005 and recommendation of the 13<sup>th</sup> Finance Commission. NDRF has been constituted by replacing the National Calamity Contingency Fund (NCCF). It is administered by the National Executive Committee (NEC).

In the event of a calamity of a severe nature when the State Disaster Response Fund (SDRF) is insufficient to meet the relief requirements, additional central assistance is provided from 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) / A Sub-Committee of the NEC (SC-NEC) constituted under section 8 of DM Act, 2005 headed by the Home Secretary.
- Thereafter, the High Level Committee (HLC) comprising of the Finance Minister, the Agriculture Minister, the Home Minister and the Vice Chairman, NITI Ayog considers the request of the State Government based on the report of the Central Team & recommendation of the IMG/SC-NEC thereon, extant norms of assistance and approves the quantum of assistance from NDRF.

- This is, however, subject to the adjustment of 50% of the balance in SDRF as on 31<sup>st</sup> Mar of the preceding financial year.
- As per the 14<sup>th</sup> finance commission, the contribution of GoI towards the corpus of SDRF in Odisha for a period from 2015-20 is Rs.4130 crore under the existing central & state share of 75:25.

## **9.2 State Disaster Response Fund (SDRF)**

As per the provisions of Disaster Management Act, 2005 sub-section (1)(a) of Section (48) and based on the recommendation of the 13<sup>th</sup> Finance Commission, the Government of Odisha has constituted the State Disaster Response Fund (SDRF) replacing the Calamity Relief Fund (CRF). 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 installments 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.

The annual allocation towards the corpus of SDRF in Odisha, for an amount of Rs.4130 crore, under the existing central & state share of 75:25 for a period from 2015-20, as per the 14<sup>th</sup> finance commission, is detailed as below.

**SDRF - 2015-20 (Table No 9.1) (INR in Crore)**

Share	2015-16	2016-17	2017-18	2018-19	2019-20	Total
<b>Central (75%)</b>	560.25	588.75	618.00	648.75	681.75	3097.50
<b>State (25%)</b>	186.75	196.25	206.00	216.25	227.25	1032.50
<b>TOTAL</b>	<b>747.00</b>	<b>785.00</b>	<b>824.00</b>	<b>865.00</b>	<b>909.00</b>	<b>4130.00</b>

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 installments of the subsequent year.

The State Executive Committee (SEC) headed by the Chief Secretary decides on all matters connected with the financing of the relief expenditure of immediate nature from SDRF.

### **9.2.1. SDRF Norms**

#### **a. Calamities covered under SDRF**

- (i) 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, SDRF funds shall be utilized for providing immediate relief to the victims of cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack, frost & cold wave.
- (ii) However, 10% of available SDRF funds may be utilised for providing relief to the victims of the State Specific Disasters viz. lightning, heat wave, whirl wind, tornado, heavy rain, boat accident (other than during flood), drowning (other than during flood) & snake bite (other than during flood).
- (iii) The scale of relief assistance against each items for all disaster including “local disasters” should not exceed the norms SDRF/NDRF. Any amount spent by the State authorities over & above the ceiling amount would be borne by the state Govt. out of its resources of the State Govt. & not from SDRF.
- (iv) The ex-gratia as prescribed under the SDRF norms is detailed below

#### **LIST OF ITEMS & NORMS OF ASSISTANCE FROM SDRF/NDRF (Table 9.3)**

<b>Sl. No</b>	<b>ITEMs</b>	<b>NORMS OF ASSISTANCE</b>
1	<b>GRATUITOUS RELIEF</b>	

	a) Ex-Gratia payment to families of deceased persons	<b>Rs. 4.00 lakh</b> per deceased person including those involved in relief operations or associated in preparedness activities, subject to certification regarding cause of death from appropriate authority.
	b) Ex-Gratia payment for loss of a limb or eyes(s).	<b>Rs. 59,100/-</b> per person, when the disability is between 40% and 60%.  <b>Rs. 2.00 lakh/-</b> per person, when the disability is more than 60%.  Subject to certification by a doctor from a hospital or dispensary of Government, regarding extent and cause of disability.
	c) Grievous injury requiring hospitalization	<b>Rs 12,700/-</b> per person requiring hospitalization for more than a week.  <b>Rs. 4,300/-</b> per person requiring hospitalization for less than a week.
	d) Clothing and utensils/household goods for families whose houses have been washed away/fully damaged/severely inundated for more than two days due to a natural calamity.	<b>Rs. 1,800/-</b> per family, for loss of clothing.  <b>Rs. 2,000/-</b> per family, for loss of utensils/household goods.
	e) Gratuitous relief for families whose livelihood is seriously affected	<b>Rs. 60/-</b> per adult and <b>Rs. 45/-</b> per child, not housed in relief camps. State Govt. will certify that identified beneficiaries are not housed in relief camps. Further State Government will provide the basis and process for arriving at such beneficiaries district-wise.  Period for providing gratuitous relief will be as per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period of assistance will up to 30 days, which may be extended up to 60 days in the first instance, if required, and subsequently up to 90 days in case of drought/pest attack. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year.
2.	<b>SEARCH &amp; RESCUE OPERATIONS</b>	
	(a) Cost of search and rescue	As per actual cost incurred, assessed by SEC

