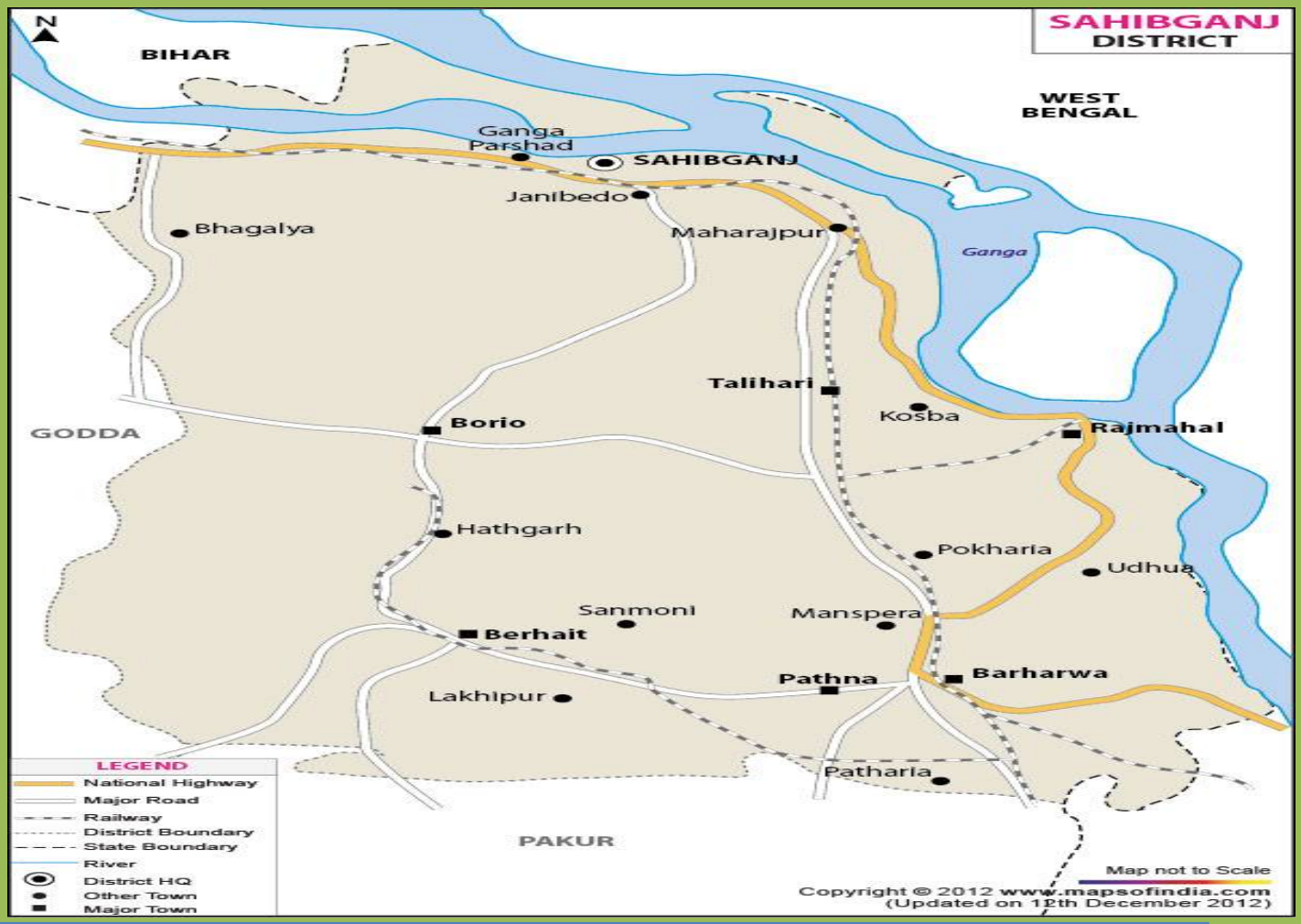
DISTRICT DISASTER MANAGEMENT PLAN OF SAHEBGANJ (2017)



***Prepared By*:**

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In-case of Disaster Contact

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Disaster Management Plan Sahebganj

झारखण्ड सरकार

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Chapter I

Introduction to District Disaster Management Plan

Under this heading there would be a brief discretion with figures so that one can understand the overview of the whole plan.

2015.2. **Need for DDMP:**

Disaster = Hazard X Vulnerability.

Hazards are natural or man-made; we humans can't prevent hazards but can reduce the vulnerability to reduce the risk, known as DRR (disaster risk reduction). For better DRR and management it is important to have planning well in advance so that people can work more professionally. And for doing so, the advance planning is required at the national, state, district, panchayat and village and even family and individual levels.

Changes in Methodology:
Earlier there were activities only post a disaster which included Response and Recovery but now the activities also involve pre-disaster occurrence activities like Mitigation and preparation too.
Earlier after an event used to occur authorities used to make plan to respond to the situation and rescue the people and after that pay the victims but nowadays plans are made and resources are gathered before the event occur. Early warning systems play an important role in forecasting the occurrence and people are warned and moved from the site before the event occurs, saving many lives.

1.2 Objective of plan and way to deliver:

The objective is to reduce the vulnerability of population to the hazard and reduce the risk of a disaster.

- To deliver it effective planning is needed along with resources and preparation.
- Early warning systems are needed to work effectively so that evacuation can take place before the event strikes and lives can be saved.
- Awareness about what to do in occurrences of different kind of disaster should be well spread and mock drill should be done at regular intervals.
- A team capable of handling different disasters should be prepared and trained.
- Emergency helplines numbers should be available and monitored.
- Resources should be counted, known and tracked at regular intervals.

Period in which plan should be updated:

- Every 6 months there should be counting of resources and man power availability.
- Every year the plan should be updated based on recent events and event of last year.

District At A Glance

1.3) History of District:

The history of Sahibganj district is rich and interesting. It centers mainly on the history of Rajmahal, Teliagarhi Fort and Sahibganj Town itself. The history of Sahibganj district is inseparable from the history of its parent district of Santhal Pargana with its headquarters at Dumka and is inter-related with the histories of Godda, Dumka, Deoghar and Pakur districts.

As a direct consequence of the Santhal Hul or Rebellion of 1854-55 led by Sido and Kanu brothers Santhal Pargana has been created as a separate district in 1855 by ceding portions of Bhagalpur (which is presently in Bihar) and Birbhum (which is presently in West Bengal) district. The entire Santhal Pargana along with portions of the present Hazaribagh, Munger, Jamui, Lakhisarai, Begusarai, Saharsa, a part of Purnia and Bhagalpur, districts was termed as "Jungle Terai" by the English on assumption of Diwani in Sept. 1763 from Shah Alam II at Allahabad after the Allahabad Treaty.

Early History:-

There is evidence in the pages of history that the area is inhabited since time immemorial only by Malers (Mal Paharia). They were the early settlers of the territory of Rajmahal hills, who still reside in some areas of the same hills. They are considered to be the "Malli" mentioned in the notes of Megasthenese, Greek Ambassador of Selukus Nikater, who happened to be in the vicinity of Rajmahal hills in 302 BC. Till the visit of Chinese traveller Hiuen Tsang in 645 AD, the history of this area was wrapped in obscurity. In his travellogue the Chinese pilgrime mentions about the Fort of Teliagarhi, when he saw the lofty bricks and stone tower not far from the Ganges. We gathered information through the pages of history that it was certainly a Buddhist Vihar.

Medieval Period:-

A continuous history of the district is available from the 13th Century when Teliagarhi became the main gateway of Muslim armies marching to and from Bengal. During the Turkish dynasty rule in Delhi, Malik Ikhtiaruddin-bin-Bakhtiar Khilji marched towards Bengal and Assam trough Teliagrahi pass. He captured Bengal and its king Lakshaman Sena fled away to Cooch Behar. In 1538, Sher Shah Suri and Humayun came face to face for a decisive battle near Teliagarhi. On 12th July 1576, the battle of Rajmahal was fought and the foundation of the Mughal rule in Bengal was laid. It was Man Singh, the most trusted general of Akbar, who in the capacity of Viceroy of Bengal and Bihar made Rajmahal the capital of Bengal in 1592. But this honour of Rajmahal was short-lived, for the capital was shifted to Dacca in 1608. Shortly after this, Teliagarhi and Rajmahal became the seat of a fierce battle between the rebellious Prince Shahjahan and Ibrahim Khan. Shahjahan emerged victorious and became the master of Bengal for the time being, losing finally in 1624 at Allahabad.

In 1639, Rajmahal regained its glory and was once more made the capital of Bengal by Shah Shuja, the second son of Emperor Shahjahan, on his appointment as the Viceroy of Bengal. It continued as the seat of the Mughal Viceroy up to 1660 and a mint town till 1661. It was at Rajmahal that Dr. Gabriel Boughten cured the daughter of Shah Shuja. By this

means Dr. Boughten succeeded in securing an order from Shah Shuja giving the English the liberty to trade in Bengal. Thus the minutest foundation of the British rule was laid here. The fugitive Nawab of Bengal Siraj-ud-Daula was captured at Rajmahal during his flight after the Battle of Plassey in 1757.

BRITISH PERIOD:-

The victory at Plassey made British master of the then Bengal which contained the present Sahibganj District. In Santhal Pargana, they were up against a band of simple but determined opponents, the Paharias. Paharias were great lovers of freedom and could not tolerate any intruder in their homeland. The English were very much concerned and Warren Hastings the Governor General of India organized a special corps of 800 men in 1772 to curb the Paharias. The corps was put under the command of Captain Brooke, who was appointed the Military Governor of the Jungle terai. He partly succeeded in his mission. Captain James Browne, who succeeded Brooke in 1774, found himself busy mostly in suppressing the rebellion of the Bhuniyas. He however, prepared a scheme to win over the Paharias, which was left to be elaborated and put into action actually by Augustus Cleveland the first British Collector of Rajmahal. He introduced the system of trial of cases by an assembly of chiefs. This system received further sanction by Regulation I of 1796, which made it obligatory on the Magistrate to commit all-important cases for trial by the assembly of Chiefs. The Magistrate was, of course, to attend the trial as a superintending officer and had the power to confirm or modify the punishment. This show of self-rule continued till 1827 when Paharias were declared amenable to ordinary courts of law, though they even then enjoyed the privilege to settle pretty disputes.

One of the successors of Augustus Cleveland, Mr. J. Sutherland, who in the capacity of Joint Magistrate of Bhagalpur toured the old district of Santhal Pargana in 1818 to enquire into the causes of local unrest and in 1819 suggested to the Fort William, Calcutta, that the hill tracts inhabited by the tribals should be declared the direct property of Government so that they could be looked after better as a follow-up action of the above suggestion, in 1824. John Perty Ward was deputed to demarcate the Government Estate. He was assisted by Captain Tanner, a Survey Officer. This Estate was named as "Damin-i-koh", a Persian term meaning, 'skirts of the hills'. The work was over in 1837 and Mr. Pontet, Deputy Collector was made in-charge of the revenue administration of the Damin area in the same year. The pouring in of Santhals was encouraged for clearing the jungle for the purpose of cultivation. One got the impression that all was well with the administration and that the Santhals were happy. But it was illusive. The internal set-up of the administrative system could not ensure proper justice to the common man and there was a deep underlying discontent among the simple minded but excitable Santhals.

SANTHAL REBALLION (HUL), 1855:-

Santhals settled in the district migrating from Birbhum, Bankura, Hazaribag and Rohtas between 1790 to 1810. As per William W. Hunter "The Permanent Settlement for the land tax in 1790 resulted in general extension of tillage and the Santhals were hired to rid the lowlands of the wild beasts which, since the great famine of 1769, had everywhere encroached upon the margin of cultivation".

The Santhals who were encouraged to settle in the district were simple and hardy. Their words were a knot of tie. Thus they fell an easy prey to the unscrupulous hillmen and non-Santhal traders. Chaudhary, P.C. Roy writer of the new Gazatteer of Santhal Praganas held the view that "It was common practice for the hillmen to apply for grant of land on condition of cultivating it themselves but they frequently gave it to Santhals, in the hope of collecting rents from them. Baniyas and mahajans, made heavy exaction from the innocent Santhals and there was no check on them. The local administration was extremely corrupt. In the area where Santhals had settled in large numbers, the Naib Sazwals, assistants of the English superintendents, were greedy and oppressive". The police were equally corrupt. The Santhals were used to ready justice at no cost. But to add to their hardship they had to trek a long way, either to Jangipur in Murshidabad district or to Bhagalpur for justice as the civil and criminal courts were located there. If at all they could get the justice there, it proved too costly for them. To add to their injury the court staff and lawyers all pounced on them and exploited them to the maximum."

Besides, there was the 'Kamauti' system. The idea of it was repayment of a debt by physical labour. In practice, however the debtor worked in many cases for a generation or two and yet the loan, no matter how small, could not be repaid. The mahajans were crooked and took advantage of the meekness of Santhals. Disgruntled, thus the Santhals felt insecure and their discontent was sharpened as their co-tribesmen outside the clutches of mahajans and banias earned a handsome wages in the forests which were being cleared for the rail lines to be laid. These entire facts and circumstances led to the Santhal Hul or Rebellion of 1855.

The Santhals got leaders in Sido, Kanu, Chand and Bhairab all the four brothers of village Bhognadih near Barhait of Sahibganj district. Chandrai and Simgrai were also the main figures. Singrai was the son of Baijal Manjhi of Littipara. Kanu was killed in action and Sido was arrested and hanged at Barhait.

The object of the Santhal uprising was the economic emancipation of the Santhals. The first spark of the revolt was ignited at Littipara. Kena Ram Bhagat was a leading merchant and moneylender of Amrapara. The altercation, which took place, led to the arrest of Baijai Manjhi, who was sent to Bhagalpur jail where he died shortly after without any trial. His son Singrai raised the banner of revolt who was also hanged in Barhait bazaar after summary trial. The Santhals became infuriated and Hul ensured as precursor of so called first Indian Freedom Movement of 1857. Without going in depth of the disturbance, the foreign rulers took this as a challenge to their authority and pounced upon the Santhals with mighty forces and engaged troops to quell the disturbances. As the English tried to arrest the Santhals and thereby protect the 'dikus' or the disturber whom the Santhals had branded as their enemy, the trouble spread over a large area covering present Santhal Pargana division, Birbhum, Bankura and Hazaribagh district. A large number of troops were forced into action and all sorts of atrocities were resorted to. But for a brief lull for about a month in September 1855, waves of rising continued upto December 1855. Martial law was proclaimed on the 10th November 1855 and with ruthless hands, the British Government succeeded in suppressing the rebellion by December 1855. On the 3rd January 1856, the operation of the Martial law was suspended.

FREEDOM MOVEMENT:-

Sahibganj was not immune from patriotic fervor, and played its role in the country's struggle for freedom from 1921 onwards. Even in the hills and forests of Sahibganj, there was a patriot named Lambodar Mukherjee moving and rousing the people telling the simple folk who they really were and what they should be. He brought to them the outside world, so securely closed by the British, with the help of lantern slides.

The district played its role in the Salt Satyagrah Movement and the Civil Disobedience Movement of 1930 and in the boycott of foreign liquors and cloths. The movement gathered momentum and Government had to send military forces and use violence to control the situation. Paharias reacted very favourably to the Civil Disobedience Movement, and some of them moved about appealing the Santhals and the Paharias to join hands with the freedom fighters.

The 1942 movement also spread to entire Santhal Pargana division, for that matter in 7abours7j and on the 11th August 1942 a general strike was observed. On the 12th August 1942 a procession was taken out at Godda and soon the entire district was aflame. Thus the district of Santhal Pargana marched hand-in-hand with other parts of the State in the protracted struggle for country's freedom which yielded the result on 15th August 1947 in the form of end of slavery.

POST 1947:-

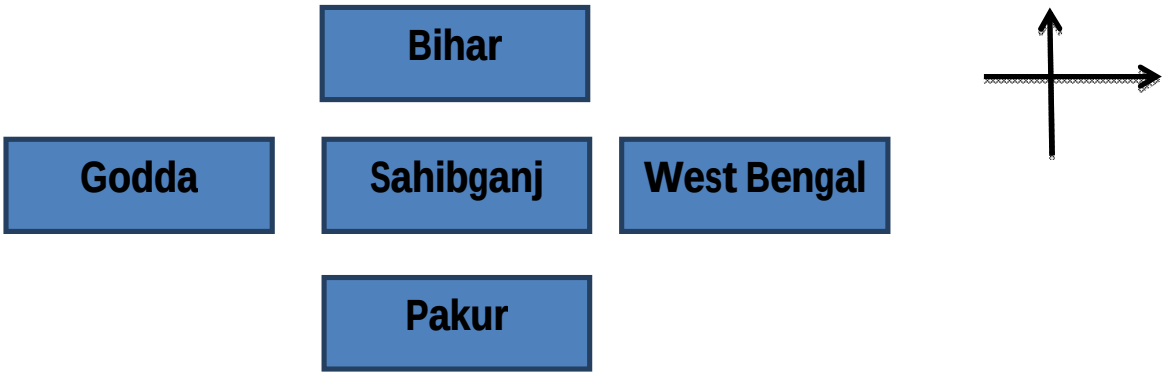
Government considered the Paharias and other tribals of Rajmahal hills as demographically underdeveloped section of society and embarked on policies and plans for their emancipation. Government's efforts in the past could not bring the desired results and the district continued to remain relatively backward.. The Jharkhand Movement for more empowerment spearheaded by tribals and demand for separate statehood thus gained momentum and finally on 15th

November 2000, a separate state named as Jharkhand came into existence comprising the 18 districts of the Chota Nagpur and Santhal Pargana divisions.

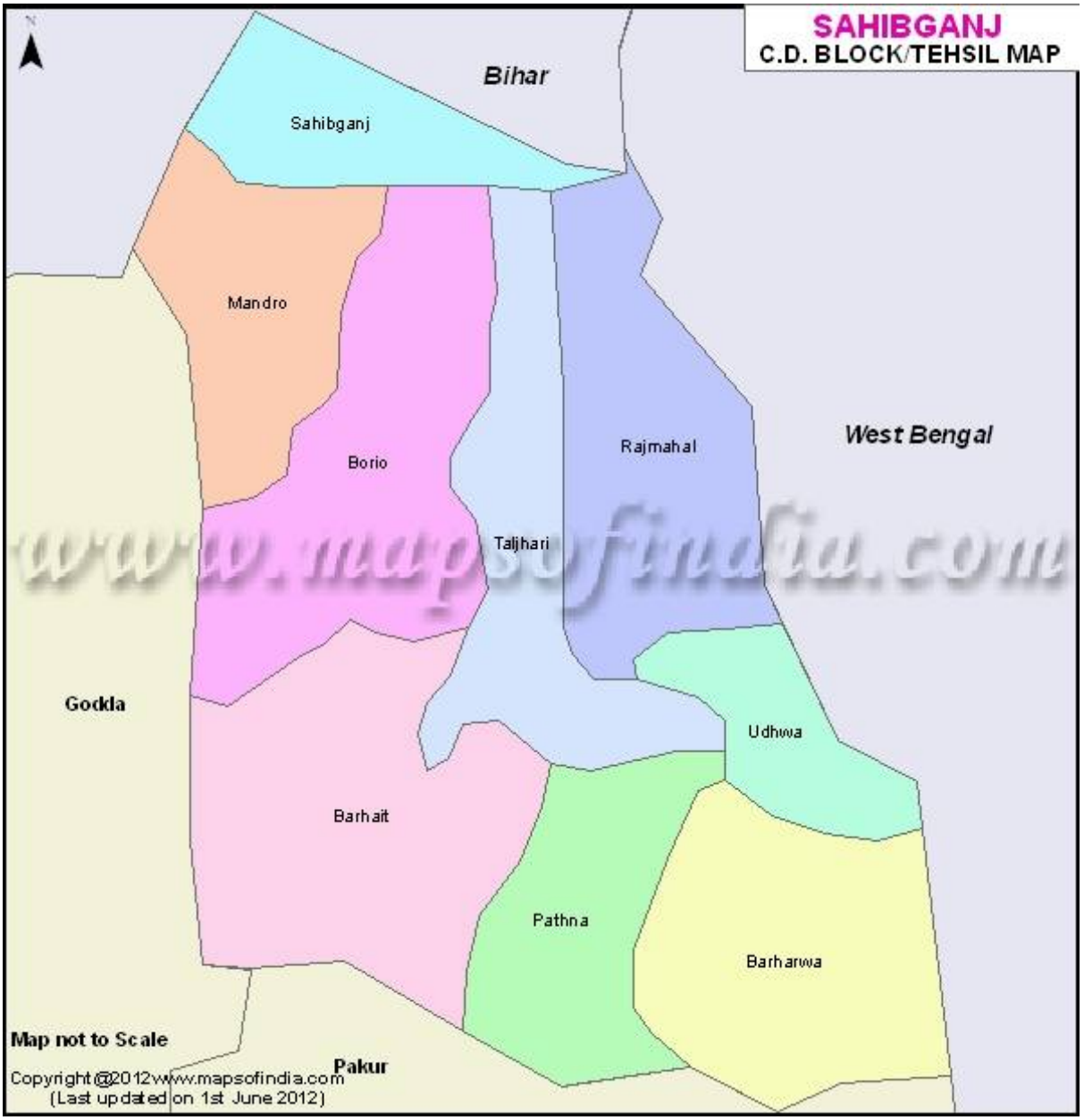
1.4 Administrative Features:

Sahibganj District is located in the North-Eastern part of the state. It is surrounded by Thakurgangti and Boarijor Blocks [Godda District] in the West, Sundarpahari Block [Godda District] in the South-West, Litipara, Hiranpur and Pakur Blocks[Pakur District] in the South, Bihar in North and North-West and West Bengal in East and South-East.

1.5 Map of the District describing direction:



Sahibganj District covers the area of 2266 Sq. Kms. It is at $87^0$25' East to $87^0$54' East Latitude and $24^0$42'North to $25^0$21'North Longitude. The district has 2 Sub-divisions, 9 blocks and 1 Municipality.



1.6 Demographic Trend:

This district has a population of 1,150,567 persons. The density of population here is noted to be 558 people/ sq. Km as per Census 2011.

The population increased about 1.2 times in the last 10 years. The growth rate was 24.01% per annum between 2001-2011; it increased from 25.91% in the next decade.

SUB-DIVISIONS	TOTAL	BLOCKS	CIRCLES	Population	NO.OF GRAM PANCHAYATS	NO. OF VILLAGES	
						INHABI-TATED	UNINHA-

							BITATED
Sahibganj	1.Sahibganj	1.Sahibganj	11	73867	32	23	09
	2.Mandro	2.Mandro	12	75663	228	179	49
	3.Borio	3.Borio	17	90601	344	264	80
	4.Barhait	4.Barhait	22	115706	275	190	85
Rajmahal	5.Taljhari	5.Taljhari	13	76156	273	195	78
	6.Rajmahal	6.Rajmahal	23	140574	147	98	49
	7.Udhwa	7.Udhwa	26	167833	129	79	50
	8.Pathna	8.Pathna	13	82060	150	124	26
	9.Barharwa	9.Barharwa	29	168132	241	155	86
TOTAL			166	1150038	1819	1307	512

Total Population	1150038
Total Male	590390
Total Female	559648
Total SC	4.08%
Total ST	23.13%
Total BPL	
Total Urban Population	159446 Male – 83630 Female – 75815
Total Population of Nagar Panchayat	22422 Male – 11815 Female – 10707
Total Population of Nagar Parishad	88084 Male-48578 Female- 41506
Total Rural Population	990592 Male-506729 Female – 483833
Permanent Disability	20 (Mental Retardness)
Handicapped Person	5380
Blind Person	644
Total No. of Households	

Total Panchayat	166
Total Village	1809
% Growth in the population from 2001to 2011	
Total Child (0-6yrs) population	216402 Male – 110704 Female – 105696
Literacy	53.57%
Male Literacy	62.65%
Female Literacy	44.31%
Per Capita Income	
MMR	
IMR	
CMR	
Complete Immunization Rate	
Total Primary Schools	574 , Wefare Sch-04, Paharia Wefare Sch-19
Total Middle Schools	109
Total High Schools	36
Total Inter Colleges	01
Total Colleges	04
Total District Hospital	01
Total Sub Divisional Hospital	01
Total Referral Hospital	01
Total CHC	05
Total PHC	10
Total APHC	Nil
Total HSC	

A2	Permanent Disability	
A2.1	Handicapped Persons	
A2.2	Blind Persons	
A3	Total No. Of Families	
A3.1	Total BPL Families	
A4	Literacy Rate Of District	
A4.1	Male Literacy Rate	73.20%
A4.2	Female Literacy Rate	79.52%
A4.3	Total Literacy Rate	69.23%

Land Details

1. Forest covered Land- 28425 Ha
2. Other Land- 2012.14 Acre
3. Agricultural land- 103049.46 Ha

4. Non- agricultural Land- 8585.44 Ha
5. Khasmahal Land- 1421.00 Acre
6. Transfer Land to other department- 243.25 Acre
7. Khasmahal Urban Circle- 08
8. Khasmahal Rural Circle- 02
9. Leased No. Of Land- No. 2566 and Land- 1085.94 Acre
10. Renewed leased- 1.51 Acre
11. Request for renew of Leased Land- 1082.60 Acre
12. Rest khasmahal Land- 102.85
13. Average rain fall- 1404.09 mm
14. Regular rain fall- 1304.20 mm

Administrative details

1. Sub division- 02
2. No. Of Blocks- 09
3. No. Of Tahsils- 09
4. Corporation- 1
5. Gram Panchayats- 166

Educational Institutions-

1. Primary Schools- 574
2. Middle Schools- 109
3. High Schools- 36
4. Primary School teacher training institution- 01
5. No. Of Colleges- 04
6. Child labor rehabilitation school- 08
7. Industrial training Institutes- 01
8. Literacy rate- 53.57% (Male- 62.65%, Female- 44.31%)

Total Road Communications 2067.03 Km and the details are:-

1. National High Way No. 80 - 93.05 Km
2. State High way - 167.76 Km
3. District Road - 178.04 Km
4. Link Road - 10.00 Km
5. Kachha Road - 1618.00 Km

Historical Places-

1. Rajmahal- Kanheya Stan - Sri Chaitanya had versioned Lord Krishna here.
   Mangalahat - Jama Mosque
2. Udhwa- Palasgaddi - In 1658 governor of west Bengal Raj Kumar Saha and Mir

Jumla, Comander of Aurangajeb had fought here and Mir Jumla won it.

Udhwanala - Fight of Udhwanala happened here in 11th Aug 1763 between Nawab Mir Kasim and British Commander Major Adams in which British won.

Patodajhill - Patodajhill is the only Lake in Jharkhand which attract foreign birds during winter.

3. Taljhari- Maharajpur - Motijharna (Water fall) and the temple of lord Shiva.
4. Barhet Sivgadi - Historic lord Shiva temple.
5. Patna Bindudham - Bindubhasini Devi Temple is situated here.
6. Mandro Teliagadi - Fort of Telia King is situated here where Maa Raski Temple is also situated where Telia king was worshiping.

Block Wise Details-

Sl. No.	Name of the Block	Area (Sq. Km)	No. Of Village			Mauja			No. Of Halka
			Revenue	others	Total	Pradhani Mauja	Khas Mauja	Total Mauja	
1	Sahibganj	173.27	22	13	35	-	40	40	10
2	Borio	261.74	266	86	352	315	02	317	08
3	Mandro	123.52	185	43	228	256	03	259	07
4	Barhet	308.82	195	80	275	272	03	275	11
5	Rajmahal	126.93	95	45	140	21	122	143	07
6	Udhawa	199.13	79	50	129	30	80	110	06
7	Barharwa	187.25	154	87	241	35	168	203	08
8	Patna	163.16	123	27	150	150	-	150	08
9	Taljhari	158.23	193	80	273	271	02	273	08
Total		**1702.10**	**1312**	**511**	**1823**	**1350**	**420**	**1770**	**73**

Physiography

1.7 Occupational Structure:

A large part of this district is hilly. The region on the bank of the Ganges is fertile and richly cultivated. The district may be divided into two natural divisions on the basis of its geographical location and cultivable land.

First region consists of Borio, Mandro, Barhait, Pathna and Taljhari blocks and lies under Damin-I-koh area. The hills and slopes are covered with forests, once dense but scanty now. The valleys have cultivable lands, yielding mostly paddy. The inhabitants of this region are generally Paharias, Mal Paharias and Santhals. The inhabitants on the hill top cultivate Barbatti and maize using rain water.

The second region consists of Sahibganj, Rajmahal, Udhwa and Barharwa blocks. This plain region consists of the uplands, undulation along ridges and depressions. The Ganges, Gumani and Bansloi rivers flow through this region. This area has plenty of fertile lands and is richly cultivated. The inhabitants of this region are mainly middle class people of different castes, Paharias and Santhals.

1.8 Geography & Jurassic Belt:

The belt is made up mostly of hills and slopes covered with forests. Plain region consists of the uplands, undulation along ridges and depressions. The Ganges, Gumani and Bansloi rivers flow through this region. This area has plenty of fertile lands and is richly cultivated.

Occupation other than agriculture consist of mining, fisheries, live stock rearing and traditional cottage and village industries. The Rajmahal Hills are source of building and road stones. Pakur chips, /kaolin and Bentonite (multani mitti) is also found in the region.

The traditional cottage and village industries practiced by the Santhals and the Paharias constitute tasar rearing, village black-smithy, carpentry, handloom weaving, rope making, bidi making, earthen ware making, stone ware making, etc. There is no large-scale industry available in the area mainly due to lack of infrastructure support. A number of small-scale industries have been set up in the district. Most of these are based on mining and related querying activities.

1.9 Climate:

The nearness to West Bengal and varied elevations influence the climatic condition. During winter it becomes cool and record average temperature of 15°C but during summer temperature ranges from 30°C to 40C.

1.10 Rainfall:

The district receives an annual rainfall of 1500 mm. and most of the rainfall occurs during the rainy season. It is not sufficient as the area is hilly and most water moves away after the rainy season.

1.11 Drainage System

The topography of this District is hilly type. Hence the water during the rainy season flows away to nearby states but due to the Ganges, this area is prone to flood in rainy season. Major drain lines are Gumani and Udhava nala.

1.12 Agriculture & Animal Husbandry:

Agriculture is affected sector due to flood in Ganges during rainy season and water storage is a not sufficient, and as the area is hilly most water flows away after the rainy season.
As per 2001 census 2, 55, 838 people were involved in agriculture (27.5%) in which 1, 53,176 are males and 1, 02,662 are females.
As per the 2001 census 55,812 people were involved in household industry, 1, 14,193 in other works and 5, 39,725 are not working.

1.13 Crops:

The major crops of Sahibganj District are Paddy, Maize, Arhar, Urad, Moong, Groundnut, Soyabean, Til, Jowar, Bajra, Mahua, Wheat, Rai, Tisi, Maize, Gram and Sunflower.

Kharif Crops (Sown in July, Reaped in Sept/Oct)	Paddy, Maize, Arhar, Urad, Moong, Groundnut, Soyabean, Til, Jowar, Bajra, Mahua

Rabi Crops (Sown in Oct, Reaped in Jan/Feb)	Wheat, Rai, Tisi, Maize, Gram, Sunflower

1.14 Hydrology:

The development of any area largely depends on the quality of water as well as quantity of ground water. As far as Sahibganj District is concerned drinking water / irrigation water is obtained from wells, tube wells, ponds and river Ganga.

1.15 Irrigated areas:

The total cultivable land available in Sahibganj District is 1,03,049.46 Hec. Out of which 8,484 Acre area is irrigated through wells, ponds and canals.

1.16 Flora & Fauna:

Owing to large scale unscrupulous felling the region once known for its thick and extensive forests is now bereft of much of its jungle wealth. The Forest department has undertaken afforestation of these areas.

The most common tree found in the district is sal (Shorea Robusta). Some teak, though not of good quality, is also found. Some other trees found in the district are Jackfruit, Murga, Simal, Bamboo, Asan and Satsal. Sal and Simal logs and Jackfruit are exported in large quantities to the neighboring districts and also to the places outside Jharkhand.

1.17 **Fisheries:**

The extensive bed of the Ganges at Sahibganj and Rajmahal offers one of the best fields in the state for collection of fish spawn and fishing. The spawn of Rohu, Katla, Mirga, Catfish and Hilsa is collected from the Barhait valley.

1.18 Industrial Profile:

The traditional cottage and village industries practiced by the Santhals and the Paharias constitute tasar rearing, village black-smithy, carpentry, handloom weaving, rope making, bidi making, earthen ware making, stone ware making, etc. There is no large-scale industry available in the area mainly due to lack of infrastructure support. A number of small-scale industries have been set up in the district. Most of these are based on mining and related querrying activities. There is a good potential for setting up china clay industries.

Chapter 2

Hazard Risk Vulnerability Assessment

2.1 Introduction:

Name of the District: Sahibganj

No. of Sub- Division: 2

No. of blocks: 9

No. of village: 1819

Disaster Vulnerability of the district

Hazard	Severity (use symbol only)	Last incidence (mm/yy)
Earthquake	H	
Flood	H	SEP/13
Storm serge	L	
Lightning	L	
Mining Disaster	L	
Train Accident	L	JAN/12
Fire	H	

Symbol- High= H, Medium= M, Low= L

Date of district Contigency Plan confirmation: 01/10/2015

Mock drill conducted on: Not yet Conducted

Last revised: _01/05/2016

Intensity of the Disasters in the District:

Name of Hazard	***Sensitivity***
Earthquake	Moderate to High
Flood	Very High
Drought	High
Lightening	Very High
Fire	High
Forest Fire	Moderate
Mining Disaster	High

Occurance of Disaster in the District:

Type of Disaster	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Flood	N	N	Y	Y	Y	N	N	Y
Drought	Y	Y	N	N	Y	N	N	N

Fire	Y	Y	N	N	Y	Y	Y	Y
Hailstorm	N	N	N	N	N	N	N	N
Lightening	Y	Y	Y	Y	Y	Y	Y	Y

Disaster Vulnerability and Impacts

Type of Disaster	Potential impact	Areas affected
Flood	Death, Injuries, Loss to property	Sahibganj, Rajmahal, Udhwa and Taljhari.
Drought	Lack of drinking water, crop failure, poor health condition, Malnutrition job scarcity for 17abours, Migration, trafficking, Domestic violence etc.	Whole District
Lightening	Death, Injuries, Loss to property	Whole district
Sunstroke	Death, illness	Whole district
Fire and Forest Fire	Death, Injuries, Loss to property	Whole District
Earthquake	Death, Injuries and Loss to property and Environment.	Whole District
Road accidents	Death, injury	Whole District
Mining Disaster	Death, Injuries	All the mines

DISASTER RISK ANALYSIS

Type of Hazards	Jan-Mar			April- June			July-Sep			Oct- Dec		
Flood												
Drought												
Lightening												
Sunstroke												
Fire and Forest fire												
Earthquake												
Road accidents												
Mining Disaster												

Impact of Fire Disaster in Sahibganj District:-

Incidences of Fire in Sahibganj in Urban as Well as in Rural areas in being increasing due to growing urbanization and ignorance to the Fire safety norms and regulation. District Fire Brigade department has only 8 staff at present despite of total sanctioned post of 25. Details of Fire incidences in last three years are as follows:-

Year	Small Fire	Medium Fire	Big Fire	Rural Fire	Urban Fire	Loss of Life	Loss of Wealth
2009	18	21	8	7	23	-	65.08lakh
2010	33	7	17	41	17	8	2.62 crore
2011	17	6	9	19	12	-	57.71lakh
2012	20	11	5	17	17	-	19.06lakh

2013 **2014**	- 01	- 01	01 01	01 03	- -	- 01	- -
In charge District Fire Station							

2.2 Disaster Analysis

2.2.1 Flood

As mentioned in the map here with, the area of district on **Ganga** river sides/costal sides/creeks/low-lying are flood prone, (31) wards were affected due to flood in **2013** year. In Recent Past since 2007/08 to 2015/16 the flood hit 4 times in th the District, around 14 blocks were hit by the flood in the duration of 9 years and 7,18,026 people were affected by the flood.

Flood Situation at Sahibganj and the Loss in the last dacade:-

Year	N0. Of Block affected	N0. Of Persons affected	No. of animals affected	Value Of damaged Crops (Rs.)	No. of Houses Damaged	Value of damaged houses (Rs.)	N0. Of lives lost	Expenditure incurred on Flood Relief (Rs.)
2007-08	04	10449	Nil	Nil		27,84,000.00	06	38,84,000.00
2008-09	Nil	Nil	Nil	Nil		Nil	Nil	Nil
2009-10	Nil	Nil	Nil	Nil		Nil	Nil	Nil
2010-11	Nil	Nil	Nil	Nil		Nil	Nil	Nil
2011-12	04	596226	Nil	2,45,97,000.00	650	65,75,000.00	10	56,57,021.00
2012-13	01	56	Nil	Nil		Nil	Nil	
2013-14	05	111295	10085	3,89,37,500.00	528	21,21,300.00	01	3,08,60,973.00
2014-15	Nil	Nil	Nil	Nil		Nil	Nil	Nil
2015-16	Nil	Nil	Nil	Nil		Nil	Nil	Nil
2016-17	07	135587	5000	39,13,105.00	74	2,97,800.00	06	2,77,87,360.00
Total	**14**	**7,18,026**	**10085**	**6,74,47,605.00**	**1178**	**1,17,87,100.00**	**17**	**6,81,89,354.00**

Since 2007, Sahibganj has been hit by flood 4 times and around 7, 18,026 people and 10085 animals were affected by the flood. In this flood 17 person died and the the loss estimated that Rs. 6,35,34,500.00 crop was damaged and 1178 houses were damaged which worth Rs. 1,14,80,300.00. Due to this flood Rs. 4,04,01,994.00 was given as Relief to the victims from the SDR Fund.

Flood Response Plan of Sahebganj District:-

- Ganga Anti Erosion Action Plan is being implemented by the centrally sponsored Ganga Pump Canal Project, Sahibganj. The adjacent Ganga River Bank side is eroded almost by 1.6k.m. The ongoing project is able to complete the anti erosion Revetment work in the stretch of 2.978k.m.
- The River Flow level is being continuously monitored by the Ganga Pump Canal Project Unit. The normal level of Ganga at Sahibganj is 22mtr and Danger level is 27.25mtr
- Central Water Commission intensively monitors the River Water level thrice a day and shares the information with District administration on daily basis.
- Rainfall Measuring Instrument is being installed in all the Blocks and functioning.
- District administration acquires almost 244 country and mechanized boat during the time of Flood.
- Prepositioning of Five quintals of Rice in the PDS of each Panchayat is done.
- Flood Post (Badh Chowki) is created in the entire flood affected Blocks to outreach the Search, Rescue and Relief operation in the proximity of the affected Villages.
- Apda Mitra (Volunteer) is identified in the entire Flood affected Villages and their Contact no. are documented in the Disaster Management Department of the District.
- Prepositioning of Bleaching Powder, Halozene Tablets, ORS, First Aid medicine is done at all the Primary Health Center , Health Sub Center and Anganwadi.
- Water and Sanitation department prepares all the Relief Shelter with the supply of safe drinking Water, Hygiene and Sanitation.
- District Control Room becomes operation for 24x7 periods at the District HQ having contact number of 06436-224593.
- All the Sub Division Offices, Block offices, District Health Office and Revenue department is provided with 145 Life Jackets.

Check List for Information from District Disaster Management Authority, Sahibganj, in the context of preparedness for South West Moonsoon-2016

Sl. No.	Subject	Action/Steps Taken	Status
1.	Status of District Disaster Management Plan (DDMP)	DDMP of the district has been updated as per the NDMA template, Relief Standards and Standard Operation Procedure recommended by Hon'ble Supreme Court.	Updated
2.	Vulnerability Assessment	Vulnerability Assessment has been carried out in view of the past incident matrix of the district and incorporated in the DDMP. The villages and pockets getting affected by the flood are identified and list has been prepared looking into the past history and incidents.	Done
3.	Dissemination of Warning	Ganga Canal Project is the agency which monitors the water level at Ganga. They provide regular updates to the DDMA and inform prior to any warning situation when the water level likely to increase or close to the danger	Prepared with the mechanism for the Early Warning of flood

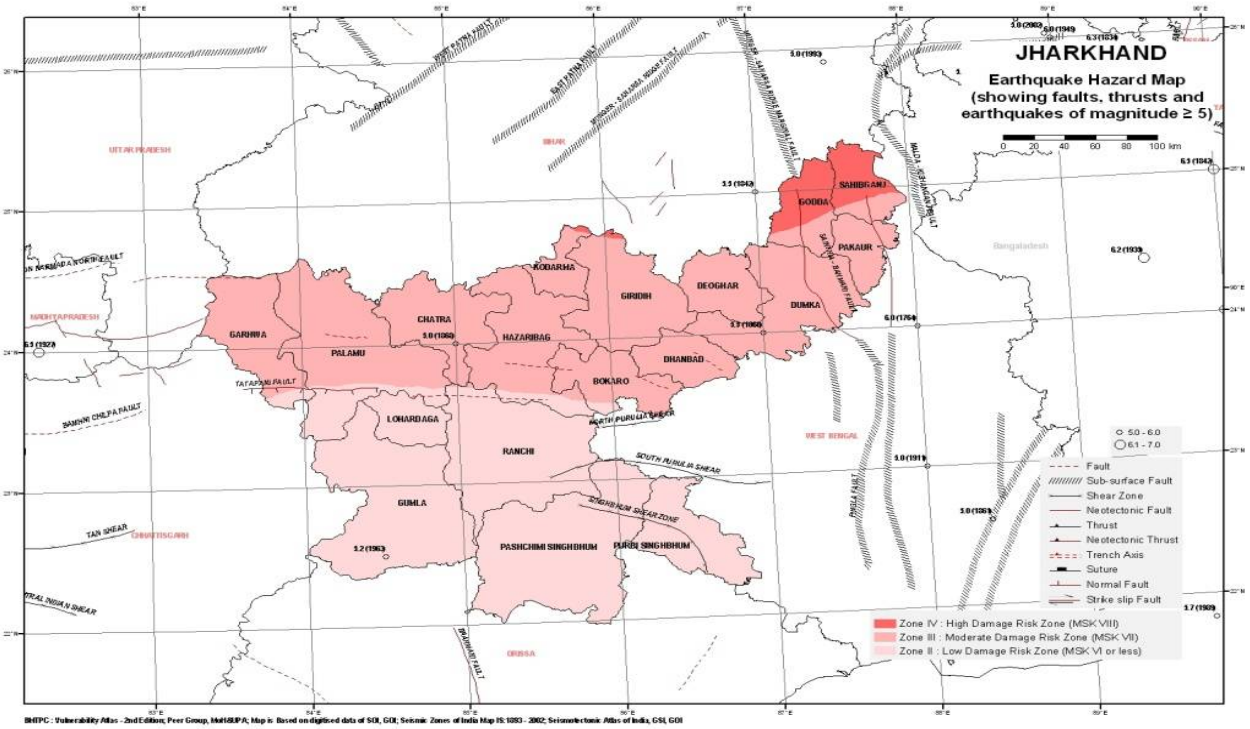
		level. In the same time the District Agricultural Office provide the local rain fall status to DDMA regarding the local rain fall and the local level river situations are monitored accordingly by the DDMA. The DDMA is in constantly informed by the SEOC, MID and other national agencies to know the water level status and take appropriate action prior to any increase of water level.	
4.	Emergency Response Activities	SOP's, Incident Repose System (IRS) and Emergency Support Functionaries has been drafted and incorporated in DDMP.	SOP and IRS in Place
i	Coordination	District level Coordination committee regularly meet and review the preparedness for flood with all stakeholders.	Done
ii	Rapid Damage Assessment	DDMA is set to conduct Rapid Damage Assessment in the time of disaster.	It is Conducted
iii	Maintenance of essential Services.	All the departments are informed to do their essential services like transportation and Telecommunication to restore in the time of flood.	Departments are prepared
iv	Stocking of essential commodities.	Essential commodities like food grains, kerosene oil and salt etc. kept in the blocks for the flood victims before monsoon.	Stock is kept
v	Medicines	Medicines are also kept available for the flood victims Like diarrhea and water borne diseases.	Stock is kept
vi	Arrangements of Drinking Water	DDMA is prepared to provide safe drinking water to the flood victims through the active involvement of PHD department/ Drinking water and Sanitation Department.	Prepared
vii	Temporary Shelter/Relief Camps	Shelters are identified like Schools and Anganwadi centres for the shelter and relief Camps.	List is prepared
5.	Pre-contract	DDMA is does the pre contract with the vendors like boat owners and fix the rate and also with the other vendors so that List of items required in case of flood could be available before time.	Done with the boat owners and fix the price
6.	Evacuation Plan	DDMA has evacuation plan to shift the people to the safe place. It has also 4 speed boats to evacuate the trapped	Prepared

		victims during flood. It has also list of small/Big motor boats listed with price and owner name to use it for the large evacuation. The Plan is incorporated in DDMP.	
7.	Dissemination of forecasting and warning plan	DDMA is prepared to dissemination of warning to the end user through the District and block level officers. It also uses the other means to reach to the mass through deployment of Public announcements. Print and electronic media are also effective means to spread any early warning in the district.	It is Done through PA system, Print and electronic media.
8.	Plan to regulate flow of people	DDMA is prepared to do so but there are no such places where pilgrims flow largely. But if the Srabani Mela pilgrimages are diverted through Sahibganj District than DDMA could handle it effectively.	Prepared but there is no such issues.
9.	Activation of Control Room	This could be done in the time of flood but there is no EOC at District so far but the proposal has been submitted to DM Department and we are ready to set EOC.	It could be done but there is no EOC at Sahibganj.
10.	Search and Rescue Teams	District has identified divers for Search and Rescue during flood. But this more talk about the number of SAR team available at State.	District has its SAR Team. (Divers)
11.	Identification of Nodal Officer	There are Nodal officers nominated from all the departments and informed to the DDMA. A contact directory has been developed at District level and they will be contacted in the time of flood and in need.	It is done.
12.	Preparedness Drill	It is not yet done but the DDMA will conduct a preparedness drill before the monsoon enters.	Yet to be done.
13.	Transparency in Relief Operations	A relief guideline as per SDRF norms and minimum started of relief as per NDMA has been adopted in the district.	Is maintained
14.	National Building Code	So far district is not following National Building Code but it has to come from the State.	Not followed
15.	Floodplain zoning	Yes State Govt. has allotted some fund to do flood plain zoning in the bank of Ganga to stop flood and the work is	It is in process

		yet to start.	
16	Urban Flooding	The plan has to suggest by the SDMA so that it could be implemented at Sahibganj.	Not started.
17.	Conserving, harvesting & recharging of water management	Ganga Canal Project is in place for water management.	It is in place.

2.2.2 Earthquake

Sahibganj District comes under Zone IV (High Damage Risk) as per the Seismic chart and the risk is high and people have to build earthquake resistant houses as a prevention methodology looking into the risk factor.



Seismology Centre, Sahibganj

To monitor the seismological movements in Sahibganj there is a Seismology Centre, established here in Sahibganj in the year 1985 which comes under the National Centre for Seismology (NCS), Delhi. The station is directly controlled and monitored by the Central NCS and provides report for them regularly. The report is generated from the Seismology

Machine which produced 24hr reading on the earth movement. The reading produced by the machine is sent to NCS Delhi and the report is generated centrally for the entire districts and state.

Sahibganj Centre In-charge-	Mr. Gulam Md.	Mob No. 09661598835
Staff-	Mr. Paswan	Mob No. 09122873115

Seismic reports are not published at the district centre but it is generated and circulated by the NCS, Delhi office. The NCS, Delhi office analyse all the data provided from the district centre and with the help of satellite pictures produce a fair report for the entire region. So the detailed report can be only obtain from the NCS, Delhi office and they need to be connected with the DDMA or District EOC so that real time information could be collected for Early Warning and DM in the time of emergency.

The details of **National Centre for Seismology (NCS), Delhi**

Information Centre (available 24x7) -	Ph- 011- 24619943
Director- Dr. B Gahlot	Ph- 011 -43824405
Tech. Staff- Mr. Goutam	Ph- 011 -24635069

The Seismology Machine installed at Sahibganj is not functioning well and it has to be repaired or upgraded for good result. There are many small tremors occured in the past months and they are not informed or reported to the DDMA, Sahibganj. So It is suggested that if the Sahibganj Centre or NCS, Delhi will be issue a regular monthly report on the seismic happening in the districts than it will be very helpful for the DDMA to HRV analysis and Prepare DDMP to address any Disaster.

2.2.3 Accidents

The state highway and national highway number **80** passes through **Saheganj** District. The District along the state highways and District along the national highway are less accident prone.

Although in the pas railway accidents have occurred in the area.

2.2.4 Fire

Sahibganj Districts has a larger production of cotton/groundnut hence there are cotton pressing units/oil mills/show mills where the cotton/groundnut is stored/processed. Due to high amount of storage, there are possibilities of fire also.

The petroleum wells/storage tanks for petroleum pipe line are there in the areas nearby/ in the district. These can be cause of fire.

2.2.5 Industrial / Chemical Disasters:

There are collection centers, oil wells and refiners etc kind of risky industries along the state/National highways passing through this District. Besides, there are gas refilling station/chemical plants/ ONGC storages etc in this District due to which there are changes of fire and accidents.

2.3 Seasonality of Disaster:-

Disaster/Month	jan	Feb mar	apr	May june	July-dec
Flood					high
cyclone					low
Earthquake	High	High	High	High	High
Fire		Low	Med	Med	

2.4 Disaster Vulnerability and Impacts:

TYPE OF DISASTER	POTENTIAL IMPACT	AREAS TO BE AFFECTED
CYCLONE	Low	All Blocks
EARTHQUAKE	High	All Blocks
FLOOD	High	Sahebganj, Barharwa, rajmahal and Udhwa blocks
MINING		
FIRE	Medium	All Blocks
ROAD ACCIDENT	Low	All Blocks
CHEMICAL(INDUSTRIES)		
OTHER		

Historical Flood Event

Year	Water level	Month	Area Submerged (Block wise)
2011	--	August – September	Sahibganj, Rajmahal, Udhwa, Barharwa
2003	--	August – September	Sahibganj, Rajmahal, Udhwa, Borio (partially)
1999	--	August – September	Sahibganj, Rajmahal, Udhwa, Borio (partially),Mandro(partially)
1995	--	August – September	Sahibganj, Rajmahal, Udhwa, Borio (partially),Mandro(partially

2.5 Disaster History: (Last 2 Dacade)

NUMBER	DISASTER	MONTH AND YEAR (LAST OCCURRENCE)	DAMAGES
1	**EARTHQUAKE**		So far no Incident recorded in the last 2 dacades.
2	**cyclone**	2013-14	In Barhait Block 204 houses were damaged and in Patna Block 114 houses were damaged.
3	**flood**	2007-08, 2011-12,	Since 2007, Sahibganj has been hit

		2012-13, 2013-14	by flood 4 times and around 7, 18,026 people and 10085 animals were affected by the flood. In this flood 17 person died and the the loss estimated that Rs. 6,35,34,500.00 crop was damaged and 1178 houses were damaged which worth Rs. 1,14,80,300.00. Due to this flood Rs. 4, 04, and 01,994.00 was given as Relief to the victims from the SDR Fund.
4	**Lightening**	2013-14, 2014-15, 2015-16	One person died in the year 20013-14, 03 persons and one animal died in Yr 2014-15 and 03 Life loss reported in the year 2015-16.
5	**Sun Stroke**		
6	**Fire**		Fire incidents occurred in the district in summer.
7	**Road accident**		
8	**Chemical/industrial**		

2.6 Review of Risk Potentialities:

Type of Disaster	Major Impact	Damage Prone Areas-Wards	No. of vulnerable families living in
Cyclone			
Earthquake	Yes	Whole District	
Flood	Yes	Sahebganj, Taljhari, Barharwa, rajmahal and Udhwa blocks	
Sun stroke			
Fire			
Road Accident			
Chemical (Industrial)			
Other			

Chapter 3
Institutional Arrengment for DM

District Disaster Management Authority (DDMA), Sahibganj

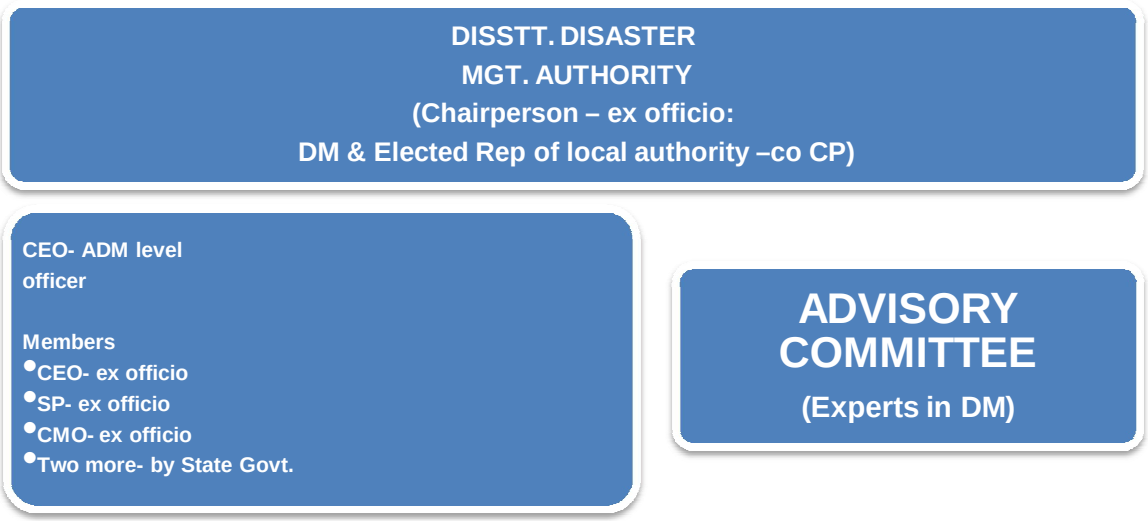
For prevention and mitigation effects of disasters and for undertaking a holistic, coordinated and prompt response to nay disaster situation it has been decided by the Government. The Disaster Management Act, 2005 provides for the effective management of disasters and for other matters connected therewith or incidental thereto. The Disaster Management ACT, 2005 under section 3, 14 & 25 seek to provide for establishment of National, State and District Disaster Management Authorities.

In line to Disaster Management Act 2005, Sahibganj District Disaster Management Authority will be constituted as per notification of Government of Jharkhand vide letter no.2/DM-40/2010-824/DM-Ranchi dated 22.09.10 as below –

3.1 DDMA Structure

1. Deputy Commissioner, Sahibganj - Chairperson

2. Chairperson, Zila Parishad	-	Co-Chairperson
3. Additional Collector	-	Chief Executive Officer
4. Superintendent of Police	-	Member
5. Deputy Development Commissioner	-	Member
6. Chief Medical Officer	-	Member
7. Executive Engineer, DW&SD	-	Member



Role and Responsibilities of DDMA

The District Disaster Management Authority will act as the District planning, coordinating and implementing body for Disaster Management and take various measures for the purpose of Disaster Management in the District in accordance with the guidelines laid down by the National or State authority. Powers and Functions of District Authority as per Section 30 of DM ACT, 2005 are as under:-

i. Prepare a disaster management plan including district response plan of the district

ii. Coordinate and monitor the implementation of the National Policy, State Policy, National Plan, State Plan and District Plan

iii. Ensure that the areas in the district vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are undertaken by the departments of the Government at the district level as well as by the local authorities

iv. Ensure that the guidelines for prevention of disasters, mitigation of its effects, preparedness and response measures as laid down by the departments of the Government at the district level and the local authorities in the district

v. Give directions to different authorities at the district level and local authorities to take such other measures for the prevention or mitigation of disasters as may be necessary

vi. Lay down guidelines for prevention of disaster management plans by the department of the Government at districts level and local authorities in the district;
vii. Monitor the implementation of disaster management plans prