2019

District Disaster Management Plan Jharsuguda , ODISHA

Volume- I

District Disaster Management Authority (DDMA)
Odisha
5/30/2019

Foreword

The provisions made under Section 31 of Disaster Management Act 2005, the District Disaster Management Plan, 2018 of Jharsuguda district was prepared with the combined efforts of District Disaster Management Authority and District Emergency Operation Centre, Jharsuguda. For the first time the DDMP prepared in two volumes i.e. Volume I contains the DDMP and Volume II includes all relevant facts and figures which will facilitate the free flow of the information among all stakeholders. DDMP, 2018 not only adheres to the legal requirements but strengthens the institutional mechanism to address various issues of DDR and CCA. In fact DDMP, 2018 made special efforts to address long term drought related issues. Besides, restoration of livelihood plan is incorporated which will bring synergic among government and nongovernment organization. Similarly, this plan focused to address drinking water related issues during summer keeping in view the heat wave condition and requirement in scarcity pockets.

We would like to thanks all stakeholders who contributed their valuable inputs to bring the DDMP, 2018 as living document.

We strongly believe, the DDMP, 2018 will ensure disaster preparedness at various levels to face any forthcomingpossibility.

Chairman, Ex-officio, DDMA
Collector &District Magistrate
Jharsuguda

Co-Chairperson, Ex-officio, DDMA
President, Zilla Parishad
Jharsuguda

Proceeding of meeting of District Disaster Management Authority held on 30/05/2019 for approval of District Disaster Management Plan, 2019

The meeting of District Disaster Management Authority (DDMA), Jharsuguda for approval of District Disaster Management Plan (DDMP), 2019 for Jharsuguda district was held under the chairmanship of Collector & District Magistrate, Jharsuguda on 29/05/2019 at 10.30 AM in the Collector Conference Hall, Jharsuguda. Following members of DDMA were present during approval of DDMP.

Sl No.	Name of the Officer	Designation	Position in DDMA	Contact No.
1	Shri Bibhuti Bhusan Das, OAS	Collector & District Magistrate, Jharsuguda	Chairperson, Ex-Officio	06645-270070
2	Mr. Laxminarayan Patel	President, ZillaParishad , Jharsuguda	Co-Chairperson, Ex-Officio	06645-271822
3	Shri A K Mohanty	Superintendent Of Police, Jharsuguda	Member, Ex-officio	06645-270808
4	Shri G R Bhanjadeo	Additional District Magistrate, Jharsuguda	Chief Executive Officer, Ex-Officio	8456996691
5	Satyanarayan Dash	P.D., DRDA, Jharsuguda	Member	06645-272997
6	Dr. M.R. Samantaray	CDMO, Jharsuguda	Member, Ex-Officio	06645-273104
7	Er. Dhaneswar Sahu	E.E., Major Irrigation Division, Sundargarh	Member, Ex-officio	9937116070
8	Mr. Rasmi Ranjan Mishra	E.E., RD, Jharsuguda	Member	9438337998
9	Mr. Pushpesh Pujari	Deputy Director Agriculture, Jharsuguda	Member	9437846415
10	Shri Aswini kumar Panda	Deputy Collector Emergency	Member	9668144841

District Disaster Management Plan

2019

Jharsuguda, Odisha

VOLUME I

Prepared By

District Disaster Management Authority

District Emergency Operation Center

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Available at http:// Jharsuguda.nic.in/ddmp-2019

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Abbreviations

AAO	: Assistant Agriculture Officer
ACSO	: Assistance Civil Supply Officer
ADMO	: Additional District Medical Officer
ADVO	: Additional District Veterinary Officer
ASHA	: Accredited Social Health Activist
BEO	: Block Education Officer
CDMO	: Chief District Medical Officer
CDVO	: Chief District Veterinary Officer
CSO	: Civil Supply Officer
DAO / TO	: District Accounts Officer / Treasury Officer
DAO	: District Agriculture Officer
DEO	: District Education Officer
DLO	: District Labour Officer
DPM	: District Programme Manager
DPO (RMSA)	: District Programme Officer, Rashtriya Madhyamik Shiksha Abhiyan
DPO (SSA)	: District Programme Officer, Sarva Shiksha Abhiyan
DSWO	: District Social Welfare Officer
LI	: Livestock Inspector
LI	: Labour Inspector
MI	: Marketing Inspector
MO	: Medical Officer
MVI	: Motor Vehicle Inspector
RTO	: Regional Transport Officer
SDWO	: Sub-divisional Welfare Officer
SI	: Supply Inspector
VAW	: Village Agriculture Worker

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Chapter – 1
Introduction

Introduction

Under the DM Act 2005, it is mandatory on the part of District Disaster Management Authority (DDMA) to adopt a continuous and integrated process of planning, organizing, coordinating and implementing measures which are necessary and expedient for prevention as well as mitigation of disasters. These processes are to be incorporated in the developmental plans of the different departments and preparedness to meet the disaster and relief, rescue and rehabilitation thereafter, so as to minimize the loss to be suffered by the communities and are to be documented so that it is handy and accessible to the general public.

Section 31 of Disaster Management Act 2005 (DM Act) makes it mandatory to have a disaster management plan for every district. DDMP shall include Hazard Vulnerability Capacity and Risk Assessment (HVCRA), prevention, mitigation, preparedness measures, response plan and procedures.

1.1 Aims and Objectives of the DDMP

Jharsuguda District lies in the close proximity to the Chhatisgarh and Jharkhand state. It is mostly affected by Drought, Heat waves. Nevertheless the traditional Housing structures especially in rural areas are more susceptible to fire accident. So the disaster management planning of this district may be referred to the inevitable plan, strong administration unit of linkup between the top & bottom of administrative unit and to the grass root level transmission link. It is no doubt that the formulation of disaster plan is for preparedness and commitment for its positive implementation at the hour of crisis. Disaster management and disaster operations in the district are consistent with the Disaster Management Strategic Policy Framework. This is achieved by:

- To identify the areas vulnerable to major types of the hazards in the district.

- To adopt proactive measures at district level by all the govt. departments to prevent disaster and mitigate its effects.
- To define and assign the different tasks and responsibilities to stakeholders during the pre-disaster and post-disaster phases of the disaster.
- To enhance disaster resilience of the people in the district by way of capacity building.
- Reduce the loss of public and private property, especially critical facilities and infrastructure, through proper planning.
- Manage future development to mitigate the effect of natural hazards in the district.
- To develop the standardized mechanism to respond to disaster situation to manage the disaster efficiently.
- To prepare a response plan based upon the guidelines issued in the State Disaster Management Plan so as to provide prompt relief, rescue and search support in the disaster affected areas.
- To adopt disaster resilient construction mechanism in the district by way of using Information, Education and Communication for making the community aware of the need of disaster resilient future development.
- To make the use of media in disaster management.
- Rehabilitation plan of the affected people and reconstruction measures to be taken by different govt. departments at district level and local authority.

The District Disaster Management Plan (DDMP) is the guide for achieving the objective i.e. mitigation, preparedness, response and recovery. This Plan needs to be prepared to respond to disasters with sense of urgency in a planned way to minimize human, property and environmental loss.

1.2 Authority for DDMP: Approval & Implementation of DDMP

As defined in Section 30 of DM Act 2005, DDMA shall act 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 National Authority and the State Authority.

The District Collector discussed the modalities and seeks views for preparation of a holistic plan in the meeting of the DDMA held in the month of March and to prepare the plan by the end of April every year.

After finalisation the District Authority shall send a copy of the District DM plan to the State Disaster Management Authority for approval.

The District Disaster Management Plan should be reviewed and updated annually.

1.3 Evolution of DDMP: Evolution, Procedure and Methodology to be followed for preparation of DDMP-

The present document is prepared to help the District administration for effective response during any type of disaster as the district is prone to natural as well as industrial and man-made disasters. Cyclone, flood are the major Natural Hazard and industrial, chemical, fire, rail/ road accidents etc. are the main man-made disaster of the district. The present document is consists of various facts which have been collected from various sources including line departments. This document contains various chapters and each chapter has its own importance. The plan consist Hazard & Risk Assessment, Institutional Mechanism, Response Mechanism, Standard Operating Procedure, inventory of Resources etc. Hazard & Risk Assessment is done on the basis of past disaster data & is collected from all departments.

The lessons learnt from Very Severe Cyclonic Storm- Phailin occurred on 12th Oct'2013 provides necessary impetus for preparation of this year plan.

1.4 Stakeholders and their responsibilities

1. At the District level, District Disaster Management Authority, with the District Collector designated as the Response Officer (RO), and other line departments at district HQ are responsible to deal with all phases of disaster management within district.

2. Other technical institutions, community at large, local self-governments, NGOs etc. are also stakeholders of the District Disaster Management Plan.

The District Collector has the following duties:

i. To facilitate and coordinate with local Government bodies to ensure that pre and post disaster management activities in the district are carried out.

ii. To assist community training, awareness programmes and the installation of emergency facilities with the support of local administration, non-governmental organizations and the private sector.

iii. To function as a leader of the team and take appropriate actions to smoothen the response and relief activities to minimize the adverse impact of disaster.

iv. To recommend the Special Relief Commissioner and State Government for declaration of disaster.

Local Authorities have the following duties:

i. To provide assistance to the District Collector in disaster management activities.

ii. To ensure training of its officers and employees and maintenance of resources so as to be readily available for use, in the event of a disaster.

iii. To undertake capacity building measures and awareness and sensitization of the community

iv. To ensure that all construction projects under it conform to the standards and specifications laid down.

v. Each department of the Government in a district shall prepare a disaster management plan for the district. The local authorities need to ensure that relief, rehabilitation and reconstruction activities in the affected area, within the district, are carried out.

vi. Trust / Organisations managing Places of Worships & Congregation

a. Each establishment / organisation identified as ―critical infrastructure and key resource‖,

b. Including places of congregation in a district shall prepare ―on-site‖ and ―off-site

c. Disaster management plan. Carry out mitigation, response, relief, rehabilitation and

d. Reconstruction activities.

Private Sector:

i. The private sector should be encouraged to ensure their active participation in the pre-disaster activities in alignment with the overall plan developed by the DDMA or the Collector.
ii. They should adhere to the relevant rules regarding prevention of disasters, as may be stipulated by relevant local authorities.
iii. As a part of CSR, undertake DRR projects in consultation with district collector for enhancing district's resilience.

Community Groups and Volunteer Agencies:

i. Local community groups and voluntary agencies including NGOs normally help in prevention and mitigation activities under the overall direction and supervision of the DDMA or the Collector.
ii. They should be encouraged to participate in all training activities as may be organized and should familiarise themselves with their role in disaster management.

Citizens:

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

1.5 Plan for review and updating: Periodicity

The DDMP prepared by the DDMA, Jharsuguda with the support and assistance from all the line departments of the districts. All the line departments provided data for the development of DDMP and its submission to the OSDMA in the scheduled time.

-Dissemination of the plan.

-Revise and Maintain - Planning teams should establish a process for reviewing and revising the plan. Reviews should be a recurring activity. Review on an annual basis is considered minimum. It should be mandatory to consider reviewing and updating the plan after the following events:

i. A major incident.

ii. A change in operational resources (e.g., policy, personnel, organizational structures, Management processes, facilities, equipment).

iii. A formal update of planning guidance or standards.

iv. Major exercises.

v. A change in the district's demographics or hazard or threat profile.

vi. The enactment of new or amended laws or ordinances.

The responsibility for the coordination of the development and revision of the basic plan, annexes, appendices and implementing instructions must be assigned to the appropriate person(s).

It is recommended that a DDMP be internally reviewed on a yearly basis and either be updated or reaffirmed. The updates or reaffirmed document may also be used to summarize the accomplishments of the past year and help the administration to prioritize mitigation goals for the next year.

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Chapter – 2

District Profile

History & Location: Jharsuguda was a Tahasil under the Sambalpur Sadar Sub-division. It was upgraded to a Sub-division in 1979 and was given the status of a district on 1st April 1994.Mineral rich District, Jharsuguda is one of the most industrially developed District of Odisha. Earlier it was a part of Sambalpur District. It was created by amalgamation of the erstwhile Jamindars of Rampur, Kolabira, Padampur and Kudabaga. The District is surrounded by Sundargarh District in the North, Sambalpur District in the East, Bargarh District in the South and Chattisgarh state in the West. Jharsuguda District is situated at a distance of 515 km from Kolkata, 616 km from Nagpur, 48 km from Sambalpur and 372 km from state capital Bhubaneswar. The total geographical area of the district is 2114 sq. km and it occupies 1.36% of the state's area. In order of size, Jharsuguda district occupies 29th position among the 30 districts of the state of Odisha.

Jharsuguda district is situated between 210 02' 37'' N to 220 00' 32'' N latitudes and 830 31' 12'' E to 840 24' 00'' E longitudes in the north-western part of the state of Odisha. It is surrounded by Sundargarh district in the north, Sambalpur district in the east, Bargarh district in the south and Chattisgarh state in the west. According to the Census of 2011, the district had a population of 5,79,505 out of which 2,96,690 were Males and 2,82,815 were Females. In terms of population, the district occupies 27th position among the 30 districts of Odisha.

Administrative Setup: The Collector and District Magistrate is the administrative head of the district. There is only one Sub-division, Jharsuguda, in the district and a Sub-Collector is in-charge of administration of this Sub-division. For convenience of revenue administration the district is divided into 5 Tahasils, namely Lakhanpur, Jharsuguda, Laikera, Kirimira and Kolabira and each Tahasilare kept in charge of a Tahasildar. Similarly, for carrying on developmental activities smoothly, the district is divided into 5 CD Blocks, namely, Lakhanpur, Jharsuguda, Kirimira, Laikera and Kolabira and each CD Block is kept under the administrative control of a Block Development Officer. Under each CD Block there are several Gram Panchayats consisting of a number of villages. The list of CD Blocks with number of Gram Panchayats and villages is given below.

TABLE 1.1: Block Wise Set up of Gram Panchayats and Villages

Sl No.	Name of CD Block	No. of Gram Panchayats	No. of Villages
1.	Lakahanpur	33	146
2.	Jharsuguda	17	73
3.	Kirimira	08	42
4.	Laikera	11	45
5.	Kolabira	09	47
TOTAL		78	353

Climate & Rain fall: The District of Jharsuguda is characterized by a hot dry summer. The temperature in the month of May is 46 degree at the maximum. The average rainfall of the District is 1500 millimeter. From April to August the wind blows from south and southwest whereas from September onwards wind blows from North West.

Major portion of the land area covering hilly region has a radish stony soil. The plain region having brownish black soil is suitable for growing paddy and vegetables. The soil of the riverbanks and delta area is sandy loom suitable for paddy, sugarcane and groundnut cultivation. Some part of the Lakhanpur block is specially known for ginger cultivation which it exports in tones to other countries.

Normal Rain fall : 1362.8 mm.

Rain Recording Station : 05

Sl. No.	**Year**	**Average Rainfall (in mm)**
1	2003	1652.68
2	2004	1222.8
3	2005	1316.8
4	2006	1257.8
5	2007	1684
6	2008	1653.6
7	2009	1124.4
8	2010	1007
9	2011	1430.9

10	2012	1800.89
11	2013	1291.93
12	2014	1372.67
13	2015	1496.9
14	2016	1110.92
15	2017	1392.10
16	2018	1359.66

Topography: The district is characterized by gently undulating topography. The district can be marked into two natural physiographic divisions as follows:

(a) Northern Jharsuguda Plateau

The entire Jharsuguda district except Laikera block comes under this physiographic division. The average height of this division ranges between 500 feet to 750 feet above the mean sea level. This division has no high hills but the terrain mostly comprising of high lands is quite undulating draining into the River Ib which is the most important tributary of the River Mahanadi in the Hirakud catchment. The blocks included in this division are Kolabira, Kirmira, Jharsuguda and Lakhanpur. Many of the streams of this division directly drain into Hirakud reservoir. Lakhanpur block which forms the northern boundary of Hirakud reservoir has a number of such streams running in north-south direction.

(b) Eastern Kuchinda Plain

Located on the north of the high hill ranges of Deogarh district and well-drained by the river Bheden and her tributaries this is a flat terrain, almost plain with high level lands that are quite extensive in nature. This physiographic division comprises of the whole of Laikera block of Jharsuguda district and major parts of Kuchinda and Bamra blocks of adjacent Sambalpur district. The proportion of flat upland in this division is rather very high. In Laikera block it is as much as 75 per cent of the total cultivated area which is the highest among all the blocks of the district.

River System: All rivers of Jharsuguda district, such as Ib, Kelo, Basundhara and Bheden(Fig-7) flow from West, North and East to South ward. Bheden (or Bonam) is a tributary of Ib. River Ib is a major, rain-fed tributary of River Mahanadi.

Ib river basin: River Ib is one of the largest tributaries of River Mahanadi. It arises in the hills near Pandrapat at an elevation of 762 m in Raigarh district of Chattisgarh. The total

length of the river is 251 km. Some of the major tributaries of Ib are Bandajore, Ichhannala, Sapai, Basundhara and Bheden. The Ibriver falls into the Hirakud reservoir from the left bank of River Mahanadi. In fact, several seasonal streams such as Saraswatinalla, Ichhanalla, Bheden, Basundhara, Sapainallas fall into river Ib. In general, there is always some flow in the river Ib throughout the year. However, flow during the summer months can go down to zero during the drought period. Standing water remains available in several deep gorge portions in river Ib. The maximum elevation at the upstream end and minimum elevation at the downstream end of the basin were found to be 1157 m and 157 m , respectively. A barrage project was proposed in the year 2005 on River Ib in the Jharsuguda district. The barrage site is located across downstream of the confluence of rivers Basundhara and Ib, near the village Deogaon of Rajpur GP (Jharsuguda block). The longest earth dam of Asia, the Hirakud Dam, has been constructed on the southern part of Jharsuguda district where all the smaller rivers of the district join with the River Mahanadi. The Mahanadi River system with Hirakud reservoir is the major water body in the district. River Mahanadi with its tributary Ib is the major river flowing through Jharsuguda area. River Mahanadi and its tributaries provide bulk of water supply and carry effluent load from this area. The river system drains into the Hirakud reservoir.

Demography:

Households and its distribution:

Sl. No	Total Number of Families/HH	Category		Category				Category	
		Rural	Urban	SC	ST	OBC	GEN	BPL	APL
1	136061	60.11%	39.89%	25543	41286	25112	44120	77695	35024

Population and its composition:

Sl. No	Population			GEN		SC		ST		OBC	
	T	M	F	M	F	M	F	M	F	M	F
1	579505	296690	282815	146295	121885	52580	52040	88273	88485	15590	14357

- Population density of the district and decadal growth of population-

Religion wise distribution of Population:

Sl. No.	Total Population	Category				
		Hindu	Muslim	Christian	Sikh	Others
1	579505	89.73	5.78	3.7	0.41	0.36

Age Group

Sl. No.	Total Population	0-5 years	6-14 years	15-59 years	60 years and above
1	579505	64794	75915	418895	19901

Sex Ratio:

1	Sex Ratio (Females per 1000 males):	953
2	Sex Ration(0-6 Years):	943

Literacy Rate:

	Total	Male	Female
Literacy Rate	78.67	86.61	70.73

[Details are at Table No. 1 to 6 of Volume II of the DDMP]

Socio-Economic profile:

The economy of the Jharsuguda District can be judged through its natural resources. The District is rich in minerals like coals, quartzite and fire clay. Besides deposit of limestone, granite, white sand stone and laterite stone are also found in several places of Jharsuguda District that add to economy of the District. Several industrial units like Vendanta Alumina, Bhusan Steel and Power, TATA Refractories are operating in the District that contributes to the economic growth of the District. There are also some major forest products like Kendu leaves, wood, rice and leather that also contribute significantly to the economy of Jharsuguda District.

Workforce participation-

The table below gives a comparative picture of some characteristics of the workers in Jharsuguda district as per Census 2001 and Census 2011.

Sl. No.	Item	Unit	Census 2001	Census 2011
1	Total Population	Nos.	509716	579505
2	Total Workers	Nos.	189593	247707
3	Total Workers (Rural)	Nos.	53802	169104
4	Total Workers (Urban)	Nos.	189593	78603
5	Main Workers	Nos.	133148	172069
6	Marginal Workers	Nos.	56445	75638
7	Cultivators	Nos.	42308	40867
8	Agriculture Labourers	Nos.	46074	56809
9	Workers in Household Industry	Nos.	14883	15836
10	Other Workers	Nos.	86328	134195

Though the number of main and marginal workers has increased in 2011 over 2001 Census, the percentage of main workers to total workers has shown a declining trend. The above table also illustrates the fact that the share of cultivators among main workers has declined between 2001 and 2011. There appears to be a shift of main workers away from cultivation related activities. Hence, the workers participation rate acts as an indicator of the dynamics of employment in the district.

Land Holding Pattern:

Sl.	Block	Forest area	Permanent Pasture	Cultural waste	Land put to non Agril. Uses	Barren land	Current fallow	Other fallow	Net area sown
1	Jharsuguda	5512	636	1937	8450	3570	-	957	19674
2	Lakhanpur	9514	13960	10815	28189	10210	-	1260	24249
3	Kolabira	2069	1286	540	4142	754	-	105	15150
4	Kirmira	1802	817	1240	3373	893	-	326	11155
5	Laikera	1420	3210	613	514	1720	-	569	17555
Total		20317	19909	15145	44668	17147	-	3217	87783

As per 2011 census operational holdings by all social groups are given in Table below:

Category	Numbers	Area in HA
Marginal (<1 Ha)	24309	12375
Small (1-2 Ha)	13059	18078
Semi Medium (2-4 Ha)	5449	15205
Medium (4-10 Ha)	1727	9954
Large (>10 Ha)	524	9085
Total (all categories)	45068	64997

Agriculture:

Agriculture is the main occupation of the rural people of the district, the Economy of the Jharsuguda District is solely an industrial economy. The scope of public Sector is very vast to provide employment opportunity to a large section of unemployed persons in the district. The economic genesis in Jharsuguda district has brought about by the growth of the large–scale industries centering the Mahanadi coalfields and other large scale and small scale industries.The major crops are Paddy, Pulses, oil seeds and vegetables. According to the data received from the Agriculture department 42.08% (in ha) are total cultivable area and 8.09% is total irrigated area (in ha). Block wise details are in the table below.

Sl.	Crop	Net Sown Area	Production (in Qtls.)	Consumption of Seeds (in Qtls.)	Consumption of Fertilizers (in Qtls.)	Consumption of Pesticides (in Qtls.)	Requirement of Loans (Rs. in Lakh)
1	Paddy (Kharif)	13944	275175	3470.9	1176.92	570	NA
2	Paddy (Rabi)	7477	2496	14.75	90	155	NA
3	Wheat	60	23.75	6	115	2.5	NA
4	Maize	967	62.94	2.01	110	5.6	NA
5	Bajra	NA	NA	NA	NA	NA	NA
6	Ragi	NA	NA	NA	NA	NA	NA
7	Milets	NA	NA	NA	NA	NA	NA
8	Pulses	5952	6.4	185	45	950	NA
9	Oil Seeds	2596	8.55	13.00	75	1530	NA
10	Vegetables	19540	185.25	13.08	130	4800	NA
11	Other Cash crops	1885	95.00	15.00	95	72	NA

Irrigation:

Micro irrigation work was taken up under the scheme National Mission on Micro Irrigation (NMMI), From 2015-16 it is going to be implemented under the scheme PMKSY (Pradhan Mantri Krishi Sinchai Yojana). As this District comes under Non-DPAP Area the provision for subsidy under PMKSY is 45% & 35% for small and big farmers, respectively. At present 188 lift irrigation points are there in the district, Lakhanpur having the highest number of lift irrigation i.e., 78 lift irrigation points. 1754 L.I. Points (deep bore well) are there in the district, Lakhanpur having the highest number of 784 L.I. Points (deep bore well). The table below represents the block wise status of L.I. points

Employment and livelihood:

In Jharsuguda district PMKSY and MGNREGS Programs are functional at block level. The target of 2017-18 under PMKSY watershed development is around 20000 for daily wage labourers. A cumulative total target for daily wage labourers under MGREGS man-days is 66777 for the five blocks of the Jharsuguda district.

Industries and mining:

There are total 17 industries in Jharsuguda district. The detail list is attached below-

List of Industries in Jharsuguda with the land area acquired.

Information on Industries		
Sl. No.	Name of the Industry	Total land acquired (in acres)
1	Action Ispat& Power (P) Ltd.	370
2	Concast Steel & Power Ltd.	195.777
3	IndBarath Energy (Utkal) Ltd.	1094.20
4	Jai Hanuman Udyog Limited.	38.85
5	L N Metallics	29.64
6	M/S Madhab Ispat Ltd.	55.7
7	MCL , Lakhanpur	16279.446
8	MCL, IB Valley	5022.558
9	MCL, Orient Area	8861.897
10	MSP Metalics Limited	126
11	OPGC	2485.25
12	SesaSterelite Ltd.(Vedanta)	4186.207
13	Seven Star Steels Limited	63.04
	SMC Power & QST Steel Bars	281.56
15	TPSL	192.47
16	TRL Krosaki Refractories Limited	386
17	Ultra tech Cement Ltd.	165.25
	Total	**39833.85**

Mines:

The district is rich in minerals like coal, quartz, quartzite and fire clay. Besides, deposit of limestone, granite, white sand stone and laterite stone are also found in several places. There are 14 coal mines and 2 quartzite mines that are currently in operational status. The detailed list of the working mines in Jharsuguda district is mentioned in Table below-

Sl No.	Ores / Minerals	Name of the Mines	Area (in hectares)	Name of the lessee
1.	Coal	Ib-River Colliery	82.273	Mahanadi Coal fields Ltd.(MCL)
2.	Coal	Ib-Proprty Colliery	270.409	Mahanadi Coal fields Ltd.(MCL)
3.	Coal	Orient Colliery (UG)	487.364	Mahanadi Coal fields Ltd.(MCL)
4.	Coal	New gondhghora colliery	161.103	Mahanadi Coal fields Ltd.(MCL)
5.	Coal	Rampur colliery	1095.698	Mahanadi Coal fields Ltd.(MCL)
6.	Coal	Gandaghora colliery	121.730	Mahanadi Coal fields Ltd.(MCL)
7.	Coal	Orient-III colliery (UG)	601.520	Mahanadi Coal fields Ltd.(MCL)
8.	Coal	Ib block 5^{th} colliery	254.547	Mahanadi Coal fields Ltd.(MCL)
9.	Coal	North–West Block Gandghor	397.733	Mahanadi Coal fields Ltd.(MCL)
10.	Coal	Lilari OCP	204.280	Mahanadi Coal fields Ltd.(MCL)
11.	Coal	Belpahar OCP	1444.053	Mahanadi Coal fields Ltd.(MCL)
12.	Coal	Lakhanpur OCP	2485.000	Mahanadi Coal fields Ltd.(MCL)
13.	Coal	Lajkura OCP	254.54	Mahanadi Coal fields Ltd.(MCL)
14.	Coal	Samaleswari OCP	828.760	Mahanadi Coal fields Ltd.(MCL)
15.	Quartzite	Chhuinpali	102.123	TRL Krosaki Refractories Ltd.
16.	Quartzite	Bhikampali	4.897	OCL India Ltd

The most notable mines of Jharsuguda district are the coal mines which encompass an area of 8689.01 hectares and had a production capacity of 41775566 Million Tonnes (MT) in the year 2014-15. The other significant mines are the quartz mines spread across an area of 107.02 hectares and had a production to the tune of 16851 Million Tonnes (MT) in the year 2014-15.

A total of 24 numbers of mining leases for major minerals are in force in Jharsuguda district, the details of which are stated below:

	Major Minerals	No. of leases
1.	Coal	14
2.	Fireclay	05
3.	Quartz	01
4.	Quartzite	03
5.	Red-Oxide	01

	Total:	**24**

Minerals like fireclay, quartz and quartzite produced from different mines are being transported to various refractories industries inside the state for manufacturing of refractory bricks.

Mineral deposit of Jharsuguda district is a major source of revenue for the State of Odisha. The assessed mineral reserve of coal in the district is of 2567.06 Million Tonnes (MT). During the last financial year 2014–15, mining revenue to the tune of Rs.464.73 Crores has been earned by the State Govt. of Odisha primarily from the production of coal and quartzite from the mines of Jharsuguda district.

Education:

As per literacy rate of the Jharsuguda District is 71.4% .The male literacy rate is 83.04% whereas female literacy rate is 59.23%. There are numbers of educational institutions in the District like S.M. College Jharsuguda, Women's College Jharsuguda, PKSS College Jharsuguda, L.N. College Jharsuguda, Black Diamond College of Engineering and Jharsuguda Engineering School etc. 83% of villages have primary schools within the village. 91% of villages have ME schools and High Schools within 5kms to the village.Total No. of Children Enrolled, 61451and total dropout is 59 whereas 37 Children Never Enrolled. In the district Total No. of Primary Schools- 375, No. ME Schools-303, No. of High Schools- 107,

No. of Teachers- 3486, Teacher Pupil Ratio-1:21, No. of Colleges-17, No. of ITI/ Polytechnic/ Vocational Training Institutes-5.

Health:

According to the AHS 2012-13 the Child Mortality Rate of Jharsuguda district was 42 and the Maternal Mortality Rate was 234. District average of Institutional delivery in percentage is 99 and immunization status of children below 5 years is 83.2 %.

According to the records of the CDMO office, the district has recorded highest cases of diarrhea in the last 5 years. In 2016, 20264 cases of diarrhea has been treated and no cases of death due to diarrhea has been found in last 5 years. TB is also a serious health hazard in the district. In last 5 Years 83926 cases of TB has been registered and 60 cases of death due to TB also has been registered. More than this Malaria, Jaundice and Pneumonia are found in the district which is health hazard for the population.

(The detail Health indicator, Major disease cases registered and death due to the diseases are found in the table no 1.33 and 1.34 of DDMP Vol II).

Housing

The housing pattern of Jharsuguda district is different in urban and rural areas. In urban areas more Pucca and semi Pucca houses are found where as in rural areas more Katcha and Semi Pucca houses are found. In urban areas 64% of Pucca and Semi Pucca houses are there where as in rural areas 79% of Semi Pucca and Katcha houses are found.

Electrification

There are five numbers of Sub-Stations in Jharsuguda district. The details are as follows:

a) 132/11 KV Sub-Station at Sarasmal
b) 132/11 KV Sub-Station at Remja
c) 132/11 KV Sub-Station at Panchgaon
d) 132/11 KV Sub-Station at Rengali
e) 132/11 KV Sub-Station at Laikera.

Out of 353 villages all the 353 villages are partially electrified. The detail table is represented below-

Sl. No.	Name of the Block	Village Electrification				Household Electrification		
		Total No. of Villages	FE-Fully Electrified	PE-Partially Electrified	UE- Un-Electrified	Total No. of HHs	Electrified	UE
1	Jharsuguda	73	0	73	-	18139	16034	2105
2	Lakhanpur	146	0	146		24476	14070	10406
3	Kirmira	42	0	42	-	10482	3793	6689
4	Kolabira	47	0	47	-	12096	4497	7599
5	Laikera	45	0	45	-	12752	8107	4645
6	Total=	353	0	353	0	77945	46501	31444

Drinking water and sanitation

The Status of Drinking water and Sanitation at the district level is as follow. There are 351 villages having access to safe drinking water. There are 6555 functional tube wells, 184 PWS and 172 villages covered till 31st march 2018, as reported by the Executive Engineer Rural Water Supply and Sanitation Division. Total number of households in the district is 86574 and 53277 households having IHHL which is 61.53%. There are 20 ODF villages which is 5.69%.

Migration:

There is no record of migration as reported by District Labor Officer.

Food security:

As per the information provided by the Civil Supply office there are 32 Mandis for Paddy procurement. Jharsuguda Municipality has 35000 Cold storage capacities in the OSWC. In RMC 20000 Qtls Storage capacity and in FCI 100000 Qtls storage capacity is there.

Food Security (Public Distribution system 105223 households are included. 105223 households are covered under NFSA and 304040 are total number of beneficiaries. Consumption of rice is 16716.63 Qtls and 3486.42 Qtls in case of wheat. 136 are the total number of PDS outlets in the block. There are 3 storage points which has 155000 Qtls storage capacity.

Social Security: As reported by District Social Security Officer, pension schemes are functional at district level. Window pension, old age pension, Pension for disables are the types of social security provided at district level.8615 males and 7885 females are covered under old age pension scheme. 6355 number of widows covered under window pensions. 669 males and 692 females are covered under disability pension scheme.

Community/ Social Institutions:

Under Community and Social institutions in Jharsuguda District there are a total of 4895 WSHGs and total numbers of women involved are 55012. A total of 3412 SHGs bank linked in the district. 575 youth clubs and 6723 members are there at the district level. Farmers club and Youth clubs are not so familiar and not found in the urban and rural sector.

Under Old Age Pension scheme, 1577 males and 1374 females are covered. 1590 females are covered under Widow Pension and 320 males and 270 females are covered under Disability Pension.

Critical infrastructure

Critical Infrastructure includes all the infrastructure available in the district. Infrastructure - like school, colleges, aganwadis, hospitals, veterinary hospitals, roads, bridges, railways etc.

Anganwadi centers:

At present there are 957 Anganwadi centers, 667 centers having their own puccabuiding, 16180 number of children between 3 to 6 years are enrolled, 40 children are reported to be malnourished and 4306 are pregnant mothers.

Schools and other Educational Institutions

In Jharsuguda District there are 118 primary schools, 113 ME schools, 36 high schools, 1130 teachers, 19:1 is the pupil teacher ratio and 2 colleges functional at present.

Hospitals and Health Centers

At present there are 66 Health Sub Centers at Jharsuguda District. A total number of 16 PHCs, 6 CHCs, 15 Homeopathic and Ayurvedic Hospitals, 14 Private Hospitals, 2 Ambulances and 2 Blood Banks are functional at the district. 63 Number of Doctors, 153 paramedical staffs and 111 ANMs, 629 ASHAs are working for the health program covering the whole district.

Veterinary Hospitals

The veterinary hospitals status in the district is as follow. There are 9 Veterinary hospitals, 7 numbers of doctors,32Livestock Aid Centers, 21 No. of Livestock Inspectors, 47 No. of Artificial Insemination Centers are functional at district level. The detail table is indicated below-

Sl. No.	Block	Veterinary Hospitals	No. of Doctors	Livestock Aid Centers	No. of Livestock Inspectors	No. of Artificial Insemination Centers	Others (to be specified)
1	Jharsuguda	2	3	10	8	12	0
2	Lakhanpur	3	1	8	4	16	5
3	Kirmira	2	1	2	2	5	1
4	Kolabira	1	0	4	3	5	0
5	Laikera	1	2	8	4	9	0
	Total=	9	7	32	21	47	6

There are 119649 cows and Buffaloes, 5529 ships and goats, 6685 draught animals and 25376 quintals of fodder requirement in the district. Thedetail livestock status is presented in the table below-

Sl . No.	Block	Livestock Population					Requirement of Fodder in Qtls.
		Milk Animals		Draught Animals			
		Cow, Buffalo	Sheep, Goat	Camel, Horse, Bullock	Donkey, Pony etc		
1	Jharsuguda	28109	175	10543	NIL		5836
2	Lakhanpur	38467	4838	10514			8000
3	Kirmira	15283	150	11859			3297
4	Kolabira	17594	288	13213			3789
5	Laikera	20196	78	20676			4454
Total=		119649	5529	66805	0		Q,25,376

Police and Fire Stations:

There are 10 police stations in the district. In Jharsuguda PS there are 95 Police personnel. The staff position of 10 Police stations is given in the table below-

Sl. No.	Name of the Block/ ULB	No. of Police Stations	No. of Police Personal
1	Jharsuguda Block/Municipality	Jharsuguda PS	95
2	Jharsuguda Block	Badmal PS	23
3	Kolabora Block	Kolabira PS	12
4	Laikera/Kirmira Block	Likera PS	25
5	Jharsuguda Block Brajarajnagar Municipality	Brajarajnagar PS	55
6	Jharsuguda Block Brajarajnagar Municipality	Orient PS	19
7	Lakhanpur Block Belpahar Municipality	Belpahar PS	19
8	Lakhanpur Block	Banaharpali PS	23
9	Lakhanpur Block	Lakhanpur PS	16
10	Lakhanpur Block	Rengali PS	19

Cooperative Societies

The Primary Agriculture Cooperative Societies under ARCS, Jharsuguda Circle Jharsuguda: There are 32 Primary Agriculture Cooperative Societies, 56824 farmers, 2009.2 qtls of seeds distributed last year, 73756.5 qtls of fertilizers distributed during last year, 249950 qtls of paddy procured during previous season.

Banks and Post offices

There are 78 Nationalized Banks in Jharsuguda District. 85 Post offices are working successfully in the district. List of Banks are listed below-

a) State Bank of India, Jharsuguda.
b) Andhra Bank
c) Allahabad Bank
d) U. Co Bank
e) Union Bank
f) United Bank of India
g) Bank of India
h) Indian Bank
i) Central Bank of India
j) ICICI
k) Oriental Bank of Commerce
l) Canara bank
m) Syndicate Bank
n) HDFC
o) Axis Bank
p) IDBI
q) Indus Ind Bank
r) Vijaya Bank
s) Kotak Mahindra Bank
t) ING Vaisya Bank
u) Bank of Maharashtra

Road and Railway network

There are 78 GPs in Jharsuguda District. 95% of the of GPs connected with the Block HQ with all-weather road. 13 % of Villages connected with GP HQ with all-weather Roads. 13% of villages/GPs having bus communication and 49 private bus are operating at present.

Railway network covers 1676mm. JSG is the station code. The railway track is joining adjacent states like Chhatisgarh, Bihar, Jharkhand and west Bengal. Major stations like Brajarajnagar, Bagdihi are operational in the district. There are 7 local stations where only passenger trains halt for passengers.

Cyclone and Flood Shelters

There are two multipurpose flood and cyclone centers in the district. Those two are in the Lakhanpur block. Kanaktora and Mahudi are two villages where multipurpose flood and cyclone centers are built for the benefit of pupils residing at flood prone villages.

Rain gauge and Automatic Weather Stations

There are five rain gauge stations installed at 5 block headquarter of Jharsuguda. One automatic weather station installed in the campus of Collect orate Jharsuguda which is maintained by IMD, Jharsuguda.

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Chapter- 3

Hazard, Vulnerability and Risk Assessment

A. Major Disasters/ Incidents during 2007-2018:

Jharsuguda district is more vulnerable to hazards like drought, flood, lightening snakebite, and as it is an industrial district it is vulnerable to industrial disaster. In the last 10 years cases have been reported for the above indicated disasters. As of now there is no evidence of industrial disaster.

Table No. : 1

Sl. No.	Disaster/ Incident	No. of incidents during (2007-2016)	No. of Deaths	Affected Population	Livestock Loss	Houses Damaged	Damage to Infrastructure				Damage and loss of Crop Area (in Hectares)
							School/ AWC Buildings	Hospitals	Road in Km.	Other Critical Infrastructure	
Disasters as approved under SDRF/ NDRF Guidelines.											
1	Flood	2014	nil	1755	nil	329	nil	nil	nil	nil	nil
2	Flood	2015	nil	372	nil	nil	nil	nil	nil	nil	nil
3	Drought	2015-16	nil	33960	nil	nil	nil	nil	nil	nil	29627.23
4	Drought	2017-18	nil	12546	nil	nil	nil	nil	nil	nil	7941.45
5	Fire	Nil									
6	Hail Storm	Nil									
7	Cyclone	Nil									
8	Earth Quake	Nil									
9	Tsunami	Nil									

10	Landslide	Nil									
11	Avalanche	Nil									
12	Cloud Burst	Nil									
13	Pest Attack	2018	nil	2786							7253.60
14	Cold Wave/ Frost	Nil									
State Specific Disasters as per Notification No.1936 Dt. 01.06.2015											
15	Lightning	2010-11	6								
16		2011-12	9								
17		2012-13	4								
18		2013-14	6								
19		2014-15	1								
20		2015-16	3								
21		2016-17	6								
22		2017-18	8								
23	Heat wave	2015-16	1								
24		2016-17	3								
25		2017-18	1								
26	Whirlwind	2014-15	1								
27	Tornado	Nil									
28	Heavy Rain	Nil									
29	Boat Accidents (Other than during Flood)	2014-15	6								
30		2015-16	3								

31	Drowning (Other than during Flood)	2016-17	7								
32		2017-18	10								
33	Snake Bite(Other than during Flood)	2015-16	1								
35		2016-17	2								
36		2017-18	5								
Other Disasters											
37	Animal Menace	Nil									
38	Building Collapse	Nil									
39	Stampede	Nil									
40	Epidemics	Nil									
41	Industrial / Chemical Accidents	Nil									
42	Road Accidents	Nil									
43	Railway Accidents	Nil									
44	Hooch Incidents	Nil									
45	Communal Riot	Nil									
46	Dam Break/ Spill Way related flood.	Nil									
47	Soil/ Coastal erosion	Nil									

[Year wise details of each disaster occurred during the last 10 years is at Table No. 3.1 of Volume II of DDMP]

B. Major Disasters/ Incidents in the District during 2018 :

Table: 02

Sl. No.	Disaster/ Incident	No. of incidents during 2018	No. of Deaths	Affected Population	Livestock Loss	Houses Damaged	Damage to Infrastructure				Damage and loss of Crop Area (in Hectares)
							AWC/ School Buildings	Hospitals	Road in Km.	Other Critical Infrastructure	
1	Lightening	8	8								
2	Snake bite	5	5								
3	Drowning	10	10								
4	Sun stroke	1	1								
5	Pest attack	-	nil	2786	-	-					7253.60
6											
7											
8											

C. Vulnerability and Risk Assessment related to disasters:

The Jharsuguda has a history of recurring natural disasters. While the coastal districts of Odisha are exposed to floods and cyclones, western Odisha is prone to acute droughts; a large section of the State is also prone to earthquakes. In addition, the State is also affected by disasters like heat waves, epidemics, forest fire, road accidents etc.

With 1359.66 mm of annual rainfall concentrated over 3 months, the district is highly vulnerable to drought. High population density, encroachment on the draught areas, poor socio-economic condition, non-irrigated area increase the vulnerability. Out of total geographical area of 29627.226 hectares are draught prone. There are 2 rivers causing flood during the rainy season. The seismic zoning of Odisha falls between zones I to II i.e. low damage risk zone and moderate damage risk zones. The parts of Jharsuguda districts coming under moderate risk zones.

Jharsuguda is not prone to cyclone. Last 15 years does not have any records of cyclone.

Table No. 03: Cyclone vulnerable areas of the district: (*As per the historical data none of the blocks has been affected by cyclone)*

Sl. No.	Name of the Block/ ULB	No. of susceptible Gram Panchayats	No. of susceptible Villages/ Wards	Vulnerable Population in Nos.	Milch and Draught animals	Houses	Vulnerable Infrastructure			
							School / AWC Buildings	Hospitals	Roads (in Km)	Other Critical Infrastructure
1										

[Note: Based on historical data the table to be filled up. Only concerned Blocks/ ULBs to be mentioned.]
(Detailed list of vulnerable Villages/Wards is at table No. 3.2 of Volume II of the DDMP.)

Electrical Infrastructure and cyclone Vulnerability: NIL (*As per the historical data none of the blocks has been affected by cyclone)*
Table No. 04

Sl. No.	Name of the Block	No. of Grid Stations	No. of 33/11 KV Substations	No. of Distributing Transformers			Conductor/ Electrical lines-11 KV or less (length in Kms.)	No. of Electrical Poles	No. of High Tension Towers	High Tension lines above 11 KV (length in Kms.)
				11 KV or Less	11 KV < and <60KV	6o KV and above				
1	Lakhanpur	0	3	1124	7	0	985.73	15750	0	110
2	Jharsuguda Municipality	1	2	415			123	1538		11.4
3	Jharsuguda	1	3	262			103.25	1299		13.61
4	Kirmira	0	1	140			211	2638		32.5
5	Kolabira	0	1	139			117	1463		32.5
6	Laikera	0	1	274			203	2538		26

Table No.05: Drinking water facility in the Cyclone prone areas: NIL (*As per the historical data none of the blocks has been affected by cyclone)*

Sl. No.	Name of the Block/ ULB	Total No. of Tube Wells	No. of Wells	PWS Schemes				Other Drinking Water Sources If any
				Total No.	Length in Mtrs.	No. of Over Head tanks	No. of Stand Points	

- **Tsunami: NA**

Table No. 06: Tsunami vulnerable areas of the district : NA

Sl. No.	Name of the Block/ ULB	No. of susceptible Gram Panchayats	No. of susceptible Villages / Wards	Vulnerable Population in Nos.	Milch and Draught animals	Houses	Vulnerable Infrastructure			
							School Buildings/ Anganwadi	Hospitals	Roads (in Km)	Other critical Infrastructure

- **Flood:**

Brajarajnagar and Lakhanpur are the two blocks which are prone to flood. In last 10 years there has been cases reported for flood. 2127 population affected in flood during 2014- 2015 and 329 houses were damaged and there were no records of livestock loss of life due to flood.

Table No. 07 : Flood vulnerable areas of the district in general:

Sl. No.	Name of the Block/ ULB	No. of susceptible Gram Panchayats	No. of susceptible villages/ Wards	Population in Nos.	Milchand Draught animal	Houses	Vulnerable Infrastructure			
							School/ AWC Buildings	Hospitals	Roads (in Km)	Other Critical Infrastructure
1	Lakhanpur	2	5	1658	120	329	NIL	NIL	NIL	NIL
2	Brajarajnagar	1	2	1000	58	129	NIL	NIL	NIL	NIL

(*As per the historical data none of the schools, hospitals and roads are vulnerable)*

Table No. 08: Causing agent wise flood vulnerable areas of the district:

Sl. No.	Causing agent- Rivers/ Water bodies/Tidal Wave/ Others	No. of Susceptible Blocks/ ULB	No. of Susceptible GPs	No. of Susceptible Villages/ Wards	Vulnerable Population	Milch and Draught animals	Houses	Vulnerable Infrastructure			
								School/ AWC Buildings	Hospitals	Roads (in Km)	Other Critical Infra.
1	IB	1	2	2	955						
2	Back water of Hirakud	2	2	5	1658						

(*As per the historical data none of the schools, hospitals and roads are vulnerable)*

Table No. 09: Agriculture and Flood Vulnerability-NIL- Back water of Hirakud are non-agricultural fields.

Sl. No.	Name of the Block	Cultivable Area (Hectares)		Area susceptible to Flood (Hectares)	
		Paddy	Non Paddy	Paddy	Non Paddy

Table No. 10 : Electrical Infrastructure in the Flood Prone Area-NIL (None Electrical Infrastructure are vulnerable to flood)

Sl. No.	Name of the Block/ ULB	No. of 33/11 KV Substations	No. of Distributing Transformers			Conductor/ Electrical lines-11 KV or less (length in Kms.)	No. of Poles	No. of High Tension Towers	High Tension lines above 11 KV (length in Kms.)
			11 KV or Less	11 KV < and <60KV	6o KV and above				
1									

Table No.11 : Drinking water and Flood Vulnerability: NIL (None Drinking water source vulnerable to flood)

- **Events/ Festivals/ Functions organized in the district where mass gathering occurs:**

  [*The events where the strength of population gathering is 5000 or above is to be mentioned in the table]*

  There are seven major festivals where there is more than 5000 population gathers. The details list is below for reference.

Table No. 12

Events /festival function being organized at Jharsuguda where mass public gathering occurs

Sl. No	Name of the district	Events indicating the name of festival/functions being organized by Mass public gathering occurs	Month	Strength of population of gathering (Appx.)	Remarks
1		Jharsuguda lokamohotsuv	January 01-05	50,000	The lokmohotsava is being organized by Dist administration and people of Jharsuguda commutation or district function day
2		Makara mela, Simuliakandeikela G.P	All the month of magha masa	30,000	People of 19 gathered here.
3		Siva ratri at koilighughar	Flaguna masa Chaturdasi	30,000	It is a big festival at the koilighughar which is a tourist place
4		DhanuyatraBandhabahalBelpahar	Pausapurnima	50,000	Dhanuyatra takes place at Pausapurnima
5		AndhariyatraAndhariPahad	December 09 - 10	50,000	This yatra is bring Organized at the end at the year for Conservation of forest
6		Bichhuakholyatra At bardipahad Lakhanpur G.P	Kartika Purnima	20,000	A Local Festival
7		RathayatraKukurjangha	Asadha	50,000	Car festival is famous for old temple of lord Jagannath Western, Odisha
8		AlekhaMohayagnaGujapahad	Magha Purnima	20,000	He is festival of mahimadharama sadhu in which large no of people gathered at Gujapahad which is old tourist place

- **Boat operation points: Table No. 13:**

Sl. No.	Name of the Block	Name of the ghat/ boat operation point	Name of the water body	No. of Panchayats/ villages connected	Daily to and fro movement of people in Nos. (Approx.)	Type of boats operating in Nos.	
						Mechanised	Non-Mechanised
1	Lakhanpur	Taldihi	Hirakud	1	56		1
2		Rampella		1	42		1
3		Padampur		1	34		1
4		Tilgi		1	40		1
5		Dhulunda		1	38		1
6		Sardha		1	36		1
7		Muhudi		1	45		1
8		Mahulpali		1	41		1
9	Jharsugua	Panchapada	IB	1	48		1
10		Malda		1	38		1
11		Rampur		1	44		1
12		Dumermunda		1	32		1

Land Slide Vulnerability:NIL (as per the historical data no evidence of landslide is there, the district is not vulnerable to land slide)

Table No. 14

Sl. No.	Land Slide Zone/ Area/ Location	Area in Sq. Km	No. of susceptible Villages/ Wards	Vulnerable Population in Nos.	Houses	Vulnerable Infrastructure			
						School/ AWC Buildings	Hospitals	Roads (in Km)	Other Critical Infrastructure
1									

***[Note:** Detailed list of villages, School, Hospitals and Roads are given in the Volume II of the DDMP]*

- **Lightning:**

Lightning is an electrical discharge caused by imbalances between storm clouds and the ground, or within the clouds themselves. Most lightning occurs within the clouds. During a storm, colliding particles of rain, ice, or snow inside storm clouds increase the imbalance between storm clouds and the ground, and often negatively charge the lower reaches of storm clouds. Objects on the ground, like steeples, trees, and the Earth itself, become positively charged—creating an imbalance that nature seeks to remedy by passing current between the two charges. Lightning is extremely hot—a flash can heat the air around it to temperatures five times hotter than the sun's surface. This heat causes surrounding air to rapidly expand and vibrate, which creates the pealing thunder we hear a short time after seeing a lightning flash. The detail of death cases in Jharsuguda district is listed in the table below-

Table No. 15- Identifiable incidents of lightning hit in last 5 years

Sl. No.	Name of the Block/ ULB	Identifiable incidents of lightning hit in last 5 years		No. of Lightning events	No. fatality/ Deaths	Injured Persons
		No. GPs	No. of Villages/ Wards			
1	Jharsuguda	3	7	7	7	0
2	Lakhanpur	4	8	8	8	0
3	Kolabira	1	1	1	5	0
4	Laikera	3	7	7	9	0
5	Kirmira	1	2	2	4	0

[List of villages is at Table No.15 of Volume II of the DDMP]

- **Major Industrial Establishments/ Chemical & Other hazardous material storage points: NIL** (No relevant data with the office, still waiting from the concerned department of the district)

Table No. 16-

Sl No.	Name & Location of the Indusrty/ Factory/ Chemical storage Points	Name & location of the Hospital / Health Centre	Gram Panchayat	Block
1	Vedanta Ltd. Bhurkamunda	Jharsuguda Govt. Hosital	Katikela	Jharsuguda
2	SMC Power Generation Ltd. Hirma		Hirma	
3	SPS Steel & Power Ltd. Badmal		Badmal	
4	Action Ispat & Power Ltd. Marakuta		Marakuta	
5	MSP Metallics (P) Ltd. Marakuta		Marakuta	
6	TPSL, Lahandabud		H.Katapalli	
7	Singhal Enterprises(P) Ltd. Hirma		Hirma	
8	Bhagabati Steels(P) Ltd.Badmal		Badmal	
9	Jain Steel &Power Ltd. Durloga		Durloga	
10	L.N. Metallics(P) Ltd. Sripura		Sripura	
11	IOCL, Durloga		Durloga	
12	IOCL, Arda		Arda	Kirmira
13	Ultratech Cement Ltd. Dhutra		Arda	
14	Madhav Ispat, Siriapali		Parmanpur	Kolabia
15	Seven star steels Ltd. Kelendamal		Kelendamal	
16	Jayhanuman Udyog(P) Ltd, Raghunathpali		Raghunathpali	
17	Apar Industries LTd. Raghunathpali		Raghunathpali	
18	ITPS, Banharpali	ITPS Hospital, Banharpali	Banharpali	Lakhanpur
19	TRL , Gumadera, Belpahar	TRL Hospital,Gumadera	Belpahar(M)	Belpahar (M)
20	Bhatia Coal Washery (P) Ltd. Chhualiberna		Belpahar(M)	
21	Global Coal mines (P) Ltd. Jorabaga		Belpahar(M)	
22	Earth Mineral Company & Co. Kirarama		Kirarama	

[Detailed vulnerable habitations list and other critical infrastructure is at Table No. 3.2 of Volume II of the DDMP

- **Drought:**

Drought is another natural calamity arises due to absence of rainfall for a period of time. A *drought* is a period of below-average precipitation in a given region, resulting in prolonged shortages in its water supply, whether atmospheric, surface water or ground water. ... Prolonged *droughts* have caused mass migrations and humanitarian crises.

Table No.- 17

Sl. No.	Name of the Block	Average Annual Rain Fall	Ground Water Level	Cultivated Area (In Hectares)			
				Paddy		Non- Paddy	
				Rain fed Area In hecters	Irrigated area	Rain fed Area	Irrigated area
1	Jharsuguda			2388.470	nil		nil
2	Lakhanpur			10895.800	nil		nil
3	Kolabira			4746.590	nil		nil
4	Laikera			7231.551	nil		nil
5	Kirmira			4364.82	nil		nil

Table No. 18: Drought Vulnerability: in year 2015 the district experienced draught. Non paddy Agricultural Crop Area lost (in Hectares) is not provided by the concerned department.

Sl. No.	Name of the Block	Year- 2015				Year – 16				Year-17				Year- 18			
		No. of GPs experienced drought	No. of Villages affected	Agricultural Crop Area lost (in Hectares)		No. of GPs experienced drought	No. of Villages	Agricultural Crop Area lost (in Hectares)		No. of GPs experienced drought	No. of Villages	Agricultural Crop Area lost (in Hectares)		No. of GPs experienced drought	No. of Villages	Agricultural Crop Area lost (in Hectares)	
				Paddy	Non - Paddy			Paddy	Non - Paddy			Paddy	Non - Paddy			Paddy	Non - Paddy
1	Jharsuguda	17	66	2388.470	nil									17	66	10211	
2	Lakhanpur	33	124	10895.800	nil									33	124	13800	
3	Kolabira	9	47	4746.590	nil									9	47	8592.093	
4	Laikera	11	45	7231.551	nil									11	45	10903	
5	Kirmira	8	42	4364.82	nil									8	42	6825	

- **Drinking Water Crisis:** As of now drinking water crises is not severe in the district. RWSS, PWD, District administration and NGOs are successfully providing the drinking water

Table No. 19:

Sl. No.	Name of the Block / ULB	Villages/ Wards without proper source of drinking water		Villages/ Wards having crisis of drinking water during summer season		Fluoride Contamination		Others Arsenic / Saline/ Iron If any
		No. of Villages / Wards	Population	No. of Villages / Wards	Population	No. of Villages / Wards	Population	
1								

[Block wise village list is at Table No. 3.2of Volume II of the DDMP]

- **Railway Line Exposed different Hazards: NIL-**Railway line is not exposed to flood , tsunami , landslide in past.

Table No. 20-

Sl. No.	Hazard	Length of Railway line exposed(in Km.)	Location
1	Flood		
2	Land Slide		
3	Storm Surge		
4	Tsunami		

- **Road Accidents: nil**

[For national and state highways only. The total network of state and national highways in the district to be discussed in detail followed by the table]

Table No- 21:

Sl. No.	Stretch of Road (From - to)	Length in Kms.	No. of Traffic Congestion Areas	No. of Accident Prone Areas	No. of villages/ habitations adjacent to accident prone areas
1	NH-200, Konaktora to Teleibani	105	4	4	4
2	SH-10 Sripura to Talpatia	34	5	5	5

- **Population Requiring Special Care:**

Table No: 22- Block wise detail

Sl. No. 1	Block/ ULB	No. of HHs headed by Women	No. of HHs headed by PWD	No. of Persons With Disability		No. of Widow	No. of Children		No. of Orphans		No. of Aged Persons (60 and above)		No. of Pregnant and lactating mothers
				M	F		0-5 Years	6-14 Years	M	F	M	F	
2	Jharsuguda (U)	2575	351	374	282	3224	9183	16016	27	26	7257	2605	1121
3	Brajarajnagar (U)	1931	214	445	482	2944	5685	8482	46	68	4012	4123	1054
4	Kolabira	1265	121	258	325	2589	2896	8796	32	30	4521	2356	1021
5	Laikera	1142	158	127	258	2321	3568	5894	45	42	2568	2148	1023
6	Lakhanpur	1786	169	254	411	3254	5698	5473	58	51	3695	4521	1452
7	Kirmira	1235	145	147	245	2147	2547	14025	41	34	2541	1256	1002

[Note: Based on historical data the tables to be filled up. Only relevant blocks to be mentioned.]

(Detailed list of vulnerable Villages/Wards is at table No. 3.2 of Volume II of the DDMP.)

Table No. 08: Causing agent wise flood vulnerable areas of the district:

1. **Earthquake Vulnerability:**

As per Earthquake Hazard Zoning Atlas-2016 issued by the National Disaster Management Authority (NDMA) and Building Materials and Technology Promotion Council (BMTPC).....

- The Jharsuguda District is coming under Zone-II (low damage risk zone)/
- The total District is under Zone- III (Moderate damage risk zone)/
- 11% of the District is coming under Zone- III (Moderate damage risk zone)/
- Lakhanpur Blocks of the district is coming under Zone- III (Moderate damage risk zone) and the other are under Zone-II (low damage risk zone) etc.

N.B. Earthquake Vulnerability Map is in Volume II

14.1 Identified Old and depleted Buildings in the District (if any)- Nil

Sl. No.	**Block/ ULB**	**No. of Vulnerable Buildings**	**Population at Risk** (inhabitants and the neighbouring)	**Remarks**

[The list of the buildings to be given in Volume II]

2. **Forest Fire:**

Forest Fire Incidents:

Sl. No.	Name of the Division	Range	No. of Fire Incidents Reported during last 5years	Area Affected in Ha.	Loss of life/ property if any
1	Jharsuguda	Jharsuguda	6	15	Nil
2	Kolabira	Kolabira	8	40	Nil
3	Laikera	Laikera	11	65	Nil
4	Lakhanpur	Lakhanpur	15	82	Nil
5	Kirmira	Kirmira	9	44	Nil

Forest fire vulnerability:

Sl. No.	Name of the Division	Range	Area (in Sq. Km)	Total Notified Forest Area (in Sq. Km)	High Risk Zone (Area in Sq Km)	No. of Villages / habitations inside/ adjacent to the High Risk Zone	Medium Risk Zone (Area in Sq. Km)	No. of Villages / habitations inside/ adjacent to the Medium Risk Zone	Low Risk Zones (Area in Sq. Km)	No. of Villages / habitations inside/ adjacent to the Low Risk Zone
1	Jharsuguda	Jharsuguda								
2	Kolabira	Kolabira								
3	Laikera	Laikera								
4	Lakhanpur	Lakhanpur								
5	Kirmira	Kirmira								

N.B. The name of the vulnerable villages along with population details under different risk zones is in Volume II.

3. Fire and Life Safety of High Rise Buildings (buildings having a height of more than 15 meter)-

Table- No. 1

Sl No.	Name of the ULB/Block	No. of High Rise Buildings	No. Of High Rise Buildings where Fire & Life Safety Audit has been carried out in last 2 years.	Remarks
1	Jharsuguda	1-SD Leisure Pvt Ltd Brundamal 2-Sankar Hotel Beheramal 3-Jangyaseni Hospital	27.10.18 10.06.17 20.09.17	

Table-No. 2

Name of the High Rise Building	Location/ Area	Name, Address, Contact Details of the Owner	Whether Fire & Life Safety Audit Under Taken (Yes/ No.)	If Yes then the Year and the Name of the Agency	Vulnerable Population
1-Micro Continental Hotel 2-Patra Electronics 3- Panigrahi Complex 4-Sevanada Complex 5- Bishnu Palace 6- Kalinga Bar 7-Yogendra Residency 8- Utakal Contementel 11- Five Element Complex 12-Royal Building 13- Priyanak Residency 14- Hotel Prince 15- Hotel Abhinandan 16- Iswari Hotel 17- Kalpana Hotel & Lodge 18- Laxmi Narayan Lodge & Cloth Store 23- Hotel Devyani 24-Queens Electronic 25-Bharat General Store 26- Punjab Cloth 27- Mundra Hotel & Fashion Mart 28- Biswanath Jewelers 29- Hora Shree 30-Hotel konark 31-Mohini Royal Hotel & Lodge 32-Anand World 33- Hotel Yogandra	Jharsuguda Town		No		

34-Bhubania Vastralaya 35- Vishal Mega Mart 36-Union Bank+RK Fashion 37-Facghion City 38-Trends 39-Ashish Enterprises+IDBI Bank 40-Kotak Mahindra+ B.K Traders 41-Hotel Roy+Manipuram Gold 42- Yogashella Complex 43-Anjan Hotel 44-Bajaj Auto 45-Skill India 46-TVS Showroom 47-Krishna Residency 48-Hotel Payal Bhubanja Vastralaya 49-Cape Town					

(As per National Building Code -2016 Para E-7 of Annexure E**)**

4. Embankments:

Irrigation Division Wise Embankments in the District:

Sl. No.	Division	Name of the Embankment	Type (Capital Embankment/ Other Agricultural/ Test Relief/ Saline)	Length (in Km.)
1	Sambalpur	Gondghora of Jharsuguda district	Other Agricultural	**0.32**

Division wise list of Vulnerable Points : Nil

Sl. No.	Name of the Division	Name of the Embankment/ River	Location of the Vulnerable Point	Affected Length (in Mtr.)	Name of the Block	Name of the Villages to be affected
1						
2						
3						

5. Dam- Burst Scenario: (For large Dams)-nil

i.

Sl. No.	Name of the Dam	Location & Water body	Type (Major/ Medium/ Minor)	Storage Capacity	Full Reservoir Level (FRL)	Maximum Water Level (MWL)	Dam Break Model / Risk Map for Dam break developed ? (Yes/No)	Pre and Post Monsoon Inspection of Structural Measures done ? (Yes/ No)	No. of Villages to be affected/ needs to be evacuated in case of a possible scenario (District & Block Wise)	Remarks
1.										
2.										

Contingency Planning for Dam bursts scenario: nil

1. For Dam - A

Sl. No.	District	Block	Name of the Village	Evacuation Route for the village/s	No. of HHs	Population	Safe Shelter Identified	Remarks

2. For Dam - B

Sl. No.	District	Block	Name of the Village	Evacuation Route for the village/s	No. of HHs	Population	Safe Shelter Identified	Remarks

ii. Formation and Subsequent Bursting of Landslide Dams: nil

Sl. No.	Land Slide Area/ Location Vulnerable for formation of land slide Dams	No. of Villages likely to be affected	Population to be affected
1			
2			

6. Cultural Heritage Sites and Precincts:

Sl. No.	Cultural Heritage site/precinct	Address/Location	Category (Centrally Protected Monument/ State Protected/ UNESCO World Heritage Site/ Unprotected Monument)	Name & Contact details of the Controlling/ Supervising Authority at the district level	Hazards & Vulnerability of the Place	Remarks (if Any) (Average Foot Fall and Days/ Period during which the place receives highest Foot Fall)
1	Jhadeswar Temple	Jharsuguda	Unprotected		NA	Kartika Month
2	Bikram khol	Jharsuguda	State Protected		NA	Winter Months
3	Padmasini Temple	Padampur, Jharsuguda	Unprotected			Winter Months
4	Ramchandi Temple,	Brajarajnagar, Jharsuguda	Unprotected			Winter Months
5	Koili Gughar Waterfall and Temple	Lakhanpur, Jharsuguda	Unprotected			Winter Months
6	Kali Mandir	Jharsuguda	Unprotected			Winter Months

7. Museums: NIL

Sl. No.	Name of the Museum	Location and Address	Type	Category/ Controlling Body (ASI/ Central Government/ State Government/ Private/ Public Trust/ Privately Managed/ University/ College)	Name & Contact details of the Controlling Authority/ Owner	Hazard & Vulnerability	Average Foot Fall and Days/ Period during which highest Foot Fall is received)	Remarks (if any)

8. Human Animal Conflict:

i. Loss of Human Lives and Property due to animal attack- NIL

Sl. No.	Vulnerable Place (Village/ Panchayat etc.)	Causing Agent/Animal (Elephant, Bear, Crocodile etc.)	Number of Human Lives lost during last 5 years	Damage to House and Property during last 5 years	Crops Damaged
1					

ii. Loss of Animal Lives due to man-made causes - NIL

Sl. No.	Vulnerable Place/ Location	Causing Agent (Railway line/ Electric transmission lines etc.)	No. of Incidents	Number of Animal Lives lost
1				

❑ ❑ ❑

Chapter – 4

Institutional Arrangement

4.1 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 than nine may be nominated by him. The Chairperson may designate one of the members to be the Vice-Chairperson.

4.2 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 chief of staffs are other members of NEC.

(Please refer Figure 1 of Volume –II (Page no.) for Central Government Notification on constitution of NEC)

4.3 State Disaster Management Authority (SDMA)

The State Disaster Management Authorities (SDMA) has to be constituted by every state government under the sub-section (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 than eight may be nominated by the Chairpersons. The Chairman of the State Executive Committee (SEC), Chief Secretary of the State is a member and Chief Executive Officer (ex-officio) of SDMA.

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 miti gation and preparedness measures.
d) Review the developmental plans of different departments of the State to ensure the integr ation 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.

4.4 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.

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.

(Please refer Figure__of Volume –II (Page no._) for Odisha Government Notification on constitution of SEC)

4.5 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.

4.6 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 in the natural calamities is the hall-mark of Special Relief Organisation.

4.7 Odisha State Disaster Management Authority (OSDMA):

Odisha State Disaster Mitigation Authority (OSDMA) was established by the Government of Odisha as an autonomous organization vide Finance Department Resolution No. IFC- 74/99-51779/F dated the 28th December 1999 (in the intermediate aftermath of the Super-cyclone in 1999). It was registered under the Societies Registration Act, 1860 on 29.12.1999 as a non-profit making & charitable institution for the interest of the people of Odisha, with its headquarters at Bhubaneswar and jurisdiction over the whole State.

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

- Coordination with the line departments involved in reconstruction,
- Coordination with bilateral and multi-lateral aid agencies,
- Coordination with UN Agencies, International, National and State-level NGOs,

- Networking with similar and relevant organizations for disaster management.

4.8 State Level Committee on Natural Calamity (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 the 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.

4.9 District Disaster Management Authority (DDMA)

Under the sub-section (1) of section 14 of DM act 2005.District DisasterManagement 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.*
c) 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*
d) The Chief Executive of the District Authority ,ex officio;
e) The Superintendent of Police, ex officio;
f) The Chief Medical Officer of the district, ex officio;
g) Not exceeding two other district level officers, to be appointed by the State Government

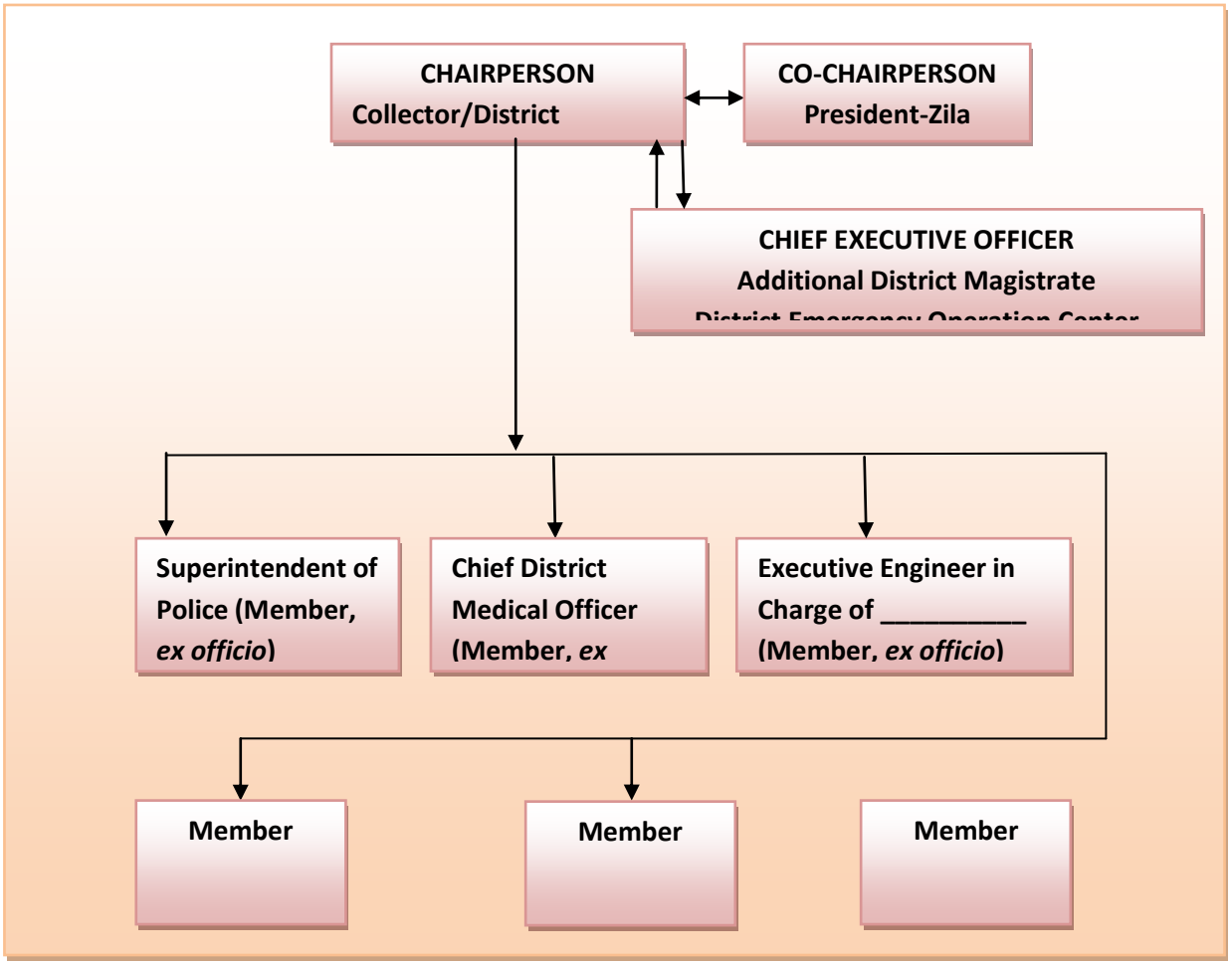
The State Government appoints an officer not below the rank of Additional Collector or Additional District Magistrate or Additional Deputy Commissioner, as the case may be of the District to be Chief Executive Officer of DDMA.

Structure of District Disaster Management Authority

Sl No.	Name of the Officer	Designation	Position in DDMA	Contact No.
1	Shri Bibhuti Bhusan Das, OAS	Collector & District Magistrate, Jharsuguda	Chairperson, Ex-Officio	06645-270070
2	Shri Laxminarayan Patel	President, ZillaParishad , Jharsuguda	Co-Chairperson, Ex-Officio	06645-271822
3	Shri A K Mohanty	Superintendent Of Police, Jharsuguda	Member, Ex-officio	06645-270808
4	Shri G R Bhanjadeo	Additional District Magistrate, Jharsuguda	Chief Executive Officer, Ex-Officio	8456996691
5	Shri Satyanarayan Dash	P.D., DRDA, Jharsuguda	Member	06645-272997
6	Dr. K Pradhan	CDMO, Jharsuguda	Member, Ex-officio	06645-273104
7	Shri RasmiRanjan Mishra	E.E., RD, Jharsuguda	Member	9438337998
8	Shri S Kerketta	Deputy Director Agriculture, Jharsuguda	Member	8895913886
9	Shri Aswini Kumar Panda	Asst Collector Emergency	Member	9668144841

The district administration is the administrative department for management of disasters. Collector is the District Relief Officer and Disaster Manager. Block is the lowest unit of relief administration. BDOs and Tahsildars jointly manage relief administration at the lowest level. District Natural Calamity Committee (DNCC) and District Disaster Management Authority (DDMA) functions with representations from district level officers and people's representative under the chairmanship of the district Collector for supervision and monitoring. Block Disaster Management Committee under the chairmanship of chairperson of Panchayat Samiti and G.P. Disaster Management Committee under the chairmanship of Sarpanch is functioning.

Figure__: Organogram of District Disaster Management Authority



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) Prepare Disaster Management Plan including District Response Plan of the District.
b) Coordinate and Monitor the implementation of the National DM Policy, State DM Policy, State DM Plan and District DM Plan.
c) Ensure that vulnerable areas of the districts are identified and prevention and mitigation measures are being undertaken by the departments of the Government both at district level and at local level.

d) Ensure that guidelines for Prevention and Mitigation measures, Preparedness and Response as lay down by NDMA and SDMA are being followed by all departments of Government both at district and local level.

e) Monitor the implementation of Disaster Management Plans
prepared by the departments of the Government at the district levels.

f) Lay down guidelines to be followed by different Government departments both at district level and local level for integrating disaster prevention and mitigation measures in their development plans and projects and provides necessary technical assistance therefor;

g) Review the state of capability for responding to any disaster or threatening disaster like situation in the district and give directions to the relevant departments or authorities at the district level for their up gradation.

h) Review the preparedness measures and give directions to the concerned departments at the district level for bringing the preparedness measures to the levels required for responding effectively to any disaster.

i) Organize, coordinate and facilitate specialized training programms and awareness programms 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.

j) Set up, maintain, review and upgrade mechanism for early warning and dissemination of proper information to public.

k) 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.

l) Examine construction in any area in the district an ensure standards for prevention of disaster or mitigation laid down for such construction to be followed by the concerned departments and authorities.

m) 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.

n) Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at short notice;

o) Encourage the involvement of Non Government Organization and Voluntary social – welfare institutions working at the grass root level in the district for disaster management.

p) Ensure communication systems are in order and disaster management drills are carried out periodically.

q) Perform such other functions as the State Government or State Authority may assign to.

Specific task assigned to members of DDMA by the Chairperson

Member 1- Shri Bibhuti Bhusan Das, OAS, Collector & District Magistrate, Jharsuguda. He is designated as Chairperson, Ex-Officio. His responsibility is to held the official meeting for the DDMP, inform all line departments to furnish relevant information for DDMP and finally hold meeting for the approval with all members for DDMP.

Member 2- Laxminarayan Patel President, ZillaParishad , Jharsuguda. He is Co-Chairperson, Ex-Officio. His responsibility is to held the official meeting for the Panchayat Samiti, inform all Block level line departments to furnish relevant information for DDMP and implement DDMP at grassroots level.

Member 3- Sri A K Mohanty, Superintendent of Police, Jharsuguda. He is Member, Ex-officio. He is responsible for the law and order situation at the district level in all situation and specially during emergency.

Member 4- G R Bhanjadeo, Additional District Magistrate, Jharsuguda. He is Chief Executive Officer, Ex-Officio. His responsibility is to held the official meeting for the DDMP, inform all line departments to furnish relevant information for DDMP and finally hold meeting for the approval with all members for DDMP.

Member 5-Satyanarayan Dash, P.D., DRDA, Jharsuguda, He is Member of DDMA. Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

Member 6- Dr. K Pradhan CDMO, Jharsuguda Member, she is Ex-officio. Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

Member 7- Er Dhaneswar Sahu E.E., Major Irrigation Division, Sundargarh, Member, Ex-officio. Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

Member 8- Shri Rasmi Ranjan Mishra E.E., RD, Jharsuguda , Member- Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

Member 9- Sri S Kerketta, Deputy Director Agriculture, Jharsuguda- Member, Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

Member 10- Shri Aswini Kumar Panda, Asst Collector Emergency- Member, Responsible to furnish information for DDMP, chalk out the action plan with time line at the grass root level.

4.10 District Level Committee on Natural Calamity (DLCNC)

The Nodal 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. The members of DLCNC are as follows:

Table No 23: Structure of District Level Committee on Natural Calamity

Sl No.	Name of the Officer	Designation	Position in DDMA	Contact No.
1	Shri Bibhuti Bhusan Das	Collector & District Magistrate, Jharsuguda	Chairperson, Ex-Officio	06645-270070
2	Shri Laxminarayan Patel	President, ZillaParishad , Jharsuguda	Co-Chairperson, Ex-Officio	06645-271822
3	Shri A K Mohanty	Superintendent Of Police, Jharsuguda	Member, Ex-officio	06645-270808
4	Shri G R Bhanjadeo	Additional District Magistrate, Jharsuguda	Chief Executive Officer, Ex-Officio	8456996691
5	Shri Satyanarayan Dash	P.D., DRDA, Jharsuguda	Member	06645-272997
6	Dr. K Pradhan	CDMO, Jharsuguda	Member, Ex-officio	06645-273104
7	Shri RasmiRanjanMishra	E.E., RD, Jharsuguda	Member	9438337998
8	Shri S Kerketta	Deputy Director Agriculture, Jharsuguda	Member	8895913886
9	Shri Aswini kumar Panda	Asst Collector Emergency	Member	9668144841

(Note: Structure and roles and responsibilities of District Level Committee on Natural Calamities (DLCNC) of the respective districts to be elaborated.)

The district administration is the administrative department for management of disasters. Collector is the District Relief Officer and Disaster Manager. Block is the lowest unit of relief administration. BDOs and Tahsildars jointly manage relief administration at the lowest level. District Natural Calamity Committee (DNCC) and District Disaster Management Authority (DDMA) functions with representations from district level officers and people's representative under the chairmanship of the district Collector for supervision and monitoring. Block Disaster Management Committee under the chairmanship of

chairperson of Panchayat Samiti and G.P. Disaster Management Committee under the chairmanship of Sarpanch is functioning.

4.11 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.

Table No 24: Location of National Disaster Response Forces

Sl No.	Battalion, Location	State	Man power drawn from	Contact Person	Contact No.
1	01 Bn, NDRF, Guwahati	Assam	BSF		
2	02 Bn, NDRF, Kolkata	West Bengal	BSF		
3	03 Bn, NDRF, Munduli	Odisha	CISF	Arun Kumar, Comdt	9437964574
4	04 Bn, NDRF, Arakkonam	Tamil Nadu	CISF		
5	05 Bn, NDRF, Pune	Maharashtra	CRPF		
6	06 Bn, NDRF, Gandhinagar	Gujrat	CRPF		
7	07 Bn, NDRF, Ghaziabad	Uttar Pradesh	ITBP		
8	08 Bn, NDRF, Bhatinda	Punjab	ITBP		
9	09,Bn,NDRF, Patna	Bihar	BSF		
10	10 Bn, NDRF, Vijayawada	Andhra Pradesh	CRPF		
11	11Bn,NDRF, Varanasi	Uttar Pradesh	SSB		
12	12 Bn, NDRF, Itanagar	Arunachal Pradesh	SSB		

4.12 Odisha Disaster Rapid Action Force (ODRAF)

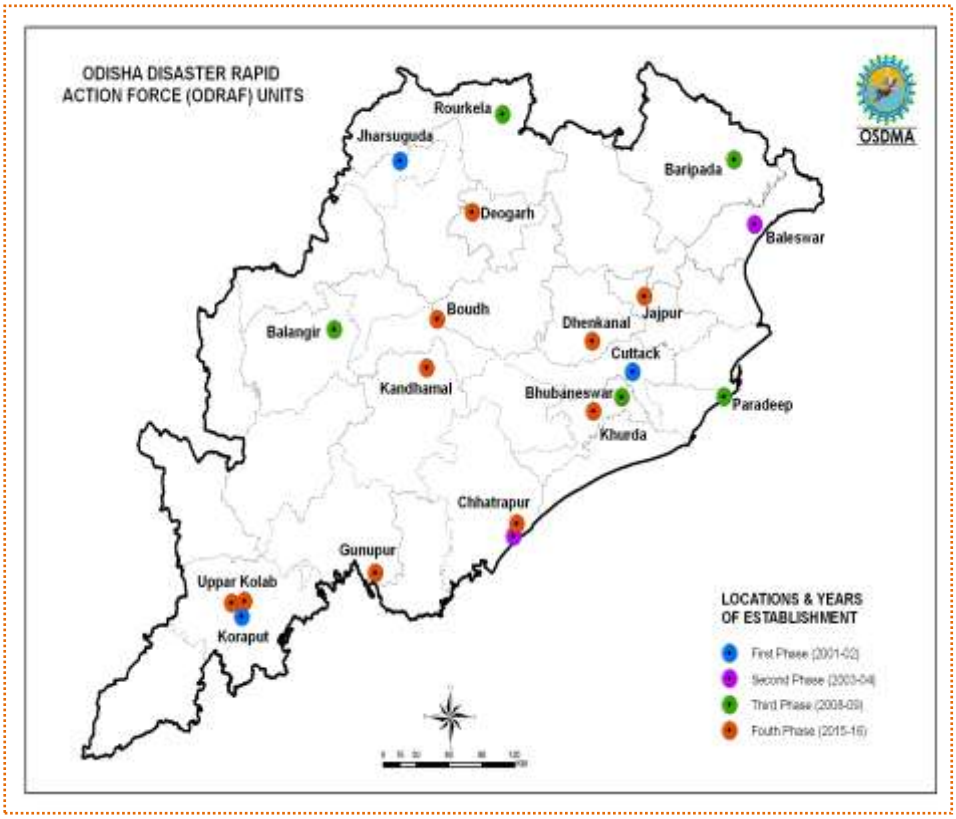
The Government of Odisha formed Odisha Disaster Rapid Action Force (ODRAF) vide notification no.939/CD dated 07.06.2001. ODRAF is a multi-disciplinary, multi-skilled, high-tech force for all types of disasters. ODRAF aims at reducing casualties, clearance of communication channels, quick deployment of 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.

10 new units of ODRAF have been proposed to set up at different locations like Sambalur, Boudh, Kalahandi, Nawarangpur, Gajapati, Berhampur, Puri, Khorda, Kendrapada and Jajpur

Table No 25: Location of Odisha Disaster Rapid Action Force with contact details

Sl No.	Place	Personnel drawn from	Name of the Commandant	Contact No.	Name of Subedar	Contact No.
1	Cuttack	OSAP 6thBn, Cuttack				
2	Jharsuguda	OSAP 2ndBn, Jharsuguda	A C Dubey	9437129436	Sri. Kul bahadur Thappa	9658630354
3	Koraput	OSAP 3rdBn, Koraput				
4	Chatrapur	OSAP 8thBn, Chatrapur				
5	Balasore	Armed Police Reserve (APR), Balasore district				
6	Bhubaneswar	OSAP 7thBn, Bhubaneswar				
7	Baripada	OSAP 5thBn,Baripada				
8	Rourkela	OSAP 4thBn, Rourkela				
9	Balangir	Armed Police Reserve (APR), Balangir district				
10	Jagatsinghpur at Paradeep	Armed Police Reserve (APR),Jagatsinghpur district				

Figure__: Location of ODRAF Units



4.14 Other Disaster Response Teams in the district

Table__: List of other Disaster Response Teams in the District

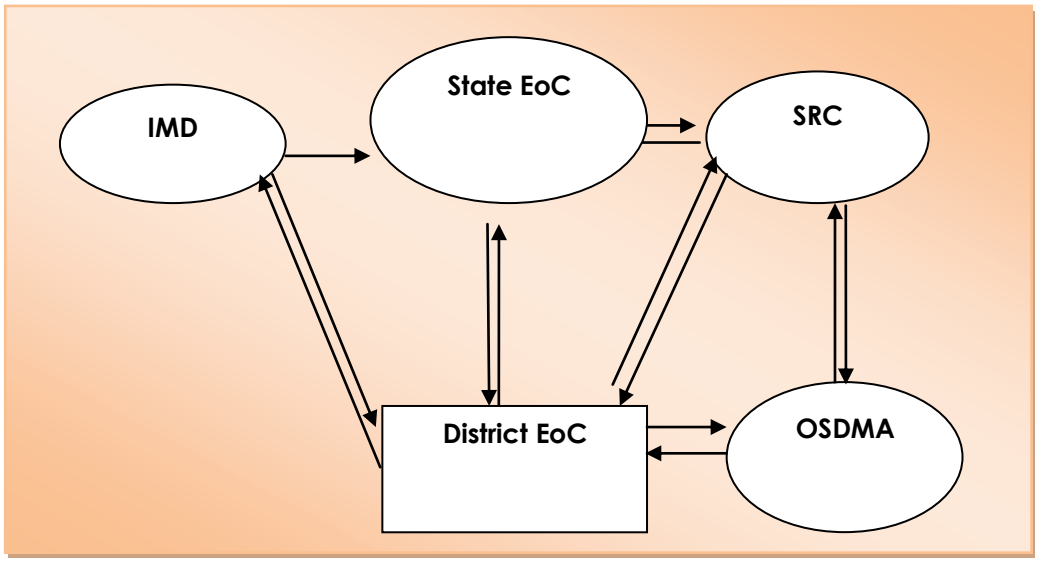
Sl. No.	Name of the Institutions	Name of the Chief Coordinator of the Organization	Designation	Contact Number	Alternate Contact Number	Number of Volunteers
1	Civil Defense					
2	Home Guards					
3	National Service Scheme (NSS)	Sudeep Purohit Nizamuddin Ali	Lecturer Lecturer	9438621248 9438641216		20 24
4	National Cadet Crops (NCC)	L Singh M Pradhan	Lecturer Lecturer	9778424577 890805663		22 20
5	Nehru Yuva Kendra (NYK)	P Pradhan				20
6	Red Cross	Aswini Ku Panda	Asst Collector	9438852757		14
7	NGOs	Sambalpur Social Service Society, At-Cox-Colony, PO/Dist-Jharsuguda.	Fr. Joseph Philip At-Cox-Colony, PO-Jharsuguda	9437658921		12
8	VOs	VSS Club	A Barik	9436854565	-	10

4.14 Emergency Communication System

4.14.1 State Emergency Operation Center (SEOC)

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.

Figure 2: Information flow chart from SEOC to Districts



4.14.2 District Emergency Operation Centers (DEOC)

DEOC of the District: Structure and Function

The structure and function of District emergency operation center is very important in the district.

Table No 27: 3 Equipments provided to DEOC and their operational status

Sl No.	Equipments	Unit	Status		Remarks
			Operational	Non-Operational	
1	Desktop Computer	1	1	1	
2	Laser Printer	0	0		
3	UPS	0	0		
4	Scanner	0	0		
5	Fax	0	0		
6	Ink Jet Printer	0	0		
7	Multi Utility Machine (Printer, Scanner, Fax, copy)	0	0		
8	Laptop	0	0		
10	LCD Projector	0	0		
11	Photocopier	0	0		
12	GPS Unit	1	1		
13	Satellite Phone	1	1		
14	VHF Sets	7	0		
15	VHF Mobile Station	0	0		
16	Walkie-Talkie (VHF hand Set)	2	2		
17	Portable Diesel Generator	1	0		
18	Inverter with Battery	1	0		
19	Inflatable Tower Light	2	2		
20	Power Saw	2	0		
21	Life Jacket	5	4	1	
22	Life Buoy	5	0	5	
23	Aluminum Ladder	1	0	1	
24	Fire Extinguisher	1	1		
25	Siren	1	0		
26	Megaphone	0	0		
27	Colour TV/Stand	1/1	0		
28	Mobile Phone	0			
29	Display Board	0			
30	White Broad	0			
31	Computer Table/Chair	1	1		
32	Rack	1	1		

33	Book Case	0			
34	GI Trunk	1	1		
35	Commando Search Light	0			
36	Steel Almirah	0			

Figure 3 : Information flow chart from District Emergency Operation Center (DEoC) to villages with early warning

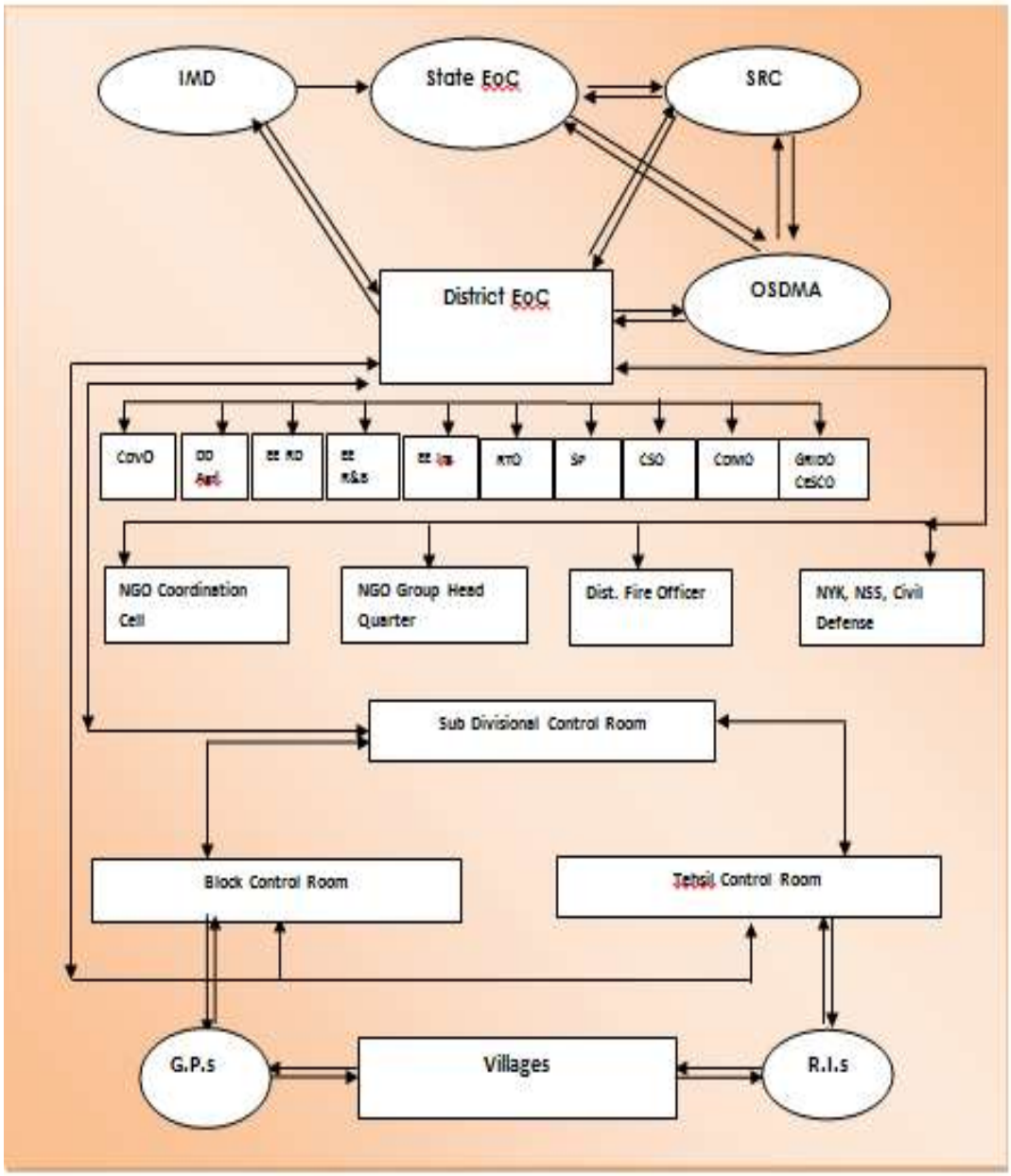
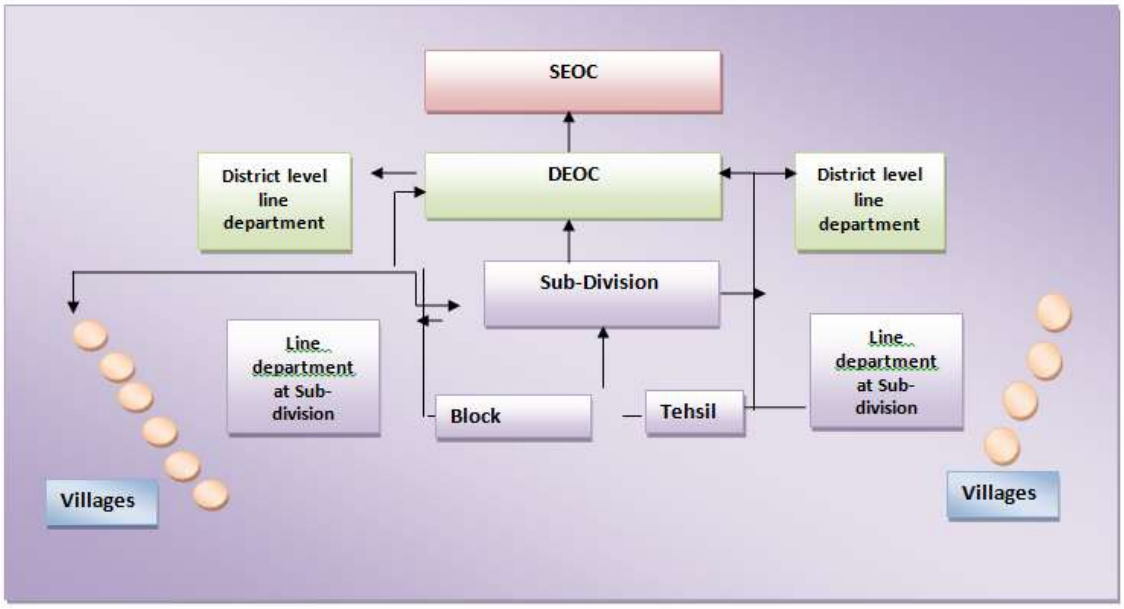


Figure 4: Information flow chart from Villages to District Emergency Operation Center (DEoC) without early warning



4.14.3 Block Emergency Operation Center (BEoC)

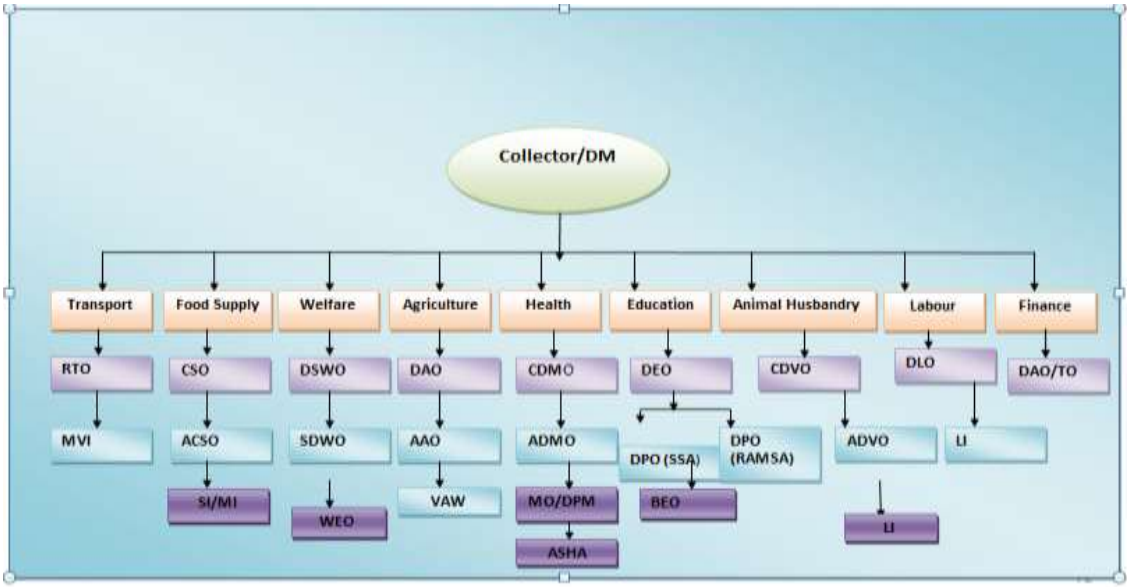
At present BEoCare not existing at the Block level. In the Meeting of DDMP, It is advised to form the BEoC at block level for better functioning of disaster management.

Table No 29: Important Line Departments at the Block

Sl No.	Department	Head of the Department at Block	Name of the Nodal Officer	Contact No.
1	Health	CDMO	Dr. K Pradhan	06645-273104
2	Fire	Fire Officer	Subasis Muduli	94390-77047
3	Police	SP	A K Mohanty	06645-270808
4	Education	DEO	Mitrabhanu Kachap	06645-273060
5	RD	EE, RD	RasmiRanjan Mishra	9438337998
6	RWSS	EE, RWSS	Sibaram Padhan	9437039839
7	Forest	DFO	Susanta Kumar	8280342658
8	Civil Supply	CSO	Udit Narayan Pattnaik	9438200044

4.14.4 Any other Alternative Emergency Operation Center in the district-nil

4.15 Coordination structure at the District level and down the line



4.16 GO-NGO Coordination before and after disaster in the district (1 page)

(Note: Elaborate on GO-NGO coordination cell in the district, if any)nil

4.16 Role of Corporate Sector in the district relating to Disaster Management (1 page)-nil

4.17 Public Private Partnership: Public & Private Emergency service facilities available in the district. (1/2 Page)

(Note: Brief description on Public and Private emergency service facilities in the district may be given) -nil

Table No 30: Contact Details of Private emergency services-

Sl. No.	Name of the Contact Person	Contact No.
1	A C Mohanta, Ultra Tech	**90900-99534**
2	Uma KantaPadhi, ITPS, Banaharpali	**97787-15425**
3	P B Panda, TRL, Belpahar	**97760-67890**
4	AbhijeetPati	**9777451555**

4.18 Multi-Purpose Flood Shelters (MFS) in the district

a) (GIS Maps for location of MFS may be incorporated)

b) (Details of Flood Shelter Management and Maintenance Committee (FSMMC) may be incorporated)

c) Table No 31: Details of FSMMC-New –no data received

d) Equipments provided to the MFS-NIL-till date no equipments are there

Table No 32: Details of equipments provided to MFS-NIL

Sl No.	***Name of the MFS***	***Location***	***Equipments Provided***	***Status***		***Remarks***
				Operational	***Non Operational***	
1	Konaktora	Konaktora	***Nil***			
2	Maodhi	Maodhi	***Nil***			

1.19 Cyclone Shelters (CS) in the District-nil

a) (GIS Maps for location of CS may be incorporated)

b) (Details of Cyclone Shelter Management and Maintenance Committee (CSMMC)may be incorporated)

c) (Equipments provided to the CS)

Table No 33: Details of CSMMC-NA

Sl No.	***Name of the FS***	***Location***	***Name of President***	***Contact No.***	***Name of Secretary***	***Contact No.***

Table No 34: Details of equipments provided to FS - Nil

4.20 Other identified Safe temporary shelters in the district-Educational Institutions, Kalyan mandaps, Town halls are other identified Safe temporary shelters in the district.

Table No 35: Identified Safe temporary shelters-

Sl No.	*Block*	*GP*	*Village*	*Name of the Institutions/Buildings*	*Type of Roof*	*No. of Rooms (Size)*	*No. of Toilets (M/F)*	*Availability of Kitchen*	*Total useable area*
1	Lakhanpur	Kanaktora	Kanaktora	HS Kanaktora	Pucca	4	2	yes	0.5 acre
2		Remta	Maudhi	PS Maudhi	Pucca	2	1	yes	10 dec

4.21 Other Safe Sites for temporary shelter for Flood/ Tsunami etc.-Educational Institutions, Kalyanmandaps, Town halls are other identified Safe temporary shelters in the district.

Table No 36: Safe Sites for temporary shelter for Flood

Sl. No.	*Block Name*	*GP Name*	*No. of Mounts*	*No. of High Bridges*
1	Lakhanpur	Kanoktora	3	-
2		Remta	1	-

4.16.2 Functions of the State Crisis Group

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. Without prejudice to the functions specified under sub-rule (1), the State Crisis Group shall,

a) Assist the State Government in managing chemical accidents at a site;
b) 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;

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;

g) Publish a list of experts and officials in the State who are concerned with the management of chemical accidents.

District Crisis Group

As prescribed in the chemical accidents (emergency planning, preparedness, and response) rules, 1996, the District Crisis Group has to be constituted.

The District Crisis Group is the apex body in the district to deal with major chemical accidents and to provide expert guidance for handling chemical accidents. Without prejudice to the functions specified under sub-rule (1). the District Crisis Group shall,-

a) Assist in the preparation of the district off-site emergency plan;

b) Assist the district administration in the management of chemical;

c) Continuously monitor every chemical accident;

d) 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;

e) Ensure continuous information flow from the district to the Central and State Crisis Group regarding accident situation and mitigation efforts;

f) Forward a report of the chemical accident within fifteen days to the State Crisis Group;

g) 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.

4.17.1 Composition of the District Crisis Group

Table___ Composition of District Crisis Group

1. District Magistrate & Collector, Jharsuguda	Chairman
2. Superintendent of Police, Jharsuguda	Member
3. Asst. Director of Factories & Boilers, Jharsuguda	Member Secretary
4. District Emergency Officer, Jharsuguda	Member
5. Deputy Superintendent of Police, Jharsuguda	Member
6. Assistant Commandant, OSAP	Member
7. Regional Officer, Orissa Pollution Control Board, Jharsuguda	Member
8. District Fire Officer, Jharsuguda	Member
9. Executive Officer, Jharsuguda Municipality, Jharsuguda	Member
10. Chief District Medical Officer, Jharsuguda	Member
11. Sub Collector, Jharsuguda	Member
12. Executive Engineer, Public Health Engineering Department, Jharsuguda	Member
13. District Information & Public Relation Officer, Jharsuguda	Member
14. District Agriculture Officer, Jharsuguda	Member
15. Regional Transport Officer, Jharsuguda	Member
16. Chief, Civil Defence Officer, Jharsuguda	Member
17. District Energy Officer	Member
18. Chief Fire Officer	Member
19. Controller of Explosive	Member
20. Sri Abhijit Pati, Factory Manager, M/s. Vedanta Limited, Bhurkamunda Jharsuguda.	Member
21. Sri D.K Singh, Head SHE, M/s. Vedanta Limited, Bhurkamunda Jharsuguda.	Member
22. Sri Pankaj Sharma, Factory Manager, M/s. Vedanta Limited, Banjari, Jharsuguda.	Member
23. Sri Ashok Kumar Saraf, Vice President & Head SHE of M/s. Concast Steel & Power Limited, Jharsuguda.	Member
24. Sri Sanjeeb Kumar Sahu, Plant Manager, LPG Bottling Plant(IOCL), Panchapada, Jharsuguda	Member
25. Sri Shashikant, Vice President, M/s. Thakur Prasad Sao & Sons Pvt. Ltd, Lahandabud, Jharsuguda.	Member
26. Dr. Tarapada Das, Vice President (HR & Admin) of M/s. TRL Krosaki Refractories Limited Belpahar, Jharsuguda.	Member
27. President, TRL Krosaki Refractories Shramik Union, Belpahar, Jharsuguda	Member
28. Sri Sanjeev Grehwal, Deputy General Manager, (O & M), M/s. IB Thermal Power Station(OPGC), Banharpali, Jharsuguda	Member
29. Sri Umakanta Pahi, Head SHE of M/s. IB Thermal Power Station (OPGC), Banharpali, Jharsuguda	Member

30. Working President of Employees Union of M/s IB Thermal Power Station (OPGC), Banharpali, Jharsuguda. Member
31. Sri Biswaranjan Nanda, Vice President & Head SHE of M/s. MSP Metallics Limited, At/Po-Marakuta, Jharsuguda. Member
32. Sri Vikas Goyal, Sr.Vice President, M/s. Action Ispat & Power Limited, At –Pandripathar, Jharsuguda. Member
33. Sri Madhav Lodha, Occupier,M/s. Madhav Ispat, Siriapali, Jharsuguda Member
34. Sri KAP Rao, General Manager,M/s. Sevenstar Steels Limited, Kelendamal, Jharsuguda Member
35. Sri D P Singh, Executive Director, M/s. SMC Power Generation Limited, At/Po –Hirma,Jharsuguda Member
36. Sri B. R Tripathy, Vice president M/s. Global Coal & Mining (P)Ltd., Jorabaga, Jharsuguda. Member
37. Sri Sreekumar M/s. Bhatia International Ltd., Belpahar, Jharsuguda Member
38. Sri Awanish Didwania, Factory Manager M/s. Earth Mineral Company Ltd., Bandhabahal, Jharsuguda Member
39. Sri Rajesh Agarwal M/s. Forties Chemicals Ltd., Raghunathpali, Kolabira, Jharsuguda. Member
40. Sri Vijay Chhabra M/s. UltraTech Cement Ltd, Arda, Jharsuguda Member
41. Sri Sumitra Shah, Occupier, M/s. Jai Hanuman Udyog Ltd.,
42. Sri Abhisek Agrawal, Occupier, M/s. L.N. Metallics (P) Ltd., Sripura, Jharsuguda Member
43. Sri Nitin Khara , Occupier, M/s. Essenn LPG Bottling (P) Ltd. Parmanpur, Kolabira, Jharsuguda. Member
44. Sri K Ranga sai, Factory Manager, M/s. Ind Barath Energy Utkal Limited At- Sahajbahal, Po- Charpali,Dist- Jharsuguda. Member
45. Sri Mrutyunjaya Karmakar, Occupier, M/s. Indian Oil Corporation Limited, Malimunda, Jharsuguda. Member

4.18 Local Crisis Group

The Local Crisis Group shall be the body in the industrial pocket to deal with chemical accidents and coordinate efforts in planning, preparedness and mitigation of a chemical accident. Without prejudice to the functions specified under sub-rule (1), the Local Crisis Group shall,

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

4.18.1 Composition of the Local Crisis Group

Table___ Composition of Local Crisis Group

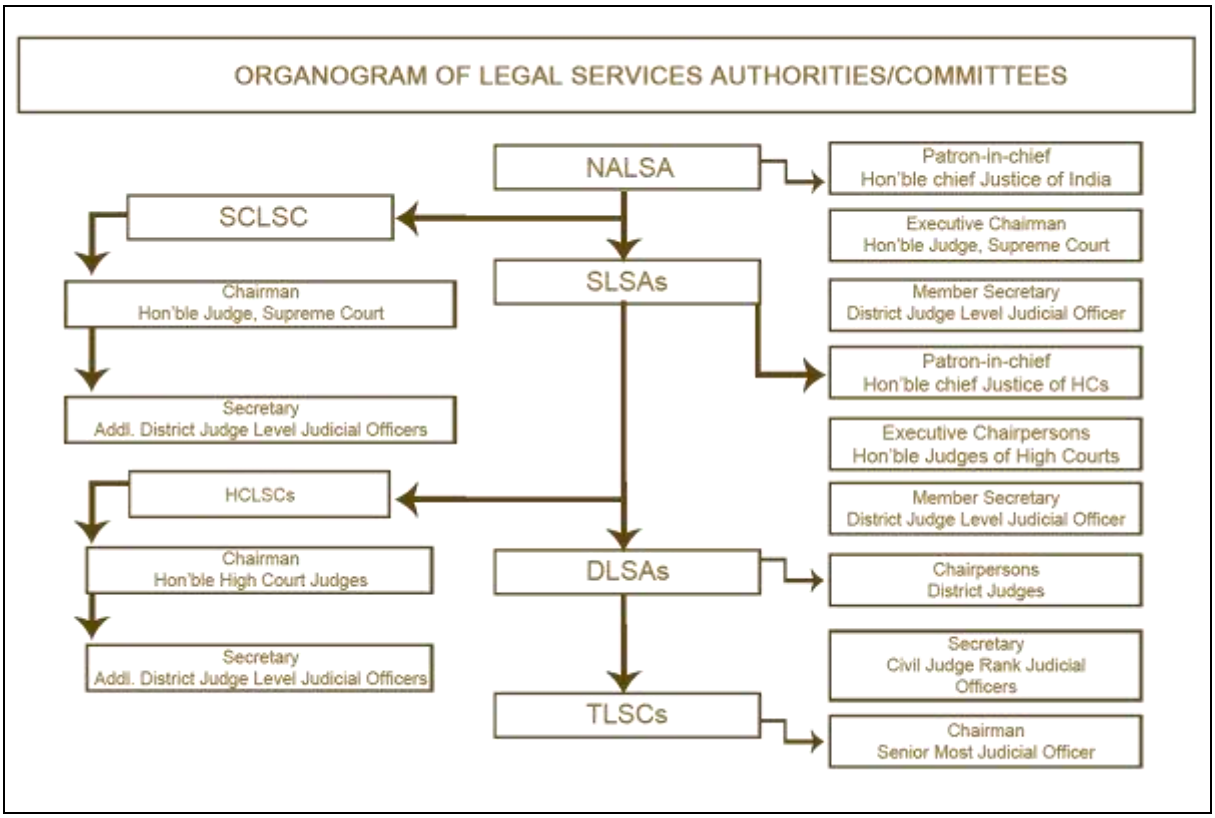
Sl No.	Member	Designation
1	SriBibhuti Bhusan Das	Collector
2	Shri Shiba Toppo	Sub Collector
3	Shri A K Panda	Asst Collector
4	Shri S Muduli	Fire Officer
5	Shri A C Dubey	Commandant ODRAF
6	Shri AK Mohanty	SP, Jharsuguda
7	Dr K Pradhan	CDMO

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.



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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.

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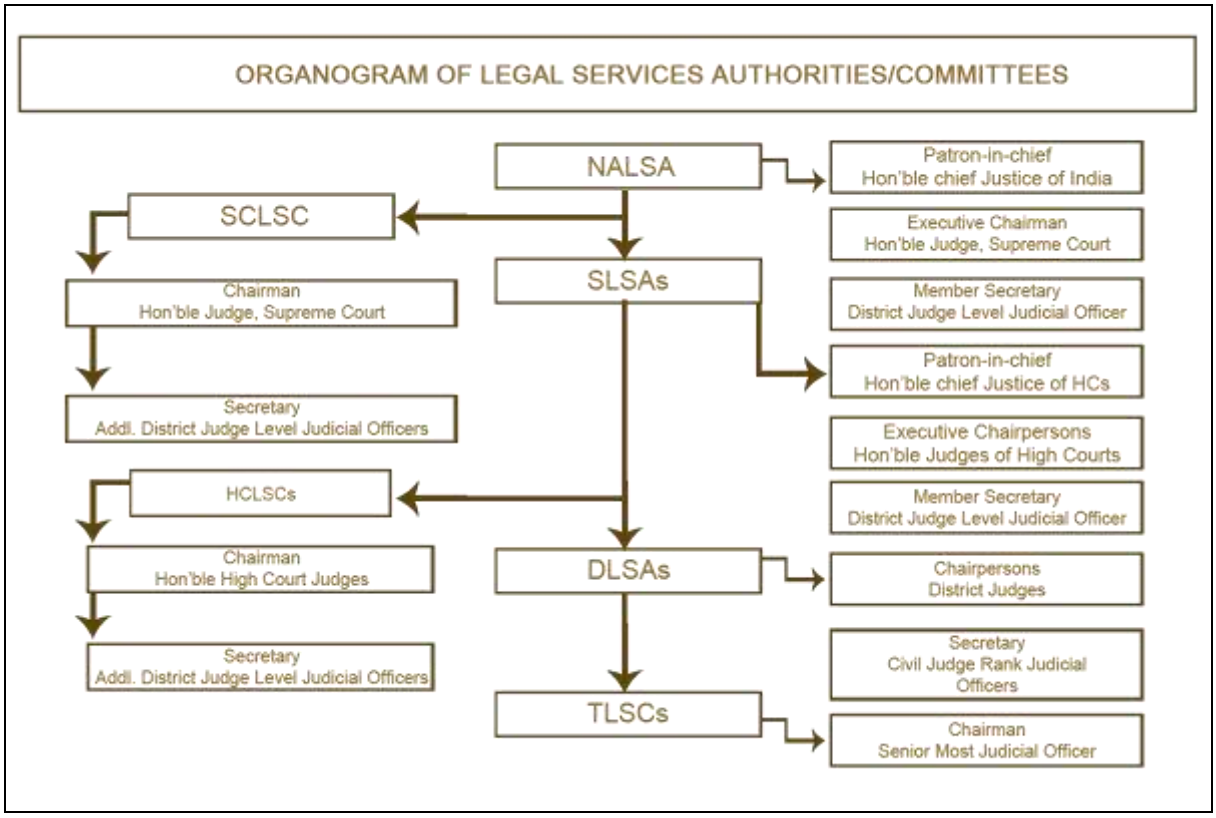

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District Legal Services Authority (DLSA), Jharsuguda				
Sl No	Name	Designation	Contact No	Mail ID
1	Shri Radha Kanta Mishra	The District Judge Cum Chairman, DLSA, Jharsuguda	8249089456	
2	Shri Bibhuti Bhusan Das	The Collector Cum Member, DLSA, Jharsuguda	9438162021	
3	Shri Aswini Kumar Mohanty	The Supt Of Police Cum Member, DLSA, Jharsuguda	9438916530	
4	Smt Mamita Dash	The Chief Judicial Magistrate Cum Member, DLSA, Jharsuguda	9437441146	
5	Shri Mukesh Tiwari	The Govt Pleader Cum Member, DLSA, Jharsuguda	9437058515	
6	Smt Janaki Biswal	The Secretary, DLSA, Jharsuguda	943919380	

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Chapter – 5

Prevention & Mitigation Measures

The Government of India have adopted mitigation and prevention as essential components of their development strategy. The Tenth Five Year Plan document has a detailed chapter on Disaster Management. The plan emphasizes the fact that development cannot be sustainable without mitigation being built into developmental process. Each State is supposed to prepare a plan scheme for disaster mitigation in accordance with the approach outlined in the plan. In brief, mitigation is being institutionalized into developmental planning.

The Finance Commission makes recommendations with regard to devolution of funds between the Central Government and State Governments as also outlays for relief and rehabilitation. The earlier Finance Commissions were mandated to look at relief and rehabilitation. The Terms of Reference of the Twelfth Finance Commission have been changed and the Finance Commission has been mandated to look at the requirements for mitigation and prevention apart from its existing mandate of looking at relief and rehabilitation. A Memorandum has been submitted to the Twelfth Finance Commission after consultation with States. The Memorandum proposes a Mitigation Fund.

The Government of India have issued guidelines that where there is a shelf of projects, projects addressing mitigation will be given a priority. It has also been mandated that each project in a hazard prone area will have disaster prevention/mitigation as a term of reference and the project document has to reflect as to how the project addresses that term of reference.

Measures for flood mitigation were taken from 1950 onwards. As against the total of 40 million hectares prone to floods, areas of about 15 million hectares have been protected by construction of embankments. A number of dams and barrages have been constructed. The State Governments have been assisted to take up mitigation programmes like construction of raised platforms etc. Floods continue to be a menace however mainly because of the huge

quantum of silt being carried by the rivers emanating from the Himalayas . This silt has raised the bed level in many rivers to above the level of the countryside. Embankments have also given rise to problems of drainage with heavy rainfall leading to water logging in areas outside the embankment. To evolve both short-term and long-term strategy for flood management/erosion control, Government of India have recently constituted a Central Task Force under the Chairmenship of Chairman, Central Water Commission. The Task Force will examine causes of the problem of recurring floods and erosion in States and region prone to flood and erosion; and suggest short-term and long-term measures. The Task Force will submit its report by December 2004.

Due to erratic behaviour of monsoons, both low and medium rain fall regions, which constitute about 68% of the total area, are vulnerable to periodical droughts. Our experience has been that almost every third year is a drought year. However, in some of the States, there may be successive drought years enhancing the vulnerability of the population in these areas. Local communities have devised indigenous safety mechanisms and drought oriented farming methods in many parts of the country. From the experience of managing the past droughts particularly the severe drought of 1987, a number of programmes have been launched by the Government to mitigate the impact of drought in the long run. These programmes include Drought Prone Area Programme (DPAP), Desert Development Programme (DDP), National Watershed Development Project for Rainfed Areas (NWDPRA), Watershed Development Programme for Shifting Cultivation (WDPSC), Integrated Water Development Project (IWDP), Integrated Afforestation and Eco-development Project Scheme (IAEPS).

5.1 Ways & Means to prevent or reduce the impact of various disasters:

The importance of prevention, mitigation and preparedness in limiting the impact of natural disasters is highly recommended for disaster reduction.

Disaster prevention includes activities to avoid the adverse impact of hazards. Good planning is an example of disaster prevention (e.g. the decision not to build houses in a disaster-prone area). Depending on social, technical, and economic feasibility, investing in preventive measures is justified in areas frequently affected by disasters.

Disaster mitigation includes measures taken in advance of a disaster aimed at decreasing its impact on society and the environment (e.g. developing building codes, reinforcing key structures such as hospitals).

Disaster preparedness includes pre- and post-emergency measures designed to minimize the loss of life, and to organize and facilitate timely effective rescue, relief, and rehabilitation in case of disaster (e.g. developing disaster plans and organizing simulation activities to prepare for an eventual disaster relief operation).

With sophisticated early warning systems, we can see the first signs of oncoming famine almost a year ahead of time. However, these early warnings are only helpful if they lead to early action.

5.2 Structural Measures:

Structural measures are any physical construction to reduce or avoid possible impacts of hazards, or the application of engineering techniques or technology to achieve hazard resistance and resilience in structures or systems.

Table No: 36-Structural Measures

Sl. No.	Name of the Department/ Office	Activity/ Project	Starting date	Date of completion	Cost	Funding Source
1	CMRF by RD Dept	MFS Konaktora	6.6.2015	25.7.2016	63,24,900	CMRF
2	CMRF by RD Dept	MFS Maudhi	1.1.2015	20.7.2016	60,10,227	CMRF

5.3 Non-structural Measures:

Non-structural measures are measures to reduce disaster risks and impacts, in particular through policies and laws, public awareness raising, training and education.

Table No: 37- Non-structural Measures-

Sl. No.	Name of the Department/ Office	Activity/ Project	Starting date	Date of Completion	Cost	Funding Source
1	DEOC, JHARSUGUDA	Mock drill	19.6.2018	19.6.2018	29200	OSDMA
2	DEOC & ODRAF JHARSUGUDA	FAMEX &CAP	21.5.2018	27.5.2018	-	-
3	DEOC & ODRAF JHARSUGUDA		17.12.2018	23.12.2018		
4	FIRE SERVICES AND DEOC Jharsuguda		22.11.2018	28.11.2018		
5	DEOC & ODRAF JHARSUGUDA		3.2.2019	8.2.2019		
6	DEOC & IOCL, Jharsuguda	OFFSITE Mockdrill	2.2.2019	2.2.2019		IOCL

5.4 Scope for integrating different schemes for Disaster Risk Reduction (DRR) Activities.

Following action have been taken to make aware people about different disaster through DRR project. In 3 sample villages following DRR activities have been taken:

i) Support Policies and Frameworks.

ii) Human resource development

iii) Build Linkages with Development Programme

iv) Develop broader partnerships

v) Promote Equity, Social Inclusion and Women Empowerment.

vi) Develop an enabling environment and mechanisms and support learning and knowledge sharing.

Awareness Activities: Awareness activities conducted in Villages in Jharsuguda & block also in the Block level, District level too Advocacy workshop / sensitization of Officers has been carried out in a vigorous way. School Safety is also another aspect wherein the Teachers & students are being educated on the safety aspects in their schools and the students are being imparted trainings on Search & Rescue, FA, etc.

Block / GP and Village Level Preparedness Activities: Under the Disaster Risk Reduction Project in G.P level, the volunteers have been trained on Search & Rescue, First Aid & Shelter Management etc. and Mock Drills on regular intervals has been organized in all the Blocks of Jharsuguda.

The following activities were taken in DRR Project work:

[Activities/ Projects for 5.3 and 5.4 (*Indicative Only****):***

- Construction of multipurpose cyclone and flood shelters.
- Removal of hoardings before specified cyclone period
- Trimming of trees and shrubs and removal of damaged and decayed parts of trees close to localities and critical infrastructure
- Public safety norms and constructions in places of worship and mass gathering
- Soil erosion control and riverbank stabilization
- Road and Highway Stabilization
- Bridge abutment stabilization
- Protection of Roads, Culverts and Bridges against flood- grass plantation
- Repair and Maintenance of Embankments against flooding and erosion. Retrofitting of vulnerable spots to prevent embankment breaches
- Cross Drainage Works:- Construction of causeways and culverts sufficient for carrying water more than historical records to prevent flash floods in downstream villages
- Drinking Water:
  - Habitations to be covered under pipe water supply scheme
  - Water supply in scarcity areas in during summer season
  - Raising of hand pumps in flood prone areas
  - Repair/ Replacement of non-functional hand pumps
- Sanitation:
  - Community Mobilization
  - Construction of Toilets
  - Municipal Waste Management
  - Sewerage System in ULBs

- Plantation: River bank plantation, AR, ANR, Hill Slope Plantation, Fodder Plantation, Agro forestry etc.
- Soil conservation works.
- Water harvesting
- Prevention of Road Accidents:
  - Putting up of signage in accident prone zones
  - Light reflectors
  - Diversion boards for roads and bridges
  - Repair of potholes & construction of Speed breakers
- Immunization
- Preventive measures against vector borne diseases
- Risk Transfer: Crop insurance/ livestock insurance
- Measures against animal depredation- Trenching/ Fencing
- Awareness generation programmes on disaster prevention and mitigation
- Mainstreaming Disaster Risk Reduction (DRR) in development activities]

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Chapter – 6

6.1 Climate Change Adaptation & Mitigation

Weather and climate are the results of complex interactions between anthropogenic and natural factors. Evidence of global climate change include higher average temperatures, changes in precipitation, ocean warming, ocean acidification, sea level rise, decreasing sea ice, and changes in physical and biological systems. Observed climate change can be linked with the increase of green house gas concentrations in the atmosphere since the industrial revolution. Global surface temperature change for the end of the 21st century is likely to reach 4°C if no drastic mitigation actions are taken. Various sources of climate data exist that can support planning for climate change.

Greenhouse gases (GHGs) are trace gases in the atmosphere that absorb and emit long wave radiation. They naturally blanket the earth and keep it at about 33° C warmer than it would be without these gases in the atmosphere. The table features the seven most important greenhouse gases as regulated under the Kyoto Protocol. The seven gases each have a different capacity to trap heat in the atmosphere, or a so-called "*global warming potential*" (GWP). They all belong to the group of long-lived greenhouse gases (LLGHGs), because they are chemically stable and persist in the atmosphere over time scales of a decade to centuries or longer, so that their emission has a long-term influence on climate. Some of the GHGs occur naturally (e.g. CO_2, CH_4 and N_2O) but increases in their atmospheric concentrations over the last 250 years are due largely to human activities. Other greenhouse gases are entirely the result of human activities (e.g. HFCs, PFCs, SF_6 and NF_3).

Table : 6.1

Greenhouse Gas	Global Warming Potential (GWP) (over 100 years)	% of Total Anthropogenic GHG Emissions (2010)
Carbon dioxide (CO_2)	1	76%
Methane (CH_4)	25	16%
Nitrous oxide (N_2O)	298	6%
Hydrofluorocarbons (HFCs)	124-14,800	< 2%
Perfluorocarbons (PFCs)	7,390-12,200	< 2%
Sulphur hexafluoride (SF_6)	22,800	< 2%
Nitrogen trifluoride (NF_3)	17,200	< 2%

6.2 Important Greenhouse Gases: Carbon Dioxide (Co_2)

Most important greenhouse gas (contributes ~64% to total radiative forcing by long-lived GHGs). Half of CO_2 emitted by human activities is being absorbed in the biosphere and in the oceans. Rest remains in the atmosphere for hundreds to thousands of years

The most important anthropogenic GHG is carbon dioxide (CO_2). It accounts for around 64% of total radiative forcing due to LLGHGs. Carbon dioxide does not have a specific lifetime because it is continuously cycled between the atmosphere, oceans and land biosphere and its net removal from the atmosphere involves a range of processes with different time scales. CO_2 is primarily emitted as a result of burning of fossil fuels, deforestation and forest degradation and iron and steel production. Oceans and forests are the main sequesters of carbon i.e. sinks that can absorb CO_2 from the atmosphere. Carbon dioxide is the gas to which all other gases are compared when speaking of Global Warming Potential. Emissions of other greenhouse gases can be converted into *CO_2 equivalent emissions*.

Table : 6.2

Sl No	Name of the Industry/Plant/Firm	Location	Quantity of Co2 emission (PPM)	Ranking as per CO2 Emission (in the district)	Other major polluants emited (PPM)	Action taken for cutting down émission
1	UltraTech Cement Limited, Jharsuguda Cement Works	At-Dhutra, PO-Arda , Dist-Jharsuguda (Odisha)	Not emitted	NA	Since JCW is a Grinding Unit, no gaseous pollutants is generated. Only particulate matter is emitted.	NA
2	TRL Krosaki Refractories Ltd.	Belpahar	145510			- Fuel efficient technology - Recycle & Reuse of resources
3	Lilari Opencast Project	Jurabaga	Not applicable	Not applicable	The yearly (2017-18) average of all stations samples SPM- 257 PM10– 147 PM2.5 – 41.39 SO2 – 4 NOx – 7	Not applicable
4	Lakhanpur Opencast Project	$21^0$47'32''N &$21^0$43'12''N $83^0$47'59''E &$83^0$51'30''E	Not applicable	Not applicable	The yearly (2017-18) average of all stations samples SPM- 301.7 PM10– 168.93 PM2.5 – 42.26 SO_2 - 2.96 NO_x - 8.23	Not applicable

6.3 Important Greenhouse Gases: Methane (CH4)

Second most significant greenhouse gas (contributes ~18% to total radiative forcing by long-lived GHGs). Approximately 40% of methane is emitted into the atmosphere by

natural sources. About 60% comes from human activities & Stays in the atmosphere for approximately 12 years.

The second most significant anthropogenic GHG is methane (CH_4) which contributes to approximately 18% of total radiative forcing due to LLGHGs. Approximately 40% of methane is emitted into the atmosphere by natural sources (e.g. wetlands and termites). About 60% comes from human activities (e.g. cattle breeding, rice agriculture, fossil fuel exploitation, landfills and biomass burning). Methane is mostly removed from the atmosphere by chemical reactions, persisting for about 12 years. Thus although methane is an important greenhouse gas, its effect is relatively short-lived.

Table : 6.3

Sl No	Name of the Block	Major Sources	Annual émission (In PPM)	Ranking as per CH4 Emission (PPM)	Action taken for cutting down émission
1	UltraTech Cement Limited, Jharsuguda Cement Works	NA	NA	NA	NA
2	TRL Krosaki Refractories Ltd.	NA	NA	NA	NA
3	Lilari Opencast Project	NA	NA	NA	NA
4	Lakhanpur Opencast Project	NA	NA	NA	NA

6.4 Important Greenhouse Gases: Nitrous Oxide(N_2O)

The third most significant greenhouse gas (contributes ~6% to total radiative forcing by long-lived GHGs). Stays in the atmosphere for approximately 114 years. Nitrous oxide is emitted into the atmosphere from both natural (about 60%) and anthropogenic sources (approximately 40%).

Nitrous oxide is the third most significant GHG, contributing to about 6% of radiative forcing due to LLGHGs. The primary human sources of N_20 are fertilizer production and use in agriculture and various industrial processes. It is estimated that N_20 stays in the atmosphere for an estimated 114 years. Its impact on climate, over a 100-year period, is 298 times greater than equal emissions of carbon dioxide. It also plays an important role in the destruction of the stratospheric ozone layer which protects us from the harmful ultraviolet rays of the sun.

Table : 6.4

Sl No	Name of the Block	Fertiliser / Industrial processes	Annual Usage (In tonnes)	Ranking as per N2O Emission (PPM)	Other major polluants emited (PPM)	Action taken for cutting down émission
1	UltraTech Cement Limited, Jharsuguda Cement Works	NA	NA	NA	NA	NA
2	TRL Krosaki Refractories Ltd.	NA	NA	NA	NA	NA
3	Lilari Opencast Project	NA	NA	NA	The yearly (2017-18) average of all stations samples **SPM- 257 PM10– 147 PM2.5 – 41.39 SO_2 - 4 NO_x - 7**	NA
4	Lakhanpur Opencast Project	Not applicable. Coal mining process	NA	NA	The yearly (2017-18) average of all stations samples SPM- 301.7 PM10 – 168.93 PM2.5 – 42.26 SO_2 - 2.96 NO_x - 8.23	NA

6.5 Important Greenhouse Gases: Fluorinated Gases

Global warming effect up to 23,000 times greater than carbon dioxide. Stay in the atmosphere up to 50,000 years. Three main groups: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Mainly developed as substitutes for ozone-depleting substances

Fluorinated gases are a family of man-made gases used in a range of industrial applications. Sources include refrigerants, air-conditioning, solvents, aluminium and magnesium production, etc. Many fluorinated gases have very high global warming potentials (GWPs) relative to other greenhouse gases. That means small atmospheric concentrations can have large effects on global temperatures. They can also have long atmospheric lifetimes, in some cases, lasting thousands of years. Fluorinated gases are removed from the atmosphere only when they are destroyed by sunlight in the far upper atmosphere. In general, fluorinated gases are the most potent and longest lasting type of greenhouse gases emitted by human activities. There are three main categories of fluorinated gases: hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

- Hydrofluorocarbons (HFCs) are the most common group of *F-gases*. They are used in various sectors and applications, such as refrigerants in refrigeration, air-conditioning and heat pump equipment; as blowing agents for foams; as solvents; and in fire extinguishers and aerosol sprays.
- Perfluorocarbons (PFCs) are typically used in the electronics sector (for example for plasma cleaning of silicon wafers) as well as in the cosmetic and pharmaceutical industry. In the past PFCs were also used in fire extinguishers and can still be found in older fire protection systems.
- Sulphur hexafluoride (SF_6) is used mainly as an insulating gas, in high voltage switchgear and in the production of magnesium and aluminium.

Table : 6.5

Sl No	Name of the Industry/Firm/Plant	location	Annual émission (In PPM)	Ranking as per flourinated gas Emission (PPM)	Action taken for cutting down émission
1	UltraTech Cement Limited, Jharsuguda Cement Works	At-Dhutra, PO-Arda, Dist-Jharsuguda (Odisha)	Not emitted	NA	NA
2	TRL Krosaki Refractories Ltd.	NA	NA	NA	NA
3	Lilari Opencast Project	Jurabaga	NA	NA	NA
4	Lakhanpur Opencast Project	21047'32''N &21043'12''N 83047'59''E &83051'30''E	NA	NA	NA

6.6 Important Green House Gases: chlorofluorocarbons (CFCs)

Chlorofluorocarbons (CFCs) an important Green House Gas contribute about 12% to radiative forcing by long-lived GHGs has not been included in the Kyoto Protocol because they are already regulated under the Montreal Protocol on Substances that Deplete the Ozone Layer which entered into force in 1989. The Montreal Protocol includes, for example, chlorofluorocarbons (CFCs) which contribute about 12% to total radiative forcing by LLGHGs. CFCs can stay in the atmosphere for more than 1,000 years. CFCs have a global warming potential (GWP) that ranges between 4,750 and 14,400 (over 100 years time span). CFCs are used in the manufacture of aerosol sprays, blowing agents for foams and packing materials, as solvents, and as refrigerants.

Table : 6.6

Sl No	Name of the Industry/Firm/Plant	location	Annual émission (In PPM)	Ranking as per flourinated gas Emission (PPM)	Action taken for cutting down émission
1	UltraTech Cement Limited, Jharsuguda Cement Works	At-Dhutra, PO-Arda, Dist-Jharsuguda (Odisha)	Not emitted	NA	NA
2	TRL Krosaki Refractories Ltd.	NA	NA	NA	NA
3	Lilari Opencast Project	Jurabaga	NA	NA	NA
4	Lakhanpur Opencast Project	21047'32''N &21043'12''N $83^0$47'59''E &$83^0$51'30''E	NA	NA	NA

Ref.: IPCC (2007). Fourth Assessment Report, Technical Summary – Changes in Human and Natural Drivers of Climate & UNEP (2012). Emissions Gap Report; WMO (2013). Greenhouse Gas Bulletin

6.7 Green House Gas Sequestration

In order to prevent dangerous anthropogenic interference with the climate system, actions need to be taken to stabilize greenhouse gas concentrations in the atmosphere. Such actions are referred to as "climate change mitigation". More specifically, climate Change mitigation involves:

- reducing GHG emissions, e.g. by making older equipment more energy efficient;
- preventing new GHG emissions to be released in the atmosphere, e.g. by avoiding the construction of new emission-intensive factories;
- preserving and enhancing sinks and reservoirs of GHGs, e.g. by protecting natural carbon sinks like forests and oceans, or creating new sinks ("carbon sequestration").

Source: UNFCCC (2009). Fact Sheet: The Need for Mitigation

Table 6.7 : Major Greenhouse Gases Contributors (Anthrpogenic) to Climate Change

Greenhouse Gas	Human Source (Examples)	% of Total Global GHG Emissions (2010)
Carbon dioxide (CO_2)	Fossil fuel combustion, land use changes, cement production, etc	76%
Methane (CH_4)	Fossil fuel mining/distribution, livestock, rice agriculture, landfills, etc	16%
Nitrous oxide (N_2O)	Agriculture (fertilisers) and associated land use change, etc	6%
Hydrofluorocarbons (e.g. HFCs)	Liquid coolants, etc	< 2%
Perfluorocarbons (e.g. PFCs)	Refrigerant, electronics industry and aluminium industry, etc	< 2%
Sulphur hexafluoride (SF_6)	Insulator in electronics and magnesium industry, etc	< 2%
Nitrogen trifluoride (NF_3)	Electronics and photovoltaic industries, etc	< 2%

Source : Reproduced from IPCC 2007, UNEP 2012, and FERN

The global community has committed itself to hold warming below 2°C (compared to pre-industrial temperatures) to prevent dangerous climate change. The 2013 IPCC report on the physical science basis of climate change provides a "budget approach" to this goal, looking at total allowable CO_2 emissions level to meet the 2°C target. The report states that in order to have a greater than two in three chance of keeping *global warming* below 2°C, cumulative emissions of CO_2 cannot exceed 1,000 Gigatonnes of carbon (GtC). As of 2011, more than half this amount, or over 500 GtC, has already been emitted since 1861-1880. When the effects of other greenhouse gases are included, even less CO_2 could be emitted to keep below a 2°C warming.

Current annual emission levels are at 9.5 GtC and are likely to grow every year due to population growth and economic development patterns. If annual emissions continue to grow as in past years ("business as usual" scenario) the carbon budget will be exhausted in the next three decades.

Source: IPCC (2013). Climate Change 2013 – The Physical Science Basis, Summary for Policymakers

Table 6.8 : Details of forest as a major Carbon sink

Reserved Forest / Protected Forest (in Sq. KM)	Revenue / Village Forest (in Sq. KM)	Private owned Forests (in Sq. KM)	Others (If any) (in Sq. KM)	Total (in Sq. KM)
NA	NA	NA	NA	NA

6.8 Sectors with High Mitigation Potential

Table : 6.9

Sl No	Sectors	Mitigation Options
1	Energy	• Use of renewable heat and power (hydropower, solar, wind, geothermal and bio-energy) • Improved supply and distribution efficiency • Carbon capture storage (CCS) • Combined heat and power
2	Transport	• More fuel efficient vehicles • Use of alternative energy sources (biofuels, cleaner diesel, etc.) • Better land-use and transport planning • Shift from individual transport to public transport systems • More efficient driving practices • Non-motorized transport (cycling, walking)
3	Industry	• Process-specific technologies that improve efficiency and reduce emissions • Material recycling and substitution • Heat and power recovery/cogeneration • Control of greenhouse gas emissions
4	Agriculture	• Manure and livestock management to reduce CH_4 emissions • Improved fertilizer application techniques to reduce N_2O emissions • Improved crop and grazing land management to increase soil carbon storage • Restoration of cultivated peaty soils and degraded lands • Agro-forestry practices

Sl No	Sectors	Mitigation Options
5	Forestry	• Reduced deforestation • Afforestation/reforestation • Forest management • Tree species improvement to increase biomass productivity and carbon sequestration
6	Waste	• Landfill methane recovery • Waste incineration with energy recovery • Composting of organic waste • Controlled wastewater treatment • Recycling and waste minimization • Biocovers and biofilters to optimize CH_4 oxidation

6.9 Sector specific climate change mitigation projects :

Table : 6.10

Sl No	Sector	Project Title	Period		Mitigation Targets
			From	To	
1.UltraTech Cement Limited, Jharsuguda Cement Works	Energy	Solar	01.07.2018	31.03.2019	We are in the process of installing 2 MW Solar Plant.
2.TRL Krosaki Refractories Ltd.	Material recycling & reuse Replacement of MV/SV/MH by LED lamps		Ongoing 2017 to 2019		Regular Is in progress

N.B.: Please fill in the above table with Project undertaken exclusively for Climate Change Mitigation.

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Chapter – 7

Safety of Schools and Child Care Institutions

Implementation of School Safety Policy Guidelines2016*(SSP-2016 Guidelines)*

7.1 Order on WP(C) 483/2004 of Hon'ble Supreme Court

The Hon'ble Supreme Court vide orders of dated 14.08.2017 in WP (C) 483/2004, directs vide letter no 2437/2004/SC/PIL/(WRIT) dt. 23.08.2017 that the School Safety Policy (SSP) 2016 guidelines issued by NDMA are statutory in nature and shall be implemented in letter and spirit by all concerned authorities for all schools.The direction of the Supreme Court in Implementation of the School Safety Policy Guidelines Inter-alia postulates as follow:

- Time bound implementation of the Guidelines
- District Disaster Management Authority to ensure and monitor compliance of the said Guidelines
- District Education Officer of each District to be a "Nodal officer" with responsibility, liability and obligation as well as powers and functions to ensure strict compliance with the Guidelines within the district of his jurisdiction.
- Joint Monitoring Committee consisting of representations of both Department of School Education & Literacy, Ministry of HRD and NDMA
- Quarterly compliance reports from the Chief Secretary to MHRD and NDMA on the actions taken.

Hon'ble Supreme Court has also defined few actions at different levels to ensure school safety

State & District Level	**School Level:**
• Policy for safety audits in all schools • 'Stability certificate' by Government-certified engineer. • Manual for fire safety procedures and other safety precautions • The National Building Code of India, 2005, to construct fire-safe buildings. (Revised 2016)	• Schools must take appropriate safety measures and an emergency response plan that delineates staff responsibilities, communication modes, and training and updating procedures for all members of the faculty, staff and students. • Fire insurance coverage should be made mandatory for all schools. • Ensuring that the kitchen in the precincts of the school has adequate safety mechanisms.

Ref. : Fire Safety Measures in School s(Section 3.1 p-23)/ Training of School Teachers & Other Staff (Section 3.1 p-25)/School Building Specifications (Section 3.1 p-27)Clearance & Certificates (Section 3.1 p-29)SC. ***Judgement on WP(C) 483/2004***

7.2 Guidelines on School Safety Policy, 2016- NDMA

The School Safety encompasses " the creation of safe environments for children starting from their homes to their schools and back." This as well includes safety from large-scale natural hazards, human made risks, pandemics, violence as well as more frequent and smaller-scale fires, transportation and other related emergencies and environmental threats that can adversely affect the lives of children.

Vision :

- The Guidelines stand for a vision of India where all children and their teachers, and other stakeholders in the school community are safe from any kind of preventable risks that may threaten their well being during the pursuit of education.
- Educational continuity is maintained/ resumed even in the immediate aftermath of a disaster so that Children are physically, mentally and emotionally secure within their schools.

Approach and Objectives

- All hazard approach.
- All schools; all stakeholders 2. Strengthening existing policy provisions to make schools safer
- School Safety as an indicator of quality for continued planning, execution and monitoring
- Primary objective is to ensure the creation of safe learning environment for children.
- Also seek to highlight specific actions towards school safety that can be undertaken by different stakeholders within the existing framework of delivery of education.

Applicability

- The National School Safety Policy Guidelines apply to all schools in the country-whether government, aided or private, irrespective of their location in rural or urban areas.
- They apply to all stakeholders involved in delivery of education to Children in India

All hazard approach

- School Safety efforts needs to take cognizance of all kinds of hazards that may affect the wellbeing of children.
- Hazards include structural and non-structural factors.
- Structural factors include dilapidated buildings, poorly designed structures, faulty construction, poorly maintained infrastructure, loose building elements, etc.

- Non Structural factors include loosely placed heavy objects such as almirahs, infestation of the campus by snakes and any other pests, broken or no boundary walls, uneven flooring, blocked evacuation routes, poorly designed and placed furniture that may cause accidents and injury, inadequate sanitation facilities, etc.

Right to Education Act 2009

- The Act sets minimum norms and standards with regard to location and quality of schools and in Clause 19, lays down that no school shall be established, or recognized unless it fulfills the norms and standards specified in the schedule.
- One of the key standards is in relation to access to "all weather buildings"; in "areas with difficult terrain, risk of landslides, floods, lack of roads and in general, danger for young children in the approach…
- the State Government / Local Authority shall locate the school in such a manner as to avoid such dangers".
- The Act lays down the formation of the School Management Committee for planning of infrastructure and other requirements with respect to operational functioning of schools.
- The School Development Plan, as laid out by the Act, spells out the physical requirements of additional infrastructure and equipments to meet the norms spelt out in the schedule (in relation to all weather buildings).

Key Action Areas

1. **Institutional strengthening at the State & District levels**
   - Co-opting senior officials of the Department of Education in SDMA and DDMA.
   - Nomination of School Safety Focal Point Teacher & Sensitization of School Management Committee on DM.
2. **Planning for Safety**
   - Structural Measures (including siting, design and detailing for structural safety).
   - Non structural Measures.
   - Preparation & implementation of School Disaster Management Plan.
   - Leveraging existing flagship programmes to make school campus safer.
3. **Capacity building for safe schools**
   - Training for students and school staff
   - Specialized training and skill building of Education officers, representatives of SCERT and DIET, SDMA, DDMA, etc on school safety
   - Mock Drills

4. **Disaster Management in Core Curriculum**
5. **Regular monitoring of risk and revision of School Safety Plans (including Safety Audits & Availability of Emergency Equipment).**

7.3 Category &type of schools

Name of the Block	Government Schools				Government Aided schools		Private Schools	
	Elementary		Secondary		Elementary	Secondary	Elementary	Secondary
	Rural	Urban	Rural	Urban				
Jharsuguda	89	91	11	15	07	11	39	18
Kirmira	71	0	09	0	01	0	05	01
Kolabira	68	0	09	0	02	02	06	02
Laikera	74	0	07	0	03	05	05	01
Lakhanpur	280	16	18	02	06	16	16	06

7.4 Category &type of students

Name of the Block	Government Schools				Government Aided schools		Private Schools	
	Elementary		Secondary		Elementary	Secondary	Elementary	Secondary
	Rural	Urban	Rural	Urban				
Jharsuguda	6880	11249	1024	2380	764	1912	18667	2641
Kirmira	3396	0	1376	0	55	0	915	0
Kolabira	4518	0	605	0	116	212	761	203
Laikera	4930	0	742	0	134	605	646	93
Lakhanpur	13356	2055	1803	373	184	2039	5676	933

7.5 School Safety Advisory Committee (District)

1. Date of Formation 6.6.2018
2. Institutional Architecture

District Level School Safety Committee, Jharsuguda

Sl No	Name	Designation	Contact Details			
			Mobile No. (Official)	Land Phone (Office)		E- mail ID
				Code	No.	
1	Shri Bibhuti Bhusan Das	Collector & DM	9438162021	6645	271692	jharsuguda@nic.in
2	Shri A K Mohanty	Superitendent of Police	9437208862			spjsd.odpol@nic.in
3	Shri Subasis Muduli	Divisional Forest Officer	8249096469			afojharsuguda@gmail.com
4	Shri Bijay Kumar Patel	Dist. Welfare Officer	9437881811			dwo.jharsuguda@gmail.com
5	Smt Nirupama Behera	Dist. Social Welfare Officer	9437016505			dswojharsuguda@nic.in
6	Dr K Pradhan	Chief Dist. Medical Officer	9439986890	6645	273104	cdmojharsuguda@gmail.com
7	Sibaram Pradhan	Executive Engenior RWSS	9438419972			eerwss_jha@ori.nic.in
8	Shri Aswini Panda	Dist. Emengency Officer	9438852757	6645	272902	deocjsg@gmail.com
9	Shri Lalit Mohan Khamari	Principal , DIET	8249714476			dietjharsuguda@gmail.com
10	Shri Pradipta Kumar Sa	Block Education Officer, JSG	9937510343			beojharsuguda.sme.od@nic.in
11	Smt Anadini Padhi	NGO/Director SEHEDA	8943734746	6645	274178	sehada(a)rediffmail.com
12	Shri Dambaru Dhara Pujari	SDRT Member, DRCB, JSG	9437560021			dpujari10@gmail.com
13	Smt Minarani Mangal	Dist. Project Co-odinator, SSA	9437250744			dpcjharsussa.opepa@nic.in
14	Shri Mitrabhanu Kachhap	Dist. Education Officer	9437082963	6645	273060	deojharsuguda14@gmail.com

7.6 Details of School Safety in the district: The committee was constituted and approved on 6.6.2018.

SlNo	Activity	Total School	Achieved				
			Block 1	Block2	Block 3	Block 4	Total
1	Schools having School Safety Advisory Committee**(Number)**	**355**	**283**	**301**	**325**	**355**	**355**
2	Schools having Scholl Disaster management Plan**(Number)**	**55**	**67**	**100**	**120**	**285**	**285**
3	Schools having conducted Safety Audits (Structural)**(Number)**	**0**					
b	Safety Audits (Non-Structural)**(Number)**	**0**					
4	Schools having conducted Annual Mock Drills**(Number)**	**355**					**14**
5	Schools Having Fire Extinguisher**(Number)**	**355**					**nil**
6	Schools Adhering to safety norms in storing inflammable & Toxic Material**(Number)**	**0**					**nil**
7	Schools confirming safety standards as per local building bye-laws (Latest)**(Number)**	**0**					
8	Schools having issued Recognition certificate under sub Rule(4)-Rule 15 of RTE rules 2010 (only to schools that comply with Structural safety norms)**(Number)**	**0**					
9	Schools where students & teachers undergo regular training on School Safety & Disaster Preparedness **(Number)**	**0**					
10	Schools where disaster management is being taught as part of the curriculum **(Number)**	**0**					

7.7 Disaster management Education (School Safety and School Disaster Preparedness):

[Disaster management education should include organizing awareness generation programmes in schools and colleges and conducting basic mock drills for fire and other disasters. For the purpose, in the first phase district level high schools and colleges (both govt. and private) may be taken into consideration.]

Sl. No.	Name of the Programme	No. of Schools, Colleges and Other Educational institutions to be covered during the year	Time Line	Remarks
1	Awareness generation and mock drills for fire/ earth quake etc.	MMCH, Brajarajnagar	Nov to Dec 2018	By ODRAF and Fire Services, Jharsuguda
		ThakarbapaSevashram , Belpahar		
		Jharsuguda Manmohan High school		
		P S Degree College,Kolabira		
		Mahima College, Lakhanpur		
		D P S College , Kirmira		
		High School, Laikera		
		Kendriya Vidyalaya , Jharsuguda		
		L N College Jharsuguda		
2	Preparation of School disaster management plan	150 School disaster management plan	July to September	150 schools @ 30 High Schools/ ME Schools Per Block

Details of Child Care Institutions

Sl No.	Block/ ULB	Name and Address of the Organization	Boys	Girls	Total No of Children	Name and Contact no.of the Shift-in-Charge	Fire Safety Equipments (Fire Extinguisher, Alarm)	Staff Training on Fire Safety Equipment	Nearby open space for evacuation	Alternative Shelter/s Identified
1	JHARSUGUDA	Thakkar Bapa Seva Sadan	19	20	39	Nirakar Kisan Phone No-9937118695 TikeswarSuna Phone No-7008544976	YES	YES	YES	YES
2		Mercy Memorial Children Home	11	08	19	Rev.Dr. B.K.Pattnaik Phone No-9437050324 PremaManjariPattnaik Phone No-7064402004	YES	YES	YES	YES
3		Mercy Memorial Children Home (SAA)	1	4	5	Rev.Dr. B.K.Pattnaik Phone No-9437050324 RanjitaTanty Phone No-7978623352	YES	YES	YES	YES
4		Mercy Memorial Children Home (Open Shelter)	4	2	6	Rev.Dr. B.K.Pattnaik Phone No-9437050324 BikashBebarta Phone No-9090928082	YES	YES	YES	YES

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Chapter – 8
Capacity Building Measures

8.1 Approach

Developing a DDMP without building capacity or raising awareness amongst stake-holders can be detrimental to the development of a successful and sustainable plan. Stakeholders and communities are critical components to a successful, long-term, sustainable disaster management plan. Capacity Building develops and strengthens skills, competencies and abilities of both Government and non–government officials and communities to achieve their desired results during and after disasters, as well as preventing hazardous events from becoming disasters

Developing institutional capacity is very important. At the same time, by making the local community part of the process and solution would help in ensuring that disaster mitigation measures are more likely to be implemented and maintained over time.

8.2 Capacity Building of Govt. Officials, PRI Members etc.:

[Note: a training strategy should be formulated for training of major government and non-governmental cadres in the district who can aid in disaster management. Programmes to be finalized by the district based on need and requirement.

Districts to first utilize the funds available under different schemes at the district level, for capacity building activities. Besides, funds are also available under State Disaster Response Fund (SDRF). District Administration to prepare the Capacity Building plan for the district and send the same with detailed budget to SDMA for necessary funding. Indicative list of training programmes is given below.]

Sl. No.	Name of the Course/ Training Programme	Participants	Duration of the Training Programme	Month of Organization	To be Organized by	Remarks if any
1.	Orientation training programme on disaster management	ADM, Sub-Collector All BDOs, Tahasildars, Head of line departments, Police & Fire Dept. etc.	½ day		DDMA/ Collector	To be coincided with the first quarter meeting of the DDMA
2	Training programme on heat wave preparedness	All BDOs/ EE RWS &S, CDMO, CDVO, NGOs, etc.	1 day		DDMA/ Collector	
3	Hospital preparedness and mass causality management including hospital management plan	Doctors and Hospital Administrators			CDMO	
4	Training progamme on treating heat wave related health issues	Doctors and Paramedical Staff/ ANMs	1 day		CDMO	
5	Mass Casualty Management.	Para Medics/Police/ RPF/Home Guard/Fire and Civil Defense/ Railway Officials			DDMA	
6	Earth quake resistant construction	Asst. Engineers & JEs	1 day			
7	Post disaster damage assessment	AEs of all Blocks and line departments	1 day		DDMA	
8	GIS mapping of Utilities	Block Computer Programmers, Line Department MIS officials	1 day			
9	Public health in emergencies- safe drinking water and sanitation	All BDOs, Block and district level officials of PHED/ RWS & S Dept.			CDMO	
10	Training of teachers on school safety including DM plan and conduct of Mock Drills	Principal/ Head Masters of all Govt. & Private Institutions	1 day		DEO	
11	Role of PRIs and ULBs in disaster management.	Members of ZP and ULBs, Chairman & Vice Chairman of PS.	1 day		DDMA/ Collector	
12	Block level training programmes on role of PRIs in disaster management	Sarapanchas& PS members	1 day		BDO	

13	Role of NGOs/VOs/CBOs in disaster management.	District and block level NGOs/ VOs involved with district administration in disaster management			DDMA/ Collector	
14	Training of ZKSS and BKSS members on basics of disaster management and creating community level awareness for dos and don'ts related to common disasters.	ZKSS and BKSS members		1 day	District Culture Officer/ DIPRO	
15	Search & rescue and safe evacuation.	Civil Defense Volunteers, NSS, NYK Volunteers, NCC	5 days		SP/ Asst. Commandant of the nearest ODRAF unit.	
16	Training of Masons on earthquake resistant construction.					
17	Role of Media in Disaster Management	Media Personal	1 day		DIPRO	

8.3 District/ Block level Mock Drills:

[Periodic mock drills to be organized involving district and block level officials/ institutions to assess the capacity and preparedness to face certain disasters. All recommendations and findings will be incorporated in updating of DDMP.]

Sl. No.	Type of Mock Drill	Officials/ Institutions to be involved	Month/ Date	Remarks
1	Tsunami			
2	Flood	BDO Lakhanpur, 2 MFS Shelters	JULY	
3	Cyclone			
4	Earthquake			
5	Industrial Accidents/ Industry Specific Mock drills	BDO Jharsuguda	DEC	
6	Crowd Management	BDO Jharsuguda	OCT	

8.4 Community Capacity Building and Community Based Disaster Management:

[District to chalk out detailed plan for community capacity building for disaster management which includes formation of village disaster management committees and task forces, their orientation and preparation of village disaster management plans. The villages

having multi hazard vulnerability or having more vulnerability towards flood, cyclone and tsunami may be selected in the first phase i.e. for financial year 2018-19]

Sl. No.	Block Name	No. of vulnerable villages to be covered during 2018-19	No. of VDMC and task force member to be oriented	No. NGOsto be involved in the process	Time line	Remarks
1	Lakhanpur GP-Konaktora	8	40	2	OCT/NOV	
2	Lakhanpur GP-Remta	8	40	2	OCT/NOV	

[Block wise village list for 2018-19to be given in Volume II of the DDMP]

8.5 Capacity building of Cyclone and Flood Shelter Maintenance & Management Committee and Task Force members:

[Note: the districts having Cyclone and Flood Shelter constructed by OSDMA, to draw detailed action plan for formation of CSMMC & FSMMC and training of task forces.]

Sl. No.	Name of the Training Programme	Total No. of Persons to be trained	No. of Training Programmes to be organized	Time Line	Remarks if any
1	Orientation of CSMMC and FSMMC	100	2	Aug/ sep	
2	Training of task force members on Search & Rescue and First Aid	40	2	Sep/oct	
3	Red Cross Volunteers	100	4	Sep/oct	
4	NGO Volunteers	100	4	Sep/oct	

Shelter level mock drills:

Sl. No.	Type	No. of Cyclone/ Flood Shelters to be covered	No. of villages to be covered.	Month/ Date
1	Cyclone Mock drill			
2	Tsunami Mock drill			
3	Flood Mock drill	2	8	Aug/sep

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Chapter – 9

Preparedness

9.1 Relief Lines: District to Blocks-

Sl. No	Name of the Road		Type of Road & Length	Vulnerability of the route (Description of the Vulnerability)	Coverage (Blocks)
	From	To			
1	Jharsuguda	Lakhanpur-Konaktora and Maudi Village	SH and RD Road, Pichu Road, 35km	The Villages are well connected by SH and in past flood no issues in transportation reported	2

9.2 Relief Line Channels: Block to GPs & Villages

Sl. No	Name of the Road		Type of Road & Length	Vulnerability of the route (Description of the Vulnerability)	Coverage (In Nos.)	
	From	To			Village	Population
1	Lakhanpur-	Konaktora and Maudi Village	SH and RD Road, Pichu Road, 80km	The Villages are well connected by SH and in past flood no issues in transportation reported	2	12000

9.3 Resources available: Response force & Volunteers

Sl. No	Response Force/	Capacity (In Nos.)	No. of trained person			Name of Nodal Person	Contact Details (Mobile/Phone)
			Search /Rescue	First Aid	Relief line Clearance		
1	NDRF	35	35	35	35	Chandanku Saha	9438882018
2	ODRAF	50	34	34	34	A C Dubey	06645-270096
3	Police	Lakhanpur PS	12	12	12	D Sahu	06645-252212.
4	Home Guards	Lakhanpur PS	12	12	12	P K Nayak	06645-252212.
5	Civil Defense						
6	NCC	Belpahar Mahavidylaya	20	20	20		06645 250 446
7	NSS	Belpahar Mahavidylaya	24	24	24		06645 250 446
8	NYK						
9	Trained Task force						

9.4 Preparedness at District level: (The list is Indicative & may be extended further as per need & requirement)

Task	Activity
District Emergency operation Centre (DEOC)	• Test Checkup of all communication Interfaces in regular interval • Proper manning of the Control Room as per Para-10 of the Odisha Relief Code • A dedicated vehicle must be earmarked for Control Room
Upward & Downward Communication	• Have a list of Nodal person with contact details • Establish regular linkages with all important stakeholders • Contact SEOC regularly
Meeting of DDMA (Heads of the department & stakeholder)	• DDMA must meet twice every year & before any disaster • Fix time & venue for regular Preparedness meeting to Assess preparedness of District /Department /Civil Society /Block Community /Family /Individual level regularly • Circulate the minutes of the meeting with clear-cut role & responsibility
Capacity Building	• Identifying & designating Nodal Officer for different Dept. • Capacity building & skill upgradation of ODRAF/Fire services/ Police/Home Guard • Identify Volunteer like Civil Defense/Cyclone shelter Task Force/NCC/NSS/Scout & Guide & train them on Search & Rescue, First aid, evacuation etc. • Take stake of required materials for search & rescue, first aid, casualty management, evacuation, relief etc. & update IDRN portal regularly • Assess preparedness through Mock drill at District, Block & Community level
Shelter Management	• Take necessary steps for operation & maintenance of shelters • Test Check of various Equipment at shelter level & repair of the defective ones • Ensure regular meeting of Shelter committee • Assess Shelter level preparedness through Mock drill l
Planning & Reporting	• Collect & transmit Rain fall data regularly • Collect & transmit weather report regularly • Ensure preparation of Disaster Management Plans & Safety plans at all levels • Capacity building of all Stake holders • Integrate the District plan with block & Village disaster management Plans • Develop healthy media partnership

9.5 Preparedness at Community Level

Task	Activity
Early Warning Dissemination	• Build regular linkages with BEOC & DEOC • Test Check of various Equipment at shelter level & repair of the defective ones • Keep updates from BEOC/DEOC • Monitor & Transmit updates to BEOC • Supply required information to BEOC & DEOC
Ensuring Preparedness	• Have a list of Nodal person deployed in the village with contact details • Identification of safer routes & shelters • Identify possible ways to reach persons like Farmers/Fisherman/NTFP collectors etc. who ventures into fields, sea & forest respectively • Build teams from among the task force on Search & Rescue, First aid, Damage & loss assessment • Assess preparedness at Family/Individual level • Test Check-up of equipment's
	• Understand Local dynamics exposed & vulnerable to different disaster • local Social Economic & weather conditions • Develop Village DM plan • List of emergency contact Nos. & display it in Centre places. • Participate in the activities of Preparing village Disaster Management, developing Safety plans, Capacity building Programmes & Mock Drills

9.6 Preparedness at Family Level (The list is Indicative & may be extended further as per need & requirement)

Task	Activity
Warning Communication	• List the minimum Important requirements Keep all the important Documents in a water proof polythene • Record the Safe & alternative routes to shelter • Keep News update in Radio/TV
Preparedness	• Always keep in readiness a "Ready to go Emergency Kit" containing Dry food (for 72 hours x Family member), Drinking water (2ltr/per person per day), Hand wash/soap, Important Documents/Valuables, Whistle/match box/lighter/ torch/battery/ umbrella, Mobile & charger / radio • Family must have a "Ready to go First Aid Kit" containing Iodine/ Band aids/ Cotton/ Medicines/ ORS/ ointments/ scissor/ halogens etc. • Assess preparedness on a regular basis by checking Radio/Mobile/ Emergency Kit/First Aid Kit/Fuels & Kerosene (as per need) • Replace the damaged outdated or expired materials with new ones.
Capacity Building	• Participate & involve in the activities of village disaster Management plan, preparation of Safety plans, participate in Capacity building Programmes & involve in Mock Drills

9.7 Preparedness at Individual Level (The list is Indicative & may be extended further as per need & requirement)

Task	Activity
Early Warning Dissemination	• List & keep a ready to go minimum Important requirements • Record the Safe & alternative routes to shelter • Keep News update in Radio/TV
Ensuring Preparedness	• Every individual/children must have a Personal Identity information like a copy of Aadhar card/ Voter ID / School Identity Card & Contact numbers of Preferably two who can be

	contacted in time of emergency • Family members especially kids must be sensitized about family gathering point during disaster & crowded places • Assess preparedness on a regular basis by checking Radio/Mobile/ Emergency Kit/First Aid Kit/Fuels & Kerosene (as per need)
Capacity development	• Participate & involve in the activities of • Disaster Management • Safety plans • Capacity building Programmes • Mock Drills & FAMEX

9.8 Preparedness of Departments

The list is Indicative & may be extended as per need & requirement

Name of the Department	Normal Time
Collector/ADM / Emergency Officer	• Ensure regular meetings of District Disaster Management Authority • Develop & update Disaster Management Plan, carry out Hazard analysis in the district • Identify safe alternate routes to cyclone shelters. • Keep a list of Contacts of EoCs, Nodal officer of different departments, Important stake holders, Village leaders, shelters • List of Relief lines & storage places • List & maintenance of SAR equipment • Capacity building of stakeholders & volunteers • Asses preparedness through Mock Drills for different disasters at district department, block & community level • Adopt sustainable mitigation measures • Integrate DM & DRR features in development programmes
CDMO	• Disaster Management Plans & Safety plans for Hospitals • Capacity building of Medical & Para Medical Staffs • Assess preparedness through Mock Drills & familiar exercises • Integrate department plans with plans with Village & Block Plans and

	development programmes • Develop media partnership • Develop capacity of hospitals with advance equipment, proper manning & disaster resilient infrastructures
Superintendent of Police (SP)	• Law and order in the district • Round the clock watch and ward arrangement at vulnerable points
EE- RWSS	• Repair of rain cuts are to be made. • Scoured points are to be covered with sand bags with bullah piling, if necessary, before flood situation arises to avoid further damage. Geo-textile or simple polythene sheets may be spread below sandbags if the soil is of less rigidity in order to arrest further scour. • Round the clock watch and ward arrangement at vulnerable points will be made once flood water touches the embankments and the water shows a rising trend. Patroling for this purpose will continue till water finally recedes from the embankment. • The rivers are to be carefully watched for scouring and erosion of banks for taking necessary precautionary measures.
EE- Irrigation	• Communication establishment with District and Block/ Tahasil Control Rooms and departmental offices within the division • An officer to be appointed as Nodal Officer • Activation of flood monitoring mechanism • Methods / communication arrangement of alerting officers on various sites established. • Mechanism evolved for forewarning settlements in the down streams/ evacuation/ coordination with other dam authorities • Identification of materials required for response operations • Repair/ under construction activity are well secured • Water level gauges marked • In late and out late to tanks are cleared • Watch and ward of weak embankments and stock pilling of repair material • Guarding of week embankments All staff informed about the disasters, likely damages and effects
DAO-	• Communication establishment with District and Block/ Tahasil control

Agriculture	room and departmental officers within the division • An officer to be appointed as nodal officer • Information provided about the disaster and likely damages to crop and plantation • Organized transport, storage and distribution of seeds/ fertilizers/ pesticides • Cleaning operation carried out to avoid water logging and salinity • Surveillance for pests and diseases being carried out • Establishment of public information centers requirements for salvage or re-plantation assessed damage • Identification of different areas to be affected by different hazards • Listing of irrigation sources with status All staff informed about the disasters, likely damages and effects
EE- Rural Works	• Communication establishment with District and Block/ Tahasil Control Rooms and departmental offices within the division • An officer to be appointed as Nodal Officer • Arrangement of water tankers and other temporary means of distribution and storage water • Adequate arrangement to provide water to relief camps/ affected villages, alternative water supply arranged in feeding centers/ cattle camp etc. • Disinfections of water bodies • Identification of appropriate portable water supply All staff informed about the disasters, likely damages and effects
EE- Public Works	• Communication establishment with District and Block/ Tahasil control room and departmental officers within the division • An officer to be appointed as nodal officer • Arrangement of extra vehicles/ heavy equipments, such as front-end loaders/ towing vehicles/ earth moving equipments/ cranes etc. • Inspection and emergency repair for roads/ road bridges/ underwater inspection/ piers/ concrete and steel work • Emergency inspection by mechanical engineer of all plant and equipments

	• Route strategy for evacuation and relief marked • Clearance of blocked roads • Community assistance mobilized for road clearing All staff informed about the disasters, likely damages and effects
DTO-Telecom	• Communication establishment with District and Block/ Tahasil control room and departmental officers within the division • An officer to be appointed as nodal officer • Standby arrangements for temporary electric supply or generators • Inspection and repair of poles etc. • Identification of materials required for response operations All staff informed about the disasters, likely damages and effect
CDVO	• Functioning of Control rooms 24 hours with required roster arrangement. • Pre-flood Vaccination: • Stocking of Medicine • Preparatory actions on Feed & Fodder • Formation of Mobile Teams • Preparation for shifting / evacuation of livestock • Route Chart for relief distribution • Preparedness for proper reporting • Staff Management for flood situation • Rescue of livestock during flood • Shelter of the livestock during flood: • Provision/ distribution of Feed & Fodder during flood • Arrangement for drinking water for animals • Maintenance of Sanitation: • De-worming after the flood: • Treatment of sick animals: • Touring the Flooded Area: • Disposal of Carcass: • Health Camp after the flood:

EE- Electricity	• Communication establishment with District and Block/ Tahasil control room and departmental officers within the division • An officer to be appointed as nodal officer • Standby arrangements for temporary electric supply or generator • Inspection and repair of high-tension lines/ substations/ transformers/ poles etc. • Clearing of damaged poles/ salvaging of conductors and insulators • Identification of materials required for response operation All staff informed about the disasters, likely damages and effects
EE – PHED	• Communication establishment with District and Block/ Tahasil Control Rooms and departmental offices within the division • An officer to be appointed as Nodal Officer • Arrangement of water tankers and other temporary means of distribution and storage water • Adequate arrangement to provide water to relief camps/ affected villages, alternative water supply arranged in feeding centers/ cattle camp etc. • Disinfections of water bodies • Identification of appropriate portable water supply All staff informed about the disasters, likely damages and effects

PROCEDURE FOR USING INMARSAT ISAT PHONE 2

1. Stand outside with a clear view to the sky with the phone antenna pointing upwards.
2. There must be a clear line of sight between the phone's antenna and the satellite.
3. Point the antenna towards **South-East** direction.
4. Switch on the phone by pressing the Red power button of the phone for few seconds. Until the screen lights up.
5. Align the antenna for getting the maximum satellite signal strength (minimum two bars) 
6. The screen will show "searching for satellite" "registering with network".
7. The screen will show "ready for service". Inmarsat name will come in top right corner.
8. Then the phone is ready to operate
9. Simply dial the desired no:

i. From satellite to landline : Dial **00** + Country code 91+ **STD code (without 0**) + desired **Telephone No**

ii. From **Satellite to mobile** : Dial 00 + 91+ Mobile Number

iii. From **Satellite to satellite**: 00+ satellite phone number

iv. From **Landline** (should have ISD facility) to **satellite** : 00 + satellite phone number

v. From **Prepaid mobile** (should have ISD facility with sufficient balance) to **satellite** : 00 + satellite phone number

10. To end the call Press 'red' button

NOTE:

- A delay in microseconds will be observed so the user is advised to listen to one end and then speak.
- The user is also advised to SPEAK SOFTLY to get better voice quality at the other end.
- Check the Battery. (Display will show a rectangular block that will be filled according to the charge in the battery). Always charge the battery till it gets charged 100%.
- For more detail information please follow the **User Guide document**.

Allotted Satellite Phone Numbers

Sl	Districts	Calling Numbers
1	Collector Angul	8991118456
2	Collector Balasore	8991118457
3	Collector Bargarh	8991118458
4	Collector Bhadrak	8991118457
5	Collector Bolangir	8991118458
6	Collector Boudh	8991118459
7	Collector Cuttack	8991118460
8	Collector Deogarh	8991118461
9	Collector Dhenkanal	8991118462
10	Collector Gajapati	8991118463
11	Collector Ganjam	8991118464
12	Collector Jagatsinghpur	8991118465
13	Collector Jajpur	8991118466
14	Collector Jharsuguda	8991118467
15	Collector Kalahandi	8991118468
16	Collector Kandhamal	8991118469
17	Collector Kendrapada	8991118470

Sl	Districts	Calling Numbers
18	Collector Keonjhar	8991118471
19	Collector Khorda	8991118472
20	Collector Koraput	8991118473
21	Collector Malkangiri	8991118474
22	Collector Mayurbhanj	8991118475
23	Collector Nabarangpur	8991118476
24	Collector Nayagarh	8991118477
25	Collector Nuapada	8991118478
26	Collector Puri	8991118479
27	Collector Rayagada	8991118480
28	Collector Sambalpur	8991118481
29	Collector Subarnapur	8991118482
30	Collector Sundargarh	8991118483
31	ODRAF Cuttack, OASP 6th Battalion	8991118484
32		8991118485
33	ODRAF Bhubaneswar, OSAP 7th Battalion	8991118486
34		8991118487
35	ODRAF Baripada, OSAP 5th Battalion	8991118488
36		8991118489
37	ODRAF Rourkela, OSAP 4th Battalion	8991118490
38		8991118491
39	ODRAF Koraput, OSAP 3rd Battalion	8991118492
40		8991118493
41	ODRAF Jharsuguda, OSAP 2nd Battalion	8991118494
42		8991118495
43	ODRAF Chattrapur, OSAP 8th Battalion	8991118496
44		8991118497
45	ODRAF Balasore	8991118498
46		8991118499
47	ODRAF Bolangir	8991118500
48		8991118501
49	ODRAF Jagatsinghpur	8991118502
50		8991118503
51	Special Relief Commissioner (SEOC)	8991118504
52	Managing Director, OSDMA	8991118505

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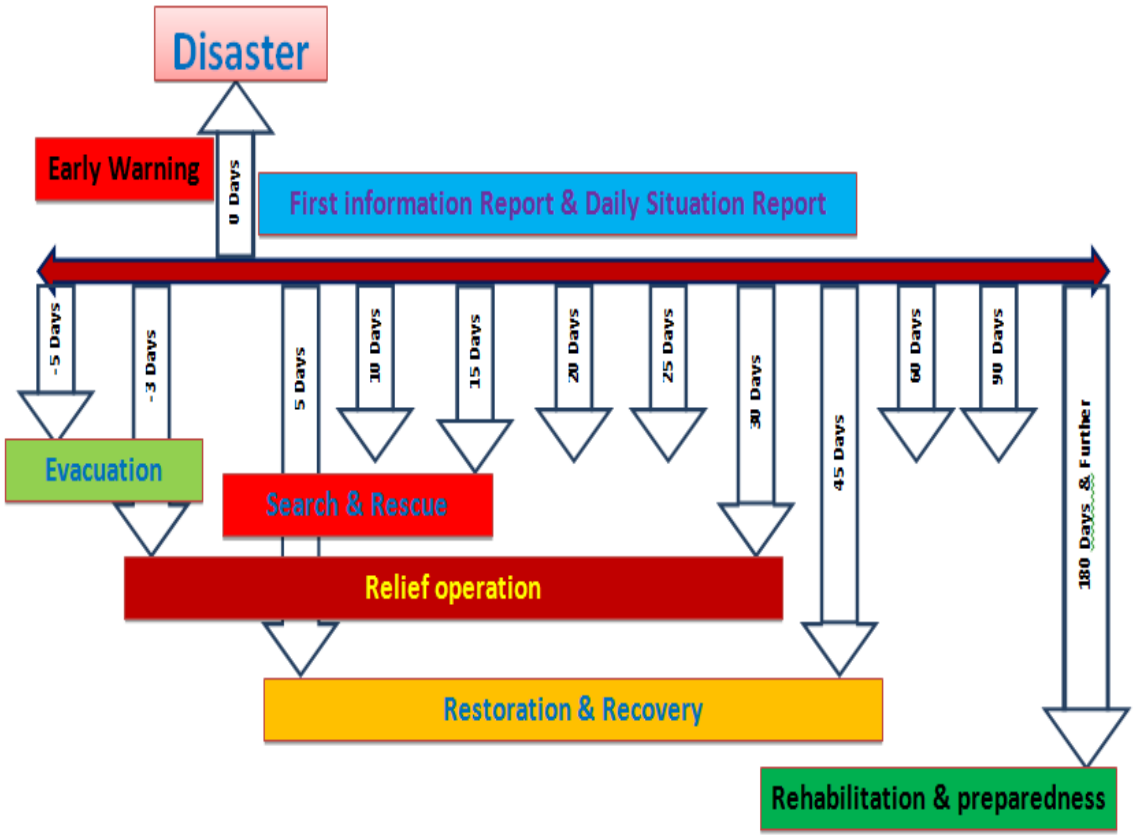
Chapter-10

Response

Response refers to activities done for handling disaster to bring the situation to normalcy not exceeding fifteen days from the abatement of disaster. The onset of an emergency creates the need for time sensitive actions to save life and property, 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.



10.1 Phases of Response: Timeline (Indicative)

Phases of response involve Mitigation, preparedness, response and recovery. Mitigation refers to measures that reduce the chance of an emergency happening, or reduce the damaging effects of unavoidable emergencies. This is achieved through risk analysis, which results in information that provides a foundation for typical mitigation measures include establishing building codes, zoning requirements, and constructing barriers such as levees. Effective Mitigation efforts can break the cycle of disaster damage, reconstruction, and repeated damage.

Preparedness

Preparedness activities increase a community's ability to respond when a disaster occurs. The National Incident Management System (NIMS) defines preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during incident response."

This preparedness cycle is one element of a broader National Preparedness System to prevent, respond to, recover from, and mitigate against natural disasters, acts of terrorism, and other man-made disasters.

Typical preparedness measures include developing mutual aid agreements and memorandums of understanding, training for both response personnel and concerned citizens, conducting disaster exercises to reinforce training and test capabilities, and presenting all-hazards education campaigns.Unlike mitigation activities, which are aimed at preventing a disaster from occurring, personal preparedness focuses on preparing equipment and procedures for use when a disaster occurs, i.e. planning.

Preparedness measures can take many forms including the construction of shelters, installation of warning devices, creation of back-up life-line services (e.g. power, water, sewage), and rehearsing evacuation plans. Two simple measures can help prepare the individual for sitting out the event or evacuating, as necessary. For evacuation, a disaster

supplies kit may be prepared and for sheltering purposes a stockpile of supplies may be created. These kits may include food, medicine, flashlights, candles and money.

Response

A well-rehearsed emergency plan developed as part of the preparedness phase enables efficient coordination of resources. Response actions carried out immediately before, during, and after a hazard impact are aimed at saving lives,reducing economic losses, and alleviating suffering.The response phase includes the mobilization of the necessary emergency services and first responders in the disaster area. This is likely to include a first wave of core emergency services, such as firefighters, police and ambulance crews. Response actions may include activating the Emergency Operations Center (EOC), evacuating threatened populations, opening shelters and providing mass care, emergency rescue and medical care, fire fighting, and urban search and rescue.Response begins when an emergency event is imminent or immediately after an event occurs. Response encompasses the activities that address the short-term, direct effects of an incident. Response also includes the execution of the Emergency Operations Plan and of incident mitigation activities designed to limit the loss of life, personal injury, property damage, and unfavorable outcomes. As indicated by the situation, response activities include:

- Applying intelligence and other information to lessen the effects or consequences of an incident.
- Increasing security operations.
- Continuing investigations into the nature and source of the threat.
- Ongoing public health and agricultural surveillance and testing processes, immunizations, isolation, or quarantine.
- Specific law enforcement operations aimed at preempting, interdicting, or disrupting illegal activity, and apprehending actual perpetrators and bringing them to justice.
- Restoring critical infrastructure (e.g., utilities).
- Ensuring continuity of critical services (e.g., law enforcement, public works). In other words, response involves putting preparedness plans into action.

Recovery

Actions taken to return a community to normal or near-normal conditions, including the restoration of basic services and the repair of physical, social and economic damages. Typical recovery actions include debris cleanup, financial assistance to individuals and governments, rebuilding of roads and bridges and key facilities, and sustained mass care for displaced human and animal populations.Recovery differs from the response phase in its focus; recovery efforts are concerned with issues and decisions that must be made after immediate needs are addressed. Recovery efforts are primarily concerned with actions that involve rebuilding destroyed property, re-employment, and the repair of other essential infrastructure.

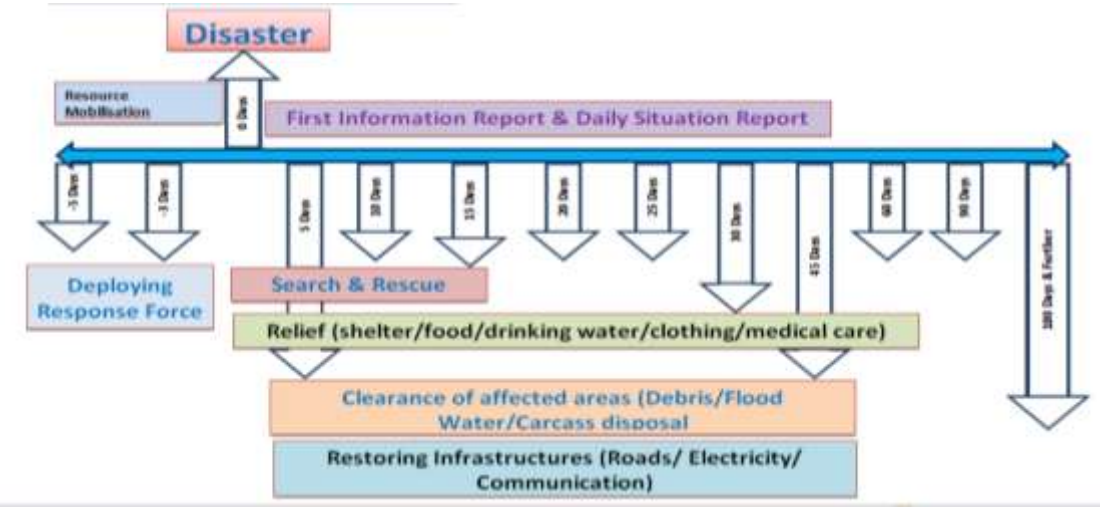
The goal of recovery is to return the community's systems and activities to normal. Recovery begins right after the emergency. Some recovery activities may be concurrent with response efforts.

Recovery is the development, coordination, and execution of service- and site-restoration plans for impacted communities and the reconstitution of government operations and services through individual, private-sector, nongovernmental, and public assistance programs that:

- Identify needs and define resources.
- Provide housing and promote restoration.
- Address long-term care and treatment of affected persons.
- Implement additional measures for community restoration.
- Incorporate mitigation measures and techniques, as feasible.
- Evaluate the incident to identify lessons learned.
- Develop initiatives to mitigate the effects of future incidents.

Long-term recovery includes restoring economic activity and rebuilding community facilities and housing. Long-term recovery (stabilizing all systems) can sometimes take years.

10.2 Relief Management: Timeline



10.3 Response

Response: District (The list is Indicative & may be extended further as per need & requirement)

Task	Activity
Warning Communication	• Warning dissemination to the list of Nodal person & concerned BDOs • Recording the receipt of information & regular Status update • Transmitting updates to SEOC in regular interval as instructed
Meeting of DDMA (Heads of the department & stakeholder)	• Collector to take up a department coordination meeting & distribute works among all the Departments • Collector issues circular to keep Govt. offices open cancelling all holidays. • A fixed time to be finalized every day for reporting at all level. • A nodal officer is identified for media management • Circulate the minutes of the meeting with clear-cut role & responsibility
Pre-positioning of staff, resources & Evacuation	• Identifying & designating Nodal Officer for different stages of disaster & affected areas. • Positioning of ODRAF/NDRF/Fire services/ Police/Home Guard in the affected areas • Pooling Volunteer services (Civil Defense/Task Force/NCC/NSS/Scout & Guide) • Take stake of required materials for search & rescue, first aid, casualty management, evacuation, relief etc. • Make necessary arrangements of shelters for evacuation

Task	Activity
	• Constitute a special team for special care to vulnerable section like Specially abled, Sr. Citizen, Pregnant & lactating women, Infants & children etc.
Response	• EOCs to Ensure back up (Power/Fuel/internet/ Communication at Dist/Dept. & Block levels • Response force under guidance of Nodal officers ensure complete Evacuation (Human/ Animal), carry out Search & Rescue, clear relief lines, • Collector to submit requisition of vehicle/boat/ helicopters & list of support from state & Centre to all concerned authorities • CSO to store required relief materials (Chhuda. Gur, Dry Foods) in the nearby storage points • CDVO to store, transport & distribute required fodders for animals to the affected areas
	• Cyclone shelter committee & Village Disaster management committee to organize free kitchen in the shelters with help of revenue dept. • EE- RWSS & CDMO to ensure supply of drinking water, disinfection of water & maintain Health & hygiene in the shelters • CDMO to carry out First aid & casualty management • Collector to collect & transmit First Information Report (FIR) & Daily Situation Report as per requirement

10.4 Response: Community Level (The list is Indicative & may be extended further as per need & requirement)

Activity

- DEOC to disseminate warning communication to BEOC & Community
- Response force to ensure Power/Fuel/internet/ Communication at Shelters back up
- Supply Inspectors & Marketing Inspectors to distribute relief materials with response force, Task force & volunteers
- Response force to carry out Search & Rescue measures, Emergent relief operation, Relief line clearance, distribution of relief
- Doctors to carry out First aid & casualty management, Carcass disposal & sufficient mortuary facility in the affected areas

10.5 Response: Family & Individual Level (The list is Indicative & may be extended further as per need & requirement)

Task	Activity
Response	• Listen to the instruction of the response force & warnings • Economic use of "Ready to go Emergency Kit" Ready to go First Aid Kit • Cooperate the response force/officers & Render volunteer service if asked for • Maintain cleanliness & hygiene at shelter

10.6 Response: Standard Operating Procedures for Departments (The list is Indicative & may be extended as per need & requirement)

Name of the Department	On Receiving Warning	Response time	Post Disaster
Collector/ADM / Emergency Officer	• Review the situation in DDMC • Activate EOC & Early Warning • Work distribution for operation • Circular to keep offices open • Arrange vehicle & activate Evacuation (Normal/Forceful)	• Activate Search &Rescue • Arrange temporary shelters • Arrange logistics in shelters • Workout financial estimates (evacuation / relief /recovery)	• Activate relief line clearance • Proper relief Distribution • Start damage assessment • Facilitate Ex-gratia & Compensation • Start primary damage estimate • Pool resources for SAR/shifting of critical patients
CDMO	• Disseminate the alert to all concerned (Staff list) • Arrangement of medicine, First aid kits & teams • Mobile Health units for inaccessible pockets • Identifying & shifting patients requiring intensive care to safer	• Mass Casualty Management units & Triage • First Aid Centers • Medical surgical teams • Adequate mortuary facility • Measures to shift patients requiring	• Psycho-Social Counseling • Post Disaster Disease surveillance system • Special attention to vulnerable section • Networking with & promote treatment in Private Hospitals • Carcass Management

Name of the Department	On Receiving Warning	Response time	Post Disaster
	places • Supply of medicines & pre-positioning of medical teams to vulnerable areas • Vaccination for prevention of communicable diseases • Measures to dis –infect drinking water • Availability of Blood Banks/Ambulance	intensive care • Pool of Blood donors (Preferably each group) • Additional laboratories • Carcass disposal team & units	& Issuance of Death Certificate
Superintendent of Police (SP)	• Performs Sovereign Task of the State for Protecting Life • Tool for Implementing State Policies • Trained & Disciplined Human Resource • Setting up control room and managing of control room round the clock	• To provide security and maintain law and order at disaster location. • To prevent commission of cognizable offences against life, property and public tranquility	• Saving life & Property of victims • Projecting a humanitarian face of Police • Image building exercise for Police • Collapsed Structure Search and Rescue (CSSR), • Medical First Response
EE- RWSS	• Setting up control room and managing of control room round the clock		
EE- Irrigation	• Setting up control room and managing of control room round the clock		
EE- Irrigation	• When early signs of distress appear in any part of the district, EE	• Will ensure availability of adequate number	• Undertake channel improvement for rivers and nalas to

Name of the Department	On Receiving Warning	Response time	Post Disaster
	Irrigation will submit a special situation update to DM indicating the position in respect of Irrigation preparedness in the district. • Prepare and update the disaster risk map of the district. The map should show the vulnerability and risks of the critical infrastructure related to irrigation and also whether alternate source of H2O within the district. • Prepare a contingency plan for the maintenance and repairs of Bundhs and embankments. • Identify Bundhs, which are critical for disaster protection and control. • Review and update precautionary measures and procedures.	of tool kits to prevent any damage during disaster. • Provide special attention to those places where the Bundhs were breached and repaired during the last floods/disaster last year. These are the Bundhs, which will be threatened first during the disaster. • Deployed adequate team in the most vulnerable areas.	the extent possible. Undertake de-silting / cleaning of Nalas and canals to improve the flow of water. • Supply the essential tool kits and protection material at critical places for emergency repair and construction. • Organize round the clock inspection and repair of equipments.
DAO-Agriculture	• Prepare HRV Analysis of the district. • Develop Contingency Action Plan based on HRV analysis. • Review and update precautionary measures and procedures. • Check available stocks	• Supply of agricultural equipments which may be required during Disaster. • All valuable equipments and instruments should be packed in protective	• Suggest variety of seeds and cropping pattern, which can reduce losses and reduce the risks to farmers • Plan for emergency accommodations for agriculture staff from outside the area.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	of equipments and materials which are likely to be most needed during and after disaster • 6. Provision of agricultural services should be coordinated with irrigation department, DRDO, District EOC, SITE OPERATIONS CENTREs.	coverings and stored in room the most damage-proof during disaster • All electrical equipments should be unplugged during disaster period.	• A pests and disease monitoring system should be developed to ensure that a full picture or risks is maintained. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Establish contact with soil and water testing laboratories.
EE- Rural Works	• When early signs of distress appear in any part of the district, EE Rural works will submit a special situation update to DM indicating the position in respect of rural works preparedness in the district. • Prepare and update the disaster risk map of the district. The map should show the vulnerability and risks of the critical infrastructure related to rural areas. • Ensure community involvement in disaster preparedness on: Risk assessment (to point to which measures to implement);Early warning systems; Life safeguarding	• Will ensure availability of adequate number of tool kits to prevent any damage during disaster. • Provide special attention to those places which were most vulnerable areas during disaster last year.. • Deployed adequate team in the most vulnerable areas. • Provide for preventive medication for entire livestock to check the spread of any disease among the surviving cattle. • Ensure the rural communication system and shelter management	• Provide for agricultural rehabilitation of disaster affected area by necessary assistance, with the help of state government, to affected farmers in activities such as sowing/harvesting. • Make available requisite seeds and fertilizers free of cost to the¬ farmers, of course, with the help of concerned government departments. • Provide agricultural equipment/tools through Banks and other¬ funding agencies. • Help in rehabilitation of artisans and marginal

Name of the Department	On Receiving Warning	Response time	Post Disaster
	equipment; Resources and emergency kits in anticipation of need; Maintaining emergency rosters and evacuation plans; Emergency information and communication systems; Capacity building to ensure adequate emergency response.	process during disaster.	businessmen¬affected due to the disaster. • Make efforts to re-start schools as soon as possible and encourage children to attend school regularly. • Rehabilitation of livestock affected due to the disaster; Ensure replacement of mulch cattle to the affected farmers;¬ Free cattle feed for about 2 to 3 months.
EE- Public Works	• Conduct HRV analysis of PWD of the district. • Based on HRV analysis, prepared Contingency Action Plan for the Department. • All personnel required for disaster management should work under the overall supervision and guidance of Deputy Commissioner. • All officers (technical officers) should be notified and should meet the staff to review emergency procedures. • Review and update precautionary measures and procedures, and review with staff the precautions that have	• Carry out route opening by removing debris on the road. • Provide a work team carrying emergency tool kits, depending on the nature and extent of the disaster, essential equipments to the disaster spot. • If people are evacuating an area, the evacuation routes should be checked and people assisted. • Construct/ reinforce the connecting roads from villages to roads, canals and Bundhs and raise	• Undertake repair of all paved and unpaved road surfaces including edge metalling, pothole patching and any failure of surface, foundations in the affected areas by maintenance engineer's staff and keep monitoring their conditions. • Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for flood victims. • As per the decisions of the District Control Room, undertake construction of

Name of the Department	On Receiving Warning	Response time	Post Disaster
	been taken to protect equipment. • Maintain all the highways and access roads, which are critical from the point of view of supplying relief.	their level so that people can access the high ground during disaster.	temporary structures required, for organizing relief work and construction of relief camps, feeding centres, medical facilities, cattle camps and site operations centres. • An up-to-date report of all damage and repairs should be kept in the district office report book and communicate the same to the District Control Room.
DTO-Telecom	• Communication establishment with District and Block/ Tahasil control room and departmental officers within the division. • An officer to be appointed as nodal officer • Standby arrangements for temporary electric supply or generators. • Inspection and repair of poles etc. • Identification of materials required for response operations. • All staff informed about the disasters, likely damages and effect	• Where Disaster strikes with/ without early warning signals, TSPs shall immediately assess damage to their network and deploy Rapid Damage Assessment Team & Disaster Response Task Force Teams (DRTF) with required inventory to provide emergency communication to priority callers like police, Fire, Medical, civil defense, Red Cross,	• If required portable / vehicle mounted / air-transportable BTSs / BSCs with backhaul on satellite media may be installed by TSPs. • Nodal officer of TSPs of affected telecom circle level shall report to concerned DDG (TERM), DoT (Chairman of STDCC) in that circle, for sharing information and coordination related matters. • TERM units of DOT shall be the single nodal point in the disaster region where representatives of TSPs shall also be

Name of the Department	On Receiving Warning	Response time	Post Disaster
		Army, financial institutions, NGOs, all officers and staffs engaged in restoration of telecommunication services, etc • A control room will be setup at the state HQ / nearest to affected area, as the case may be, and made operational under control of TERM cell of affected area.	present to coordinate and oversee communication restoration efforts • All the affected areas and infrastructure will maintain immediately to make sure the effective communication after disaster for quick response.
CDVO	• Prepare HRV Analysis of Animal Husbandry Department of the District. • Based on HRV Analysis, prepare Contingency Action Plan of the District. • All personnel required for Disaster/Flood Management should work under supervision and guidelines of District Magistrate. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Review and update precautionary measures and procedure and review with staff the	• . Supply stocks of equipments and drugs which are likely to be most needed during the disaster. • Fill department vehicles with fuel and park them in a protected area. • Prepare an area of the hospital for receiving large number of livestock during disaster. • Distribute the requirement of water, fodder and animal feed, for cattle camps and organize the same. • Ensure that adequate sanitary conditions through	• Post Disaster Disease surveillance system • Special attention to vulnerable section • Assist the Revenue Department in preparing plans for cattle campus and cattle feeding centers. • Organize vaccination campaigns in disaster prone villages after the disaster.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	precautions that have been taken to protect equipments. • Stock emergency medical equipments which may be required during and post disaster	cleaning operations are maintained in order to avoid outbreak of any epidemic during disaster.	
RTO/MVI	• Disseminate the alert to all concerned staff. • Prepare a list of vehicles- trucks, buses, jeeps, tractors, etc of government and private agencies in the district and provide the list to the District control room. • Issue standing instructions to the State transport department for providing buses for evacuation and relief. • Recall important functionaries from leave; communicate to the staff to man their places of duties like the ward and divisional offices and respective departments. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.	• Provide requires vans and ambulances for mobile health and animal husbandry teams for immediate response during disaster. • Provide trucks, buses, jeeps, tractors, etc for evacuation and supply chain management. • Fill department vehicles with fuel and park them in a protected area.	• Providing vehicles for communication and relief. • Provide ambulances to rural areas for bringing affected people to hospitals after disaster.
DFO-	• Conduct HRV analysis of Forest of the district.	• Allow the transportation of fodder from forest	• Ensure Plantation to maximum possible extent.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	• Based on HRV analysis, prepared Contingency Action Plan for the Department. • All personnel required for disaster management should work under the overall supervision and guidance of Deputy Commissioner. • All district level officials of the department would be asked to report to the Deputy Commissioner when disaster occurs • Emergency tools kits should be assembled for each division, and should include: Crosscut saws, Axes, rope.	areas, when the fodder is not freely available. • Evacuate the people and animal under the forest areas to a safest place. • Cut down the most vulnerable trees near the residential areas. • Provide wooden poles and bamboo for temporary shelter.	• Ensure supply of wood for disposal of dead bodies. • Recall important functionaries from leave; communicate to the staff to man their places of duties like the ward and divisional offices and respective departments. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives.
Railway	• Overall coordination with the district administration for disaster response. • Disseminate the alert to all concerned staff. • Call for emergency meeting to take stock of the situation. Develop a strategy and objectives. • Prepare and update the disaster risk map of the district. The map should show the vulnerability and risks of the critical infrastructure related	• Activate Search & Rescue • Arrange temporary shelters • Mass Casualty Management units & Triage • First Aid Centers • Medical surgical teams • A control room will be setup at the district HQ / nearest to affected area, as the case may be, and made operational under control of TERM	• Providing necessary information to public. • Clearing the railway line blockages and restoration of the communication system. • Providing relief line to the vulnerable areas after disaster. • Special attention to vulnerable section.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	to railway lines.	cell of affected area.	
EE- Electricity	• Conduct HRV analysis for the department of the district. • Based on HRV analysis, prepare Contingency Action Plan of department of Power Supply. • All personnel required for disaster management with work under the overall supervision and guidance of responsible officer. • Establish radio communications with State Emergency Operation Centre, Divisional Commissioner, District Control Room and your departmental offices within District/Division. • After receiving alert warning, immediately undertake following inspection: High tension lines ,Towers ,Sub-stations ,Transformers ,Insulators , Poles and Other equipments.	• Instruct district staff to disconnect the main electricity supply for the affected area. • Dispatch emergency repair groups equipped with food, bedding, tents, and tools. • Protect Power Stations from disaster. Raise the height of compound walls. Arrange gunny bags. • Install pump sets for draining water in case of Flood/ Cyclone/ Tsunami, etc. • Provide information to the people about the state of power supply. It is one of the most important sources of information.	• Ensure that the Power Supply department to make alternate arrangements of emergency supply for the following offices from time of receipt of districts: Hospitals ,Public Health Departments , Deputy Commissioner Office,District EOC, Sub-Divisional EOC, site Operation Centres. , Police Stations , Telecommunications buildings , Meteorological stations. Irrigation Office. • Hire casual labourers on an emergency basis for clearing of damaged poles and salvage of conductors and insulators. • Begin repair/reconstruction .
EE – PHED	• When early signs of distress appear in any part of the district, EE PHED will submit a special situation	• Will ensure availability of adequate number of tool kits to prevent any	• Supply the safe drinking water at the affected areas immediately after the disaster.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	update to DM indicating the position in respect of water supply preparedness in the district. • Prepare and update the disaster risk map of the district. The map should show the vulnerability and risks of the critical infrastructure related to water supply and public health. • Prepare a contingency plan for the maintenance and repairs water pipe systems. • Identify vulnerable areas, which are critical for disaster protection and control. • Review and update precautionary measures and procedures.	damage during disaster. • Provide special attention to those places where the water supply were breached and repaired during the last disaster last year. • Deployed adequate team in the most vulnerable areas. • Opening the blockage of sewerage and sewage system during disaster to control the disease and epidemics.	• Maintaince of Water works immediately after the disaster. • Cleaning the sewerage system with adequate disinfection to prevent disease and epidemics.
DEO- School & Mass Education	• Conduct HRV analysis of schools of the district. • Based on HRV analysis, prepared Contingency Action Plan for the Department. • All personnel required for disaster management should work under the overall supervision and guidance of the DEO.	• Duck cover and hold first sign of earthquake move away from buildings. • Assist the evacuation teams in evacuation of the school buildings. • For a chemical hazard assist the warning team in disseminating the	• Dissemination of information on do's and don'ts so that the situation doesn't worsen. This can be done in the coordination with the warning and information dissemination teams. • The damaged building and infrastructure should

Name of the Department	On Receiving Warning	Response time	Post Disaster
	• All officers (technical officers) should be notified and should meet the staff to review emergency procedures. • Obtain IEC materials postars, Phmplets, simple tips on do's and don'ts in different disasters. • Conduct awareness generation activities systemically in the whole school targeting different classes and also staffs and teachers. • Assists in organizations of the evacuations drills for various hazards.	required safety tips to the entire school. • Ensuring the schools becomes the shelter houses with adequate nos of equipments during the disaster.	repair immediately after the disaster. • The relief lines should be measured from the school building after the disaster.
DEO - Higher Secondary Education	• Conduct HRV analysis of Higher Secondary schools of the district. • Based on HRV analysis, prepared Contingency Action Plan for the Department. • All personnel required for disaster management should work under the overall supervision and guidance of the DEO. • Organized demonstration of fire safety, first aid and search and rescue through linkages with the fire brigade, health	• Duck cover and hold first sign of earthquake move away from buildings. • Assist the evacuation teams in evacuation of the school buildings. • For a chemical hazard assist the warning team in disseminating the required safety tips to the entire school. • Ensuring the schools becomes the shelter houses with adequate nos	• Dissemination of information on do's and don'ts so that the situation doesn't worsen. This can be done in the coordination with the warning and information dissemination teams. • The damaged building and infrastructure should repair immediately after the disaster.

Name of the Department	On Receiving Warning	Response time	Post Disaster
	officials and civil defense and home guards. • Obtain IEC materials posters, Pamphlets, simple tips on do's and don'ts in different disasters. • Conduct awareness generation activities systemically in the whole school targeting different classes and also staffs and teachers. • Assists in organizations of the evacuations drills for various hazards.	of equipments during the disaster.	• The relief lines should be measured from the school building after the disaster.

10.7 Format for First Information Report (FIR) on occurrence of natural calamity

(To be sent to Special Relief Commissioner, Orissa within maximum of 18 hours of occurrence of calamity)

From: District -_____ Date of Report:- _____

To
Special Relief Commissioner, Orissa
State Emergency Operation Centre (SEOC),
Rajiv Bhawan, Ground Floor, Unit-5, Bhubaneswar
Fax No: 0674-2534176, E-mail: relief_sr@yahoo.com/src@ori.nic.in

a. Nature of Calamity

b. Date and time of occurrence

c. Affected area (number and name of affected Blocks)

d. Population affected(approx.)

e. Number of Persons
   - Dead
   - Missing
   - Injured

f. Animals
   - Affected
   - Lost

g. Crops affected and area(approx. in hect.)

h. Number of houses damaged

i. Damage to public property

j. Relief measures undertaken in brief

k. Immediate response & relief assistance required and the best logistical means of delivering that relief from State/National

l. Forecast of possible future developments including new risks

m. Any other relevant information

Authorised Signatory

District Emergency Operation Centre (DEOC)

District:-_____

NB: The Districts will submit a detailed report on each of the above points as soon as possible after submission of the above First Information Report (FIR).

10.8 Daily Status Report on Relief/ Restoration Measures Undertaken By Departments

1. Health Department.

Medical Relief Centres Opened-

Mobile teams deployed-

Wells disinfected-

ORS distributed-

Halogen Tablets distributed-

Minor Ailment Treated-

2.R.D. Department.

Mobile vans deployed-

Water tanker deployed-

ORS powder distributed-

Halogen Tablets distributed-

Water pouches distributed-

Bleaching powder distributed-

Sintex Tanks available-

Tube wells disinfected-

3. FS& CW Department

- ……Qtls. Chuda, ……. Qtls gur supplied to …… Blocks

(Qty .in quintals)

District	Chuda	Gur

- ……. Qtls of rice has been allocated to the Districts mentioned below

Blocks	**Quantity allocated (in quintal)**
	Total:

4.Fisheries& A,R.D. Department

- Animals vaccinated-
- Animals treated-

Damages to Roads/River Embankments

- **R.D. Department**

  Roads damaged-

  CD/Breach occurred-

  Breach closed-

  Building damaged-

  Building collapsed-

  Pipe water supply affected-

  Tube Wells affected-

2. Works Department

Roads damaged-

Breach occurred-

CD works damaged-

CDs washed away-

Breach closed-

3. W.R Department

Breach occurred-

Breaches closed-

Breach closing works in progress

Chapter-11

Restoration & Rehabilitation

11.1 Rehabilitation and restoration comes under recovery phase immediately after relief and rescue operation of the disaster. This post disaster phase continues until the life of the affected people comes to normal. This phase mainly covers damage assessment, disposal of debris, disbursement of assistance for houses, formulation of assistance packages, monitoring and review, cases of non-starters, rejected cases, non-occupancy of houses, relocation, town planning and development plans, awareness and capacity building, housing insurance, grievance redress and social rehabilitation etc.

The district is the primary level with requisite resources to respond to any natural calamity, through the issue of essential commodities, group assistance to the affected people, damage assessment and administrating appropriate rehabilitation and restoration measures.

The District Disaster management Authority reviews the relief measures submit financial requisition to the state Govt. under SDRF & NDRF. The requisition must reach the SDMA & SRC office in the prescribed format as detailed below for smooth & quick processing.

11.2 Standard Operating Procedure: Restoration & Rehabilitation (The list is Indicative & may be extended further as per need & requirement)

Name of the Department	**Normal Time**
Collector/ADM / Emergency Officer	• Restoration of Critical Infrastructures to bring situation to normalcy • Ensure Restoration of roads & channels, Communication network, Electricity & Energy • Ensure health in the affected areas • Adopt sustainable mitigation measures in the restoration activities
CDMO	• Carry out Disease surveillance measures to check epidemic prone diseases • Dis-infection of drinking water & measures for health & hygiene • Rehabilitation of deprived & destitute • Carry out Trauma & Psycho-social counseling
Superintendent of Police (SP)	• Security arrangements for relief materials in transit and in camps etc. • Senior police officers to be deployed in control rooms at State & district levels during L 1 level deployment onwards.

	• Deploy personnel to guard vulnerable embankments and at other risk points. • Arrangement for the safety. • Coordinate search, rescue and evacuation operations in coordination with the administration • Emergency traffic management. • Maintenance of law and order in the affected areas. • Assist administration in taking necessary action against hoarders, black marketers etc.
EE- RWSS	• Provision of tube wells at the squares, market places, bus stops, public buildings like schools, hospitals etc. to face the heat wave situation. • Alternate drinking water sources for the fluoride- affected areas like Roof top water harvesting, rainwater conservation and recycling. • Construction of drains in the villages for easy discharge of the flood water, wastewater and sewage • IEC campaign for safe drinking water and sanitation to prevent any health hazard in normal time in general and during disaster in particular.
EE- Irrigation	• Planning for new medium irrigation project and completion of the ongoing project in the rivers to increase the irrigational potential of the district. • Strengthening the weak points of the river embankments, • Provision of spurs, stone packing, launchings at the turning point and guide bank along the course of the rivers and big Nallas to prevent the damage during flash flood. • Constructions of culverts, cause ways and other cross drainage work for quick discharge of flood water and to prevent prolonged submergence causing damage to the important infrastructure. • Planning and Construction of Minor Irrigation Projects at suitable location. • Construction of masonry check dams on some seasonal and perennial Nallas
DAO- Agriculture	• Encourage the formation of social institution to increase their access to credit, market, insurance etc. like Producers/Growers association, • Cooperatives, Societies, Farmers club etc. • Capacity building of farmers and grass root extension workers on the modern agriculture practices, dynamic contingency crop planning, IPM, INM, alternate land use etc on • Popularization of Seed Village scheme and promotion of Community managed Seed Bank. • Increase the access of farmers to appropriate agro information, market, credit etc. • Promotion of the cultivation of vegetables, spices, tuber crops, mushroom etc through on field demonstration and minikit

	distribution program. • Construction of low cost storage structures for the perishable agro/hort. Products. • Training of the SHGs, vegetable growers etc. on the package of practice, proper storage, processing and value addition of the hort. Products. • Treatment of arable and non-arable lands through various mechanical and vegetative measures to prevent further their degradation and increase productivity
EE- Rural Works	• Strengthening and restoration of infrastructure with an objective to eliminate the factor(s) which caused the damage.
EE- Public Works	• Construct/reinforce the connecting roads from villages to roads, canals and bunds and raise their level so that people can access the high ground. • Install adequate road signs to guide and assist the drivers. • Institute repair of all paved and unpaved road surfaces, including edge metaling, pothole patching and any failure of surface, foundations in the affected areas by maintenance engineer's staff and keep monitoring their conditions. • Take on construction of temporary roads to serve as access to temporary transit and relief camps and medical facilities for disaster victims.
DTO-Telecom	• Assessment of damage and restoration of communication network. • Ensure all communication equipment installed at DEOC.
CDVO	• Popularization of the livestock farming as one of the viable alternative livelihood option in the normal year in particular and in drought year in general through awareness generation, attractive schemes etc. • Improvement of the quality and productivity of local livestock through Artificial Insemination and other breeding process. • Strengthening of the dispensaries/Livestock Aid centers with staffs, medicines, and equipment to proper health care of the animal. • Capacity building of the grass root extension workers/Para worker/ farmers on animal health care and hygiene, AI/breeding, birth care etc. • Popularization of the cultivation of nutritious fodder grasses or trees in the home stead/field bunds of farmers/village pasture lands etc. through demonstration unit, mini kit distribution etc. • Storage, Processing, Market linkage, Price fixatation of the livestock products • Promotion of the development of Institutions like Milk Cooperatives, Goat grower association etc.for better access to market, credit etc. • Introduction of Pisciculture in all the Dams, • Reservoirs/MIP/GP tanks and other bodies. • Supply of quality and productive fingerlings of fast

	growing/improved fish species. • Capacity building of fish farmers/grass root extn. Workers/SHG members on commercial pisciculture, fish seed and feed production etc.
RTO/MVI	• Emergency repairs of roads if affected must be carried out. • A system for priority transport of relief goods and personnel must be developed. • Relief goods may be considered for exemption from freight charges, if any. • All bus depots should be equipped with emergency communication equipments. • Every work gang should have tools which will be needed in an emergency. • This should include crosscut saws, axes and ropes. • Raincoats, caps and gumboots should be made available to work gangs in an emergency
DFO-	• Improvement of the Vegetation coverage and Biomass production to meet the multiple community need like food, fuel wood, fodder etc. through three-tier plantation. • Regeneration of degraded village Common Property Resources like village forest, waste land through the gap filling and block plantation of multipurpose tree species. • Prevention of indiscriminate forest felling through strict introduction of rules and regulation and massive awareness generation. • Strengthening of the community based organizations like VSS through various training, exposure, orientation, and sensitization and ensures the involvement of the local community in forest management (regeneration, protection etc.) • Fair Collection and marketing of the NTFP products • Restricted grazing of the cattle herd in the forest area is to be ensured to protect the natural regeneration of the forest ecosystem.
Railway	• Rapid access to the site of the accident. ϖ • Effective site management by making best use of on-board and locally available resources. • Quick extrication of victims. ϖ Speedy transportation of victims to hospital. • Proper communication system both for assisting the stranded passengers as well as giving out timely information to the media.
EE- Electricity	• Disconnect electricity after receipt of warning. • Attend sites of electrical accidents and assist in undertaking damage assessment. • Stand-by arrangements to ensure temporary electricity supply. • Inspection and repair of high tension lines /substations/transformers/poles etc. • Ensure the public and other agencies are safeguarded from any hazards, which may have occurred because of damage to electricity distribution systems.

	• Restore electricity to the affected area as quickly as possible. • Replace / restore of damaged poles/ salvaging of conductors and insulators.
EE – PHED	• Provision of tube wells at the squares, market places, bus stops, public buildings like schools, hospitals etc. • Alternate drinking water sources to affected area • Construction of drains for easy discharge of the flood water, wastewater and sewage • IEC campaign for safe drinking water and sanitation to prevent any health hazard in normal time in general and during disaster in particular.
DEO- School & Mass Education , DEO - Higher Secondary Education	• Department and the field level institution will prepare a contingent Action Plan for their reconstruction. • Damaged buildings (including classroom building, department building, and breaking of window) should be assessed and the report is to be sent to SRC for adequate funding needed for repair and constructions of building, boundary wall, Hostels etc. for quick recovery and restoration of Education.

11.3 Damage Loss Assessment

Sector	Damage in Physical terms	Requirement of funds for repair of immediate nature	Out of (3) amount available from annual budget	Out of (3) amount available from related schemes/ programmes / other sources	Out of (3) amount proposed* to be met from SDRF/NDRF as per the list of works indicated in the revised items & norms
1	2	3	4	5	6
Roads & Bridges					
Drinking water Supply works (Rural)					
Drinking water Supply works (Urban)					
Irrigation					
**Power					
Primary Health Centres					
Community assets in social sectors covered by Panchayats					

11.4 Calculation of assistance for agricultural input subsidy-SMF

(Rs. In lakh)

Sl.	Name of the Block	Area held by SMF (in Hectares)	Total Agricultural area Affected [inHect.]	Total agricultural area where croploss is > 50%	Crop loss 33% & above			Expenditure incurred			Total
					Irrigated [in hect.]	Rainfed [in hect.]	Perennial	Irrigated @Rs.13,500/- per hectare	Rainfed @Rs.6800/- per hectare	Perennial @ Rs.18000/ per Hect.	
1											
2											
3											
4											
Total											

11.5 Agricultural input subsidy- Farmers other than SMF

Farmers affected first year

(Rs. In lakh)

Sl.	Name of the Block	Area held by farmers other than SMF (in hectares	Crop loss > 33%							
			No of Farmers	Irrigated area in hect	Amount spent @ Rs.13,500/- per hect.	Rainfed Area in hect.	Amount spent @ Rs.6800/- per hect.	Perennial Area in hect	Amount Spent @ Rs.18000/ per Hect.	Total Amount Spent
1	Jharsuguda		1684		3627198	613.4				3627198
2	Lakhanpur		5765		19702133	771				19702133
3	Kolabira		9279		17916137	3085				17916137
4	Kirmira		5880		13119753	763.2				13119753
5	Laikera		2600		6311779	2021				6311779
Total			25208		60677000	7253.6				60677000

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Chapter-12
Recovery

A series of long term activities framed to improve upon the repaired activities in the Reconstruction & rehabilitation phase are covered under Recovery phase. Recovery includes all aspects of mitigation and also incorporates the continuation of the enabling process, which assists the affected persons and their families not only to overcome their losses, but also to achieve a proper and effective way to continue various functions of their lives. The Recovery process is therefore a long-terms process in which everyone has a role – the Government including the PRI members, NGOs and especially the affected people, their families and the community.

- Preparation of Recovery plan for displaced population, vulnerable groups, environment, livelihoods
- Organise initial and subsequent technical assessments of disaster affected areas and determine the extent of recovery works necessitated in addition to reconstruction & rehabilitation works.
- Evaluate the extent of works under SDRF/NDRF & other sources(damaged infrastructures)
- Explore opportunities for external aids like (International Agencies / Civil Society / Corporate Sector)
- Allocate funds for the stabilization of the repaired & reconstructed infrastructure.
- Integrate Climate change & Disaster Risk Reduction features in the recovery programmes

The DM & Collector will be the coordinator of all Recovery activities in the District. The role of the DM & Collector will be to:

- Generally monitor the management of the recovery process;
- Ensure implementation of the recovery plan by line departments, blocks
- Effective service delivery minimizing overlap and duplication;

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Chapter- 13

Financial Arrangement

13.1 National Disaster Response Fund (NDRF)

The National Disaster Response Fund (NDRF) has been constituted by the Government of India as per the sub-sections (1) of section (46) of Disaster Management Act, 2005 and recommendation of the 13th 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 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 Deputy Chairman, Niti Ayog considers the request of the State Government based on the report of the Central Team recommendation of the IMG thereon, extant norms of assistance and approves the quantum of assistance form NDRF.
- This is, however, subject to the adjustment of 75% of the balance available in the State's SDRF for the instant Calamity.

13.2 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 13th Finance Commission, the Government of Odisha has constituted the State Disaster Response Fund (SDRF) replacing

the Calamity Relief Fund (CRF). The amount of corpus of the SDRF determined by the 13th Finance Commission for each year the Finance Commission period 2010-15 has been approved by the Central Government. The Central Government contributes 75% of the said fund. The balance 25% matching share of contribution is given by the State Government. The share of the Central Government in SDRF is released to the State in 2 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.

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.

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

13.3 Chief Minister Relief Fund (CMRF)

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.

13.3.1 Cases Eligible for Assistance under CMRF

13.3.1.1Poor and persons in distress: Relief to the poor, including grant and aid (financial or otherwise) to persons in distress.

13.3.1.2 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.

13.3.1.3 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.

13.3.1.4 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.

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.

13.4 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 S.E.C. However, funds towards pure relief are released under orders of Special Relief Commissioner / Chief Secretary and the same is placed before the State Executive Committee in its next meeting for approval. To save 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.

13.5 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 in the prescribed formats prescribed in Appendix- X of Orissa Relief Code.

13.5.1 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 immediate Head of Department. The district level officers may also supply 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.

13.5.2 Submission of final flood 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 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.

13.6 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 01st and 03rd June, 2014 respectively, 10 % flexi-fund within the centrally sponsored schemes (CSS) to be utilised, inter alia for mitigation / restoration activities in the event of natural calamities 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.

Table__: Different State and Central Government Schemes and Programmes

Sl No.	Name of the Scheme	Sector	Nodal Department	Objective of the Scheme
1	National Agriculture Insurance Scheme (NAIS)/ RastriyaKrishiBimaYojna (RKBY)	Crop Insurance	Agriculture Insurance Company of India (AICI)	To protect the farmers against the losses suffered by them due to crop failures on account of natural calamities, such as droughts, floods, hail storm, storms, animal depredation, etc.
2	JanashreeVimaYojna	Life Insurance	Life Insurance Corporation Of India	The objective of the scheme is to provide life insurance protection to the rural and urban poor persons below poverty line and marginally above the poverty line.
3	Pradhan MantriFasalBimaYojana(PMFBY)	Crop Insurance	Agriculture	Insurance coverage and financial support to the farmers in the event of failure of any of the notified crop as a result of natural calamities, pests and diseases.
4	Pradhan Mantri Jeevan JyotiBimaYojna	Life Insurance		Life insurance cover for death due to any reason
5	Pradhan MantriSurkhyaBimaYojna	Life Insurance		Accidental insurance for death/full disability or partial disability
6	Postal Life Insurance (PLI) and Rural Postal Life Insurance (RPLI)	Life Insurance	Postal	Life insurance under a number of schemes for employees in government, public sector banks and government-aided education institutions
7	SSA/RMSA/RUSA	Education	Human Resource Development	To induce institutional safety

				plan and development of Policy paper of institutional safety at various level of education.
8	RashtriyaKrishiBimaYojana	Health Insurance	Agriculture	Crop insurance
9	Biju KrushakaKalyanYojana (BKKY)	Health Insurance	Health	Financial support through health and accident insurance
10	Mahatma Gandhi BunakarBimaYojana	Accidental Insurance	Handloom and Textile	Insurance for accidental death and disabilities
11	Accident Insurance Scheme	Accident Insurance	Fishery	Assistant to fishermen towards hospitalization expenses during serious disease
12	Disease Control Programmes			Protective vaccination for various diseases to livestock and treatment of animals
13	Mahatma Gandhi National Employment Guarantee scheme	Mitigtion measures	PR Dept., Govt. of India	Utilisation of MGNREGS funds to reduce the vulnerability of Panchayat vis a vis natural hazards such as drought, forest fire, cloud floods, etc
14	Pradhan Mantri Gram SadakYojana	Roads	Rural Works	To ensure that in case of disasters these roads get provision for restoration to ensure all weather connectivity
15	Indira AwasYojana	Housing	Rural Development/ Panchayati Raj	To promote measures like application of Hazard resistant design in construction of IAY houses, appropriate sitting of IAY housing. Besides, fire proof houses to fire victim for special allocation quota.
16	National Rural Health Mission	Health	Health and Family	To ensure that the village Health

			Welfare	Plan and the District health plan explicitly address the disaster risk reduction concerns in the vulnerable habitations and the vulnerable districts and the disaster management plan as per DM Act 2005 takes links itself to the District and village Health plans.
17	Finance Commission Grant	Infrastructure Development	PR Dept.	10% of the fund will be dedicated to disaster related projects

13.7 Roles of District Planning committee on financial outlay on mainstreaming Disaster Risk Reduction (DRR) in development programmes.

District Disaster Management Authority(DDMA) have been constituted in Jharsuguda district under Sec.25 (1) and (2) of the Disaster management Act, 2005 to oversee Disaster Management activities in the district. The Collector, Jharsuguda is the Chairperson of DDMA whereas the President, Zilla Parishad, Jharsuguda is the Co-Chairperson of DDMA. The 73rd and 74th amendments of the Constitution provided an impetus to the process of decentralized planning having mandated devolution of powers to Panchayati Raj Institutions (PRIs) at village, block and district levels. Article 24 243ZD of the Constitution mandated the setting up of District Planning Committees (DPCs) for consolidating plans prepared by Panchayats and Municipalities in the district into District Plans. In view of this, Government of Odisha has ensured the formation of DPCs through the Orissa District Planning Committee Act, 1998 and subsequent Orissa District Planning Committee Rules, 2000 which have been enacted for effective planning process at the district level. Subsequently, DPMU, Jharsuguda have been set up in the district for preparing the Comprehensive District Plans as per the Department Letter No.12774/dated.03.11.2015 of Planning and Coordination Department, Govt. of Odisha.

In this backdrop, the DDMP, 2018 focused on mainstreaming Disaster Risk Reduction (DRR) in development programmes.

13.8 Fund provision for disaster preparedness & capacity building

The district administration is the administrative department for management of disasters. Collector is the District Relief Officer and Disaster Manager. Block is the lowest unit of relief administration. BDOs and Tahsildars jointly manage relief administration at the lowest level. District Natural Calamity Committee (DNCC) and District Disaster Management Authority (DDMA) functions with representations from district level officers and people's representative under the chairmanship of the district Collector for supervision and monitoring. Block Disaster Management Committee under the chairmanship of chairperson of Panchayat Samiti and G.P. Disaster Management Committee under the chairmanship of Sarpanch is functioning. Though the district does not have separate capacity building funds provisions to face various types of disaster, but training programmes have been conducted for government personnel and community during drought, flood and heat waves by various departments as per the need of the districts and instructions communicated by the Govt. from time to time. Agriculture, Horticulture, ARD, Forest and PR departments organizes training in drought like situation. To tackle heat wave condition department like Health, PR, RWSS and PHED, H&UD, Veterinary and forest organizes training programmes to minimize the effects of heat waves and causality. Funds of the existing programme (funds allocated under CB components or contingency funds) have been used for this purpose.

Preparation and Implementation of District Disaster Management Plan

The DDMP prepared by the DDMA, Jharsuguda with the support and assistance from all the line departments of the districts. All the line departments provided data for the development of DDMP and its submission to the OSDMA in the scheduled time.

Jharsuguda district followed the following process in preparation of DDMP, 2018.

Steps	What has done	Who were involved	Methodology
	Review of DDMP Jharsuguda 2016 along with all District records and Jharsuguda Gazette	• Collector, ADM, Emergency Officer • DPO • Selected district level official	• Past history of disasters to be discussed and documented • Extent of severity and damage to be recorded • The nature of the Warning issued to be analysed • The nature and extent of the rescue and restoration done, to be revisited
	Situation Analysis	District and Block level officials	• Mapping the geography and topography of the risk

Steps	What has done	Who were involved	Methodology
			prone areas, block-wise, GP-wise and village-wise • Demographic details to be recorded • Mapping of the habitation in the concerned areas • The natural resources to be marked on the maps • Listing all the livelihoods and properties • The existing risk prone/ safe infrastructure to be marked on the map
	Hazard Analysis	District and Block level officials	• Identification of all possible hazards in the area based on past experience and available records • Identification of the most vulnerable areas with relation to threat to life, livelihoods and property
	Vulnerability Assessment	District and Block level officials	• Locations of the vulnerable areas are to be mapped separately • Identification of the vulnerable people such as, the elderly, the disabled, children and pregnant women, families living in thatched houses, fishermen at sea (if any), ailing people, etc. • Identification of property or assets which are likely to be affected, such as, cattle and other livestock, kachcha houses, weak structures, pump sets, tube wells and other installations, crops, horticulture and plantations, boats, nets, etc. • Identification of weak points on embankments (if any) • Marking the drainage system in the concerned area

Steps	What has done	Who were involved	Methodology
	Opportunity Analysis	District and Block level officials	• Identification of the existing resources which may help to reduce risks to life and property • Identification of the safe houses and buildings for shelter and storage • Listing the existing flood/cyclone shelters, if any • Identification of the elevated and up-lands which can act as natural barriers to protect livestock • Listing of the existing health and sanitation facilities • Identification of safe routes for evacuation • Identification of the sources of funds to carry out the preparedness activities

Roles of ADM, DEO and Nodal Officers support from other line Departments

1	Collector/ADM	Issue of necessary directives to the line department. Provided critical inputs to the DDMP compilation team
2	DEO/DPO	Desk Review of DDMPs, decisions of DDMA, DLNCC of previous years, District gazette, Contingency Plan of the departments Coordinated line department officials to provide information in time Consulted head of the departments for improvisation of DDMP, 2018.
3	Heads of Line Departments	Hazard, Vulnerability and capacity analysis of the district Provided necessary information and data. Review the proposed DDMP, 2018 Extended necessary supports and feedback for improvisation of DDMP, 2018.

Support of line departments

Supports of the line department were the key to complete the DDMP, 2018 in a stipulated time frame. Officials of the line departments were showed keen interest in sharing of required information of their departments in the prescribed formats. Officials suggested to revise the formats based on the unit of data maintain the various levels to make it practicable. GP/Village wise information was compiled from the standardized sources like Census, Agriculture Census, Livestock Census, SECC and GPDP were supplied by the departments to avail any conflict in which were available with department for ready references. Information at block level was also supplied by the department as already planned under Statistical Handbook, DIP, MGNREGS Action Plan and CDP of the departments.

Procedure for preparation of DDMP as per the DM act to be elaborated

The first meeting held at OSDMA (Odisha State Disaster Management Authority) on 3rd and 4th March 17 to discuss outline for the DDMP 2018. The 2nd meeting at district level held on 8.3.2018 under the chairmanship of District Collector, Emergency officer, DPO and all BDOs to furnish relevant information for DDMP 2018 and extend cooperation, valuable suggestion for finalization of DDMP 2018.

Information were collected from several sources like census, block level administrative functionaries, web links, district NIC center, and other line departments of the district. The DPO and district emergency section compiled the information and prepared the DDMP. The DDMP approval meeting was held on 29.4.17 under the chairmanship of District Collector, and submitted to OSDMA on 1st May 2018.

It is hoped that the plan would provide concrete guidelines towards preparedness and quick response in case of an emergency and help in realizing sustainable Disaster Risk Reduction & mitigate/minimizes the losses in the district in the long run.

Further, it is suggested that the District level officials of different department will carefully go through the plan and if they have any suggestions be free to convey the same so that the same can be done as the present document is a continuous process and it requires more refine from time to time as per needs.

Roles of ADM, DEO and Nodal Officers support from other line Departments to be defined

1	Collector/ADM	Issue of necessary directives to the line department. Provided critical inputs to the DDMP compilation team
2	DEO/DPO	Desk Review of DDMPs, decisions of DDMA, DLNCC of previous years, District gazetteer, Contingency Plan of the departments Coordinated line department officials to provide information in time Consulted head of the departments for improvisation of DDMP, 2018.
3	Heads of Line Departments	Hazard, Vulnerability and capacity analysis of the district Provided necessary information and data. Review the proposed DDMP, 2018 Extended necessary supports and feedback for improvisation of DDMP, 2018.

Support of line departments (for providing information) to be mentioned.

All the district departments were instructed to send the data to Deputy Collector Emergency vide letter no 2094, dt 15.3.17 by 30.3.17. Many departments send the data by 30.3017 and many departments were again given instructions by telephonic call to furnish data. Supports of the line department were the key to complete the DDMP, 2018 in a stipulated time frame. Officials of the line departments were showed keen interest in sharing of required information of their departments in the prescribed formats. Officials suggested to revise the formats based on the unit of data maintain the various levels to make it practicable.

Time lines for updating DDMP to be mentioned. (From January to February of every) should be incorporated in matrix (information to line departments etc.)

Sl No.	Activities to be done	Timeline
1	Consultation with line department officials and important stakeholders at district level	1st week of January
2	Submission of base line data by all line departments	3rd week of January
3	Compilation of information's and preparation DDMP. Sharing of draft with Chairperson, members of DDMA and other stakeholders	1st week of February
4	Necessary modification and finalization	2nd week of February
5	Placing the final copy before DDMA, finalization and submission of a copy to SDMA	Last week of February
6	Approval by SDMA	By March

Details of number of consultation and meetings, discussion with stakeholders for modification and final sharing.

Several meetings held at Collectorate conference hall to discuss with the heads of the departments to prepare the DDMP for 2018-18. Inputs received from all quarters were taken care and a draft plan was prepared. The drafted plan was shared with the departments for review and provides their critical input for improvisation of the DDMP, 2018.

Sharing and placing before DDMA for approval

All the DDMA members hold the meeting under the chairmanship of District Collector. Final DDMP, 2018 was placed before DDMA on 30.5.2018 and approved. The proceedings of the meeting are attached for reference in annexure.

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Chapter -14

Lessons learnt and Documentation

Drought is the major natural calamity arises due to absence of rainfall for a period of time in the district. A *drought* is a period of below-average precipitation in a given region; resulting in prolonged shortages in its water supply, whether atmospheric, surface water or ground water.

In Jharsuguda district in 2015 draught affected the whole district. All the five blocks were affected causing distress for farmers. The below table represents the block level annual rainfall and cultivated area in hectors.

Table No- 17

Sl. No.	Name of the Block	Average Annual Rain Fall	Ground Water Level	Cultivated Area (In Hectares)			
				Paddy		Non- Paddy	
				Rain fed Area In hecters	Irrigated area In hc	Rain fed Area in hc	Irrigated area
1	Jharsuguda	90.00	24.51%	2388.470	2657	23.18	-
2	Lakhanpur	108.78	26.82%	10895.800	7938	49.90	-
3	Kolabira	80.59	19.51%	4746.590	1790	19.58	-
4	Laikera	93.58	24.51%	7231.551	1733	27.21	-
5	Kirmira	89.93	39.61%	4364.82	6947	55.89	-

Table No. 18: Drought 2015

Sl. No.	Name of the Block	Year- 2015			
		No. of GPs experienced drought	No. of Villages affected	Agricultural Crop Area lost (in Hectares)	
				Paddy	Non-Paddy
1	Jharsuguda	17	66	2388.470	nil
2	Lakhanpur	33	124	10895.800	nil
3	Kolabira	9	47	4746.590	nil
4	Laikera	11	45	7231.551	nil
5	Kirmira	8	42	4364.82	nil

Drought is a natural hazard, it has a slow onset, and it evolves over months or even years. It affected the whole Jharsuguda district in the year2015 and causes severe crop damage. 29627.226 hectors of agricultural fields were draught affected, 31503 numbers of farmers affected due to draught. Government provided 20, 00,00000 input subsidy to farmers. The impacts of drought can be reduced through preparedness and mitigation.Under the chairmanship of Collector, the Agricultural department, RWSS, RD, Horticulture etc developed an integrated plan to reduce the draught in the district.

The components of a drought preparedness and mitigation plan were the following:

- Prediction
- Monitoring
- Impact assessment
- Response.

Prediction can benefit from climate studies which use coupled ocean/atmosphere models, survey of snow packs, anomalous circulation patterns in the ocean and atmosphere, soil moisture, assimilation of remotely sensed data into numerical prediction models, and knowledge of stored water available for domestic, stock, and irrigation uses.

Monitoring exists in countries which use ground-based information such as rainfall, weather, crop conditions and water availability. Satellite observations complement data collected by ground systems. Satellites are necessary for the provision of synoptic, wide-area coverage.

Impact assessment is carried out on the basis of land-use type, persistence of stressed conditions, demographics and existing infrastructure, intensity and areal extent, and its effect on agricultural yield, public health, water quantity and quality, and building subsidence.

Response includes improved drought monitoring, better water and crop management, augmentation of water supplies with groundwater, increased public awareness and education, intensified watershed and local planning, reduction in water demand, and water conservation.

Drought preparedness and mitigation can be accomplished with the following practices: (1) soil and water conservation, and (2) herd management.

Soil and Water Conservation

Conservation practices minimize the disruption of the soil's structure, composition and natural biodiversity, thereby reducing erosion and soil degradation, surface runoff, and water pollution. The following are established practices of soil and water conservation:

- Crop rotation

- Contoured row crops
- Terracing
- Tillage practices
- Erosion-control structures
- Water retention and detention structures
- Windbreaks and shelterbelts
- Litter management
- Reclamation of salt-affected soil.

Water-supply projects were also implemented for drought mitigation, with a view to strengthen drought preparedness. Activities such as water-use planning, rain-water harvesting, runoff collection using surface and underground structures, improved management of channels and wells, exploration of additional water resources through drilling and dam construction, are implemented as a part of a drought-mitigation plan.

To increase moisture availability, the following in-situ moisture-conservation practices can be adopted:

- ✓ For agricultural crops, measures include ridges and furrows, basins, and water spreading.
- ✓ For tree crops, measures include saucer, semi-circular bunds, crescent-shaped bunds, catch pits and deep pitting.
- ✓ Rainwater harvesting collects rainfall or moisture for immediate or eventual use in irrigation or domestic supplies. Part of the rainwater collected from roofs can be stored in a cistern or tank for later use.
- ✓ Landscape contouring is used to direct runoff into areas planted with trees, shrubs, and turf.

Draught mitigation and preparedness is a continuous process. Farmer's cognizance of draught is very much necessary to tackle the natural calamity.

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