	measures/ evacuation of people affected/ likely to be affected.	and recommended by central Team(in case of NDRF).  - By the time the central Team visits the affected area, these activities are already over. Therefore, the State Level Committee and the Central Team can recommend actual / near-actual costs.
	(b) Hiring of boats for carrying immediate relief and saving lives.	As per actual costs incurred, assessed by SEC and recommended by the Central Team (in case of NDRF).  The quantum of assistance will be limited to the actual expenditure incurred on hiring boats and essential equipment requiring for rescuing stranded people and thereby saving human lives during a notified natural calamity.
<b>3</b>	<b>RELIEF MEASURES</b>	
	a) Provision for temporary accommodation, food, clothing, medical care etc. for people affected/ evacuated and sheltered in relief camps.	As per assessment of need by SEC and recommended of the Central Team (in case of NDRF), for a period of up to 30 days. The SEC would need to specify the number of camps, their duration and the number of persons in camps. In case of continuation of a calamity like drought or widespread devastation caused by earthquake or flood etc., this period may be extended to 60 days, and up to 90 days in case of severe drought. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year.  Medical care may be provided from National Rural Health Mission (NRHM).
	b) Air dropping of essential supplies	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF).  - The quantum of assistance will be limited to actual amount raised in the bills by the Ministry of Defence for airdropping of essential supplies and rescue operations only.
	c) Provision of emergency supply of drinking water in rural areas and	As per actual cost, based on the assessment of need by NEC and recommended by the Central

	urban areas.	Team ( in case of NDRF), up to 30 days and may be extended up to 90 days in case of drought. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year.
<b>4</b>	<b>CLEARANCE OF AFFECTED AREAS</b>	
	a) Clearance of debris in public areas.	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central Team for assistance to be provided under NDRF.
	b) Drainage of flood water in affected areas	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central Team(in case of NDRF).
	c) Disposal of dead bodies/ Carcasses	As per actuals, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF).
<b>5</b>	<b>AGRICULTURE</b>	
(i)	<b>Assistance to farmers having landholding up to 2 ha.</b>	
A.	<b>Assistance for land and other loss</b>	
	a) De-silting of agriculture land ( where thickness of sand/ silt deposit is more than 3", to be certified by the competent authority of the State Government )	<b>Rs. 12,200/-</b> per hectare for each item.  (Subject to the condition that no other assistance/subsidy has been availed of by/is eligible to the beneficiary under any other Government Scheme.)
	b) Removal of debris on agriculture land in hilly areas.	
	c) De-silting/ Restoration/ Repair of fish farms	
	d) Loss of substantial portion of land caused by landslide, avalanche, change of course of rivers.	<b>Rs. 37,500/-</b> per hectare to only those small and marginal farmers whose ownership of the land is legitimate as per the revenue records.
B.	<b>Input subsidy (where crop loss is 33% and above)</b>	
	a) For agriculture crops, horticulture crops and annual plantation crops	<b>Rs 6,800/-</b> per hectare in rainfed areas and restricted to sown areas.  <b>Rs. 13,500/-</b> per hectare in assured irrigated

		areas, subject to minimum assistance not less Rs.1000/- and restricted to sown areas.
	b) Perennial Crops	<b>Rs. 18,000/-</b> hectare for all types of perennial crops subject to minimum assistance not less than <b>Rs. 2000/-</b> and restricted to sown areas.
	c) Sericulture	<b>Rs. 4,800/-</b> per hectare for Eri, Mulberry, Tussar <b>Rs. 6,000/-</b> per hectare for Muga.
(ii)	<b>Input Subsidy to farmers having more than 2 Ha of landholding</b>	<b>Rs. 6,800/-</b> per hectare in rain fed areas and restricted to sown areas. <b>Rs. 13,500/-</b> per hectare for areas under assured irrigation and restricted to sown areas. <b>Rs. 18,000/-</b> per hectare for all types of perennial crops and restricted to sown areas. - Assistance may be provided where crop loss is 33% and above, subject to a ceiling of 2 hectare per farmer.
<b>6.</b>	<b>ANIMAL HUSBANDRY - ASSISTANCE TO SMALL AND MARGINAL FARMERS</b>	
	i) Replacement of milch animals, draught animals or animals used for haulage.	<p><b><i>Milch animals -</i></b></p> <p><b>Rs. 30,000/-</b> Buffalo/cow/camel/yak/Mithun etc.  <b>Rs. 3,000/-</b> Sheep/goat/pig.</p> <p><b><i>Draught animal -</i></b></p> <p><b>Rs. 25,000/-</b> Camel/horse/bullock etc.  <b>Rs. 16,000/-</b> Calf/Donkey/Pony/Mule</p> <p>- The assistance may be restricted for the actual loss of economically productive animals and will be subject to a ceiling of 3 large milch animal or 30 small milch animals or 3 large draught animal or 6 small drought animals per household irrespective of whether a household has lost a large number of animals. (The loss is to be certified by the Competent Authority designated by the State Government).</p> <p><b><i>Poultry:-</i></b>  Poultry @ <b>Rs. 50/-</b> per bird subject to a ceiling of assistance of <b>Rs. 5000/-</b> per beneficiary household. The death of the poultry birds should be on account of natural calamity.</p>

		<p>Note:- Relief under these norms is not eligible if the assistance is available from any other Government Scheme, e.g. loss of birds due to Avian Influenza or any other diseases for which the Department of Animal Husbandry has a separate scheme for compensating the poultry owners.</p>
	<p>(ii) Provision of fodder/ feed concentrate including water supply and medicines in cattle camps.</p>	<p>Large animals - <b>Rs. 70/-</b> per day.</p> <p>Small animals - <b>Rs. 35/-</b> per day.</p> <p>Period for providing relief will be as per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period for assistance will be upto 30 days, which may be extended upto 60 days in the first instance and in case of severe drought up to 90 days. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit, subject to the stipulation that expenditure on this account should not exceed 25% of SDRF allocation for the year.</p> <p>Based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF) consistent with estimates of cattle as per Livestock Census and subject to the certificate by the competent authority about the requirement of medicine and vaccine being calamity related.</p>
	<p>iii) Transport of fodder to cattle outside cattle camps</p>	<p>As per the actual cost of transport, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF) consistent with estimates of cattle as per Livestock Census.</p>
<b>7.</b>	<b>FISHERY</b>	
	<p>i) Assistance to Fisherman for repair/ replacement of boats, nets - damaged or lost</p> <ul style="list-style-type: none"> <li>--Boat</li> <li>--Dugout-Canoe</li> <li>--Catamaran</li> <li>--Net</li> </ul> <p>(This assistance will not be provided if the beneficiary is</p>	<p><b>Rs. 4,100/-</b> for repair of partially damaged boats only</p> <p><b>Rs. 2,100/-</b> for repair of partially damaged net.</p> <p><b>Rs. 9,600/-</b> for repair of fully damaged boats.</p> <p><b>Rs. 2,600/-</b> for repair of fully damaged net.</p>

	eligible or has availed of any subsidy/assistance, for the instant calamity, under any other Government Scheme.)	
	ii) Input subsidy for fish seed farm	<b>Rs. 8,200/- per hectare.</b>  (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/assistance, for the instant calamity, under any other Government Scheme, except the one time subsidy provided under the Scheme of Department of Animal husbandry, Dairying and Fisheries, Ministry of Agriculture.)
<b>8.</b>	<b>HANDICRAFTS/HANDLOOM - ASSISTANCE TO ARTISANS</b>	
	i) For replacement of damaged tools/ equipment	<b>Rs. 4,100/- per artisan for equipments.</b> - Subject to certification by the competent authority designated by the Government about damage and its replacement.
	ii) For loss of raw-materials/ goods in process/ finished goods.	<b>Rs. 4,100/- per artisan for raw material.</b> - Subject to certification by the competent authority designated by the State Government about loss and its replacement.
<b>9.</b>	<b>HOUSING</b>	
	a) <b>Fully damaged/ destroyed houses</b>	
	i) Pucca house	
	ii) Kutcha house	<b>Rs. 95,100/- per house, in plain areas</b>
	b) <b>Severely damaged houses</b>	<b>Rs. 1,01,900/- per house, in hilly areas including Integrated Action Plan (IAP) districts.</b>
	i) Pucca house	
	ii) Kutcha house	
	c) <b>Partially Damaged Houses</b>	
	i) Pucca (other than huts) where the damage is at least 15%	<b>Rs.5,200/- per house</b>
	ii) Kutcha (other than huts) where the damage is at least 15%	<b>Rs.3,200/- per house.</b>
	d) <b>Damaged/destroyed huts:</b>	<b>Rs. 4,100/- per hut</b>  (Hut means temporary, make shift unit, inferior to Kutcha house, made of thatch, mud, plastic sheets etc. traditionally recognized as huts by the State/District authorities.)  Note:- The damaged house should be an

		authorized construction duly certified by the Competent Authority of the State Government.
	e) Cattle shed attached with house	Rs. 2,100/- per shed.
<b>10.</b>	<b>INFRASTRUCTURE</b>	
	<p><b><i>Repair/restoration (of immediate nature) of damaged infrastructure.</i></b></p> <p>(1) Roads &amp; bridges, (2) Drinking water Supply works, (3) Irrigation, (4) Power (only limited to immediate restoration of electricity supply in the affected areas), (5) Schools, (6) Primary Health Centre, (7) Community assets owned by Panchayat.</p> <p>Sectors such as Telecommunication and Power (except immediate restoration of power supply), which generate their own revenue, and also undertake immediate repair/restoration works from their own funds/resources are excluded.</p>	

***Activities of immediate nature:***

Illustrative lists of activities which may be considered as works of an immediate nature are given in the Section-B.

***Assessment of requirements:***

Based on assessment of need, as per States' costs/rates/ schedules for repair, by SEC and recommendation of the Central Team (in case of NDRF).

- As regards repair of roads, due consideration shall be given to Norms for Maintenance of Roads in India, 2001, as amended from time to time, for repair of roads affected by heavy rains/floods, cyclone, landslide, sand dunes, etc. to restore traffic. For reference these norms are

\* Normal and Urban areas: up to 15% of the total of Ordinary Repair(OR) and Periodical Repair (PR).

\* Hills: up to 20% of total of OR and PR.

- In case of repair of roads, assistance will be given based on the notified Ordinary Repair (OR) and Periodical Renewal (PR) of the State. In case OR & PR rate is not available, then assistance will be provided @ Rs.1 lakh/km for State Highway and Major District Road and @ Rs.0.60 lakh/km for rural roads. The condition of "State shall first use its provision under the budget for regular maintenance and repair" will no longer be required, in view of the difficulties in monitoring such stipulation, though it is a desirable goal for all the States.

- In case of repairs of Bridges and Irrigation works, assistance will be given as per the schedule of rates notified by the concerned

		<p>States. Assistance for micro irrigation scheme will be provided @ Rs.1.5 lakh per damaged scheme. Assistance for restoration of damaged medium and large irrigation projects will also be given for the embankment portions, on par with the case of similar rural roads, subject to the stipulation that no duplication would be done with any ongoing schemes.</p> <ul style="list-style-type: none"> <li>- Regarding repairs of damaged drinking water schemes, the eligible damaged drinking water structures will be eligible for assistance @ Rs.1.5 lakh/damaged structure.</li> <li>- Regarding repair of damaged primary and secondary schools, primary health centres, Anganwadi and community assets owned by the Panchayats, assistance will be given @ Rs.2 lakh/damaged structure.</li> <li>- Regarding repair of damaged power sector, assistance will be given to damaged conductors, poles and transformers upto the level of 11 kV. The rate of assistance will be @ Rs.4000/poles, Rs.0.50 lakh per km of damaged conductor and Rs.1.00 lakh per damaged distribution tansformer.</li> </ul>
<b>11.</b>	<b>PROCUREMENT</b>	
	Procurement of essential search, rescue and evacuation equipments including communication equipments, etc. for response to disaster.	<ul style="list-style-type: none"> <li>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</li> <li>- The total expenditure on this item should not exceed 10% of the annual allocation of the SDRF.</li> </ul>
<b>12.</b>	<b>CAPACITY BUILDING</b>	<ul style="list-style-type: none"> <li>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</li> <li>- The total expenditure on this item should not exceed 5% of the annual allocation of the SDRF.</li> </ul>
<b>13.</b>	State specific disasters within the local context in the State, which are not included in the notified list of disasters eligible for assistance	<ul style="list-style-type: none"> <li>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</li> </ul>

	<p>from SDRF/NDRF, can be met from SDRF within the limit of 10% of the annual funds allocation of the SDRF.</p>	<ul style="list-style-type: none"> <li>- The norm for various items will be the same as applicable to other notified natural disasters, as listed above. or</li> <li>- In these cases, the scale of relief assistance against each item for 'local disaster' should not exceed the norms of SDRF.</li> <li>- The flexibility is to be applicable only after the State has formally listed the disasters for inclusion and notified transparent norms and guidelines with a clear procedure for identification of the beneficiaries for disaster relief for such local disasters', with the approval of SEC.</li> </ul>
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## SECTION-B

### Illustrative list of activities identified as of an immediate nature

1.	Drinking Water Supply:
	<ul style="list-style-type: none"> <li>i. Repair of damaged platforms of hand pumps/ring wells/spring-tapped chambers/public stand posts, cisterns.</li> <li>ii. Restoration of damaged stand posts including replacement of damaged pipe lengths with new pipe lengths, cleaning of clear water reservoir (to make it leak proof).</li> <li>iii. Repair of damaged pumping machines, leaking overhead reservoirs and water pumps including damaged intake - structure, approach gantries/jetties.</li> </ul>
2.	Roads:
	<ul style="list-style-type: none"> <li>i. Filling up of breaches and potholes, use of pipe for creating waterways, repair and stone pitching of embankments.</li> <li>ii. Repair of breached culverts.</li> <li>iii. Providing diversions to the damaged/washed out portions of bridges to restore immediate connectivity.</li> <li>iv. Temporary repair of approaches to bridges/embankments of bridges, repair of damaged railing bridges, repair of causeways to restore immediate connectivity, granular sub base, over damaged stretch of roads to restore traffic.</li> </ul>
3.	Irrigation:
	<ul style="list-style-type: none"> <li>i. Immediate repair of damaged canal structures and earthen/masonry works of tanks and small reservoirs with the use of cement, sand bags and stones.</li> <li>ii. Repair of weak areas as piping or rat holes in dam walls/embankments.</li> <li>iii. Removal of vegetative material/building material/debris from canal and drainage system.</li> <li>iv. Repair of embankments of minor, medium and major irrigation projects.</li> </ul>
4.	Health
	<ul style="list-style-type: none"> <li>i. Repair of damaged approach roads, buildings and electrical lines of</li> </ul>

	PHCs/community Health Centres.	
5.	Community assets of Panchayat	
	a) Repair of village internal roads. b) Removal of debris from drainage/sewerage lines. c) Repair of internal water supply lines. d) Repair of street lights. e) Temporary repair of primary schools, Panchayat ghars, community halls, anganwadi, etc.	
6.	Power	
	a) Poles/Conductors and transformers upto 11 kv.	
7.	The assistance will be considered as per the merit towards the following activities:	
i)	Damaged primary school building  Higher secondary/middle/ college and other educational institutions building	Up to Rs. 1.50 lakh/unit  Not covered
ii)	Primary Health Centre	Upto Rs. 1.50 lakh/unit
iii)	Electric poles and wires etc.	Normative cost (upto Rs.4000 per pole and Rs.0.50 lakh per km)
iv)	Panchayat Ghar/Anganwadi/ Mahila Mondal/ Yuva Kendra/ Community Hall	Upto 2.00 lakh/unit
v)	State Highways/Major District road	Rs.1.00 lakh/km*
vi)	Rural road/bridge	Rs.0.60 lakh/km*
vii)	Drinking water scheme	Upto 1.50 lakh/unit
viii)	Irrigation Sector: Minor Irrigation schemes/Canal  Major irrigation scheme Flood control and anti Erosion Protection work	upto Rs.1.50 lakh/scheme  Not Covered Not Covered
ix)	Hydro Power Project/HT Distribution systems/ Transformers and subs stations	Not Covered
x)	High Tension Lines (above 11 kv)	Not Covered

xi)	State Govt Buildings viz. departmental/office building, departmental/residential quarters, religious structures, patwarkhana, Court premises, play ground, forest bungalow property and animal/bird sanctuary etc.	Not Covered.
xii)	Long terms/Permanent Restoration Work incentive	Not Covered
xiii)	Any new work of long term nature	Not Covered
xiv)	Distribution of commodities	Not Covered (However, there is a provision for assistance as GR to families in dire need of assistance after a disasters)
xv)	Procurement of equipments/machineries under NDRF	Not Covered
xvi)	National Highways	Not Covered (Since GOI bears entire expenditure towards restoration work activities)
xvii)	Fodder seed to augment fodder production	Not Covered

- - If OR & PR rates are not provided by the State

#### **9.2.4 Functions of State Executive Committee regarding affairs of SDRF**

- (i) The SEC will decide on all matters concerned with the financing of the relief expenditure of immediate nature from SDRF. SEC can extend the relief assistance period within a limit expenditure not exceeding 25% of SDRF allocation for the year.
- (ii) SEC will arrange contribution from concerned Govt, & invest the accretions to SDRF in accordance to the following norms approved by GoI.
  - i. Central Govt. dated securities
  - ii. Auctioned Treasury bills
  - iii. Interest earning deposits & certificates of deposit with Scheduled commercial Banks.

(iii) Five per cent (5%) of the annual allocation may be kept for Capacity building activities like.

- i. Setting up of & strengthening Emergency Operation Centres
- ii. Training & capacity building of stakeholders & functionaries in the State.
- iii. Supporting Disaster Management centres in ATIs & other institutions in the State.
- iv. Preparation of Disaster Management plans based on Hazard Risk & Vulnerability analysis.

### **9.3 Chief Minister's Relief Fund (CMRF)**

Odisha Chief Minister's Relief Fund aims to provide assistance to calamities and in distress condition, to indigent persons suffering from critical ailments and to undertake charitable activities for public welfare. A guideline in this regard has also been devised in the year 2017. Cases Eligible for Assistance under CMRF

- **Poor and persons in distress:** Relief to the poor, including grant and aid (financial or otherwise) to persons in distress.
- **Aged, differently able, orphans, AIDS affected:** Assistance for the relief and rehabilitation of the aged, differently able' orphans, HIV/AIDS affected persons/families and those otherwise differently able or incapable of earning their livelihood, by grant and aid (financial and otherwise) and / or maintenance, establishment and support of institutions and homes for the benefit of such persons.
- **NOKs of person dying due to calamities, or violence:** Ex-gratia/compensation to the NOKs of the person dying due to the natural or man-made calamities, communal violence, naxal violence, or public disorder of a serious nature or any other calamity, affecting a family or a community, which deserves extreme compassion & not covered under existing assistance sheme of State/Central Government.
- **Persons affected by calamities or violence:** Assistance for relief & rehabilitation of persons affected by natural or man-made calamities, communal violence', naxal violence or public disorder of a serious nature or any other calamity' affecting a family or a community, which deserves

extreme compassion and not covered under any existing assistance scheme of State/central Government.

- **Medical treatment & aid:** Assistance out of CMRF may be provided to indigent & poor deserving persons who could not avail assistance for their treatment under Odisha State Treatment Fund (OSTF) due to various reason. The medical aid also extended to Freedom Fighter pensioners & remote areas through Collectors.
- **Assistance for Rural Development:** Financial assistance out of CMRF may also be considered to undertake, promote, aid or otherwise support rural development including any programme for promoting the social and economic welfare of the public in any rural area either directly or through an independent agency following due procedure.
- **Delegation of Power to the Collectors:** To assist more number of deserving person and for better utilisation of the Chief Minister's Relief Fund, the State Government have delegated powers to the Collectors for sanction of assistance out of CMRF so as to extend such assistance to the deserving persons immediately at the time of their need.

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

Funds required towards pure relief to affected persons / families for 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 cases, grievous injury, house building assistance, 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 SEC. 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 time, 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.

## **9.5 Damage Assessments and Report after Flood/Cyclone**

Private properties and properties of Government under different Departments are damaged by high floods and cyclones. As per para-75 of Orissa Relief Code, the Collector shall undertake assessment of damages to private properties as well as properties of Government. This assessment shall be done quickly soon after the abatement of flood/cyclone in the formats prescribed in Appendix- X of Orissa Relief Code.

### **9.5.1 Submission of preliminary damage report (Para-76 of ORC)**

1. The Collector as well as the district level officers under each Department of Government shall, immediately after assessment of flood damage, forward a copy of their report to their Head of Department. The district level officers may also submit reports to the Collector.
2. The Heads of Departments after necessary scrutiny shall forward their reports to their respective Departments of Government with copy to Special Relief Commissioner, not later than two weeks from the date of abatement of flood.
3. The Special Relief Commissioner shall compile the State report and shall furnish the consolidated preliminary report to the Revenue Department within a week of the receipt of the reports from the Heads of Department.
4. The preliminary flood damage report should be prepared as accurately as possible, as the relief measures, if any, are to be based on the merit and statistical data of that report.

### **9.5.2 Submission of final flood/cyclone damage report (Para-77 of ORC)**

- The concerned Heads of Departments as well as the Collector shall take immediate steps to compile the final report on flood/cyclone

damage in the formats prescribed in Appendix- X of the ORC soon after submission of the preliminary report.

- Accidental errors, clerical mistakes, shortcomings, if any, noticed should be rectified in the final report. The final report shall be made available to Special Relief Commissioner as soon as possible and not later than one month from the date of abatement of flood.
- On receipt of the reports from the different sources, Special Relief Commissioner shall forthwith compile the state report and furnish the same to the Revenue Department.

## **9.6 Central and State Government programmes and Schemes on Natural Calamities**

Mainstreaming Disaster Management in development planning is the most critical component to mitigate disaster risks. That's why it's important to make note of financial resources which are used in the implementation of such programmes and schemes which can lessen the risk from disasters by reducing vulnerability. It is also crucial to build communities' resilience to deal with them. Moreover, as mandated by Ministry of Finance & Ministry of Home Affairs on recommendations of NITI Aayog vide OM No. O-11013/02/2015-CSS & CMC dated 17<sup>th</sup> August 2016 within the Centrally Sponsored Schemes (CSS) to be utilised, inter alia for mitigation / restoration activities in the event of natural calamities, or to satisfy local requirements in areas affected by internal security disturbances in the sector covered by CSS. Thus, relevant Central Government and State Government funded schemes are identified which are crucial to build over resilience of communities in the context of the district.

## **9.7 Fund provision for disaster preparedness & capacity building**

The capacity building for disaster Management in the state is categorised under two broad heads viz.

- Strengthening State Disaster Management Authority (SDMA) & District Disaster Management Authorities (DDMAs).
- Capacity building of the Odisha Disaster Response force (ODRAF) & other response force & volunteers

The budget under SDRF for the preparedness & capacity building is detailed in the below table.

**Budget for preparedness & capacity building under SDRF (Table 9.5)**

S1 No.	Category	Amount (INR in Rs.)
1	Strengthening State Disaster Management Authority (SDMA) & District Disaster Management Authorities (DDMAs)	5,0,00,000
2	Capacity building of the Odisha Disaster Rapid Action Force (ODRAF) & other response forces & volunteers.	
<b>TOTAL</b>		

## **Chapter X**

### **Implementation, Review and Updating of the Plan**

The provisions of the Disaster Management Act 2005 regarding implementation, review and updating of the State Disaster Management Plan (SDMP) are as follows:

- i. As per Section 22 (1) the State Executive Committee shall have the responsibility for implementing the National Plan and **State Plan** and act as the coordinating and monitoring body for management of disaster in the State.
- ii. According to Section 23 (6) appropriate provisions shall be made by the State Government for financing for the measures to be carried out under the State Plan.
- iii. Section 23 (7) mandates that copies of the State Plan shall be made available to the Departments of the Government of the State and such Departments shall draw up their own plans in accordance with the State Plan.
- iv. As per Section 30 (2) (ii) the District Disaster Management Authority (DDMA) may coordinate and monitor the implementation of the National Policy, State Policy, National Plan, **State Plan** and District Plan.
- v. According Section 39 (d) it shall be the responsibility of every department of the Government of a State to respond effectively and promptly to any threatening disaster situation or disaster in accordance with the **State Plan**, and in accordance with the guidelines or direction of the National Executive Committee and the State Executive Committee.
- vi. As per Section 23 (5) of the DM Act 2005 the State Disaster Management Plan (SDMP) shall be reviewed and updated annually.

The District Disaster Management Plans (DDMPs), Disaster Management Plans of Departments of the State Government and the State Disaster Management Plan (SDMP) are to be updated annually as per the timeline given by State Disaster Management Authority/ OSDMA.

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**OSDMA**

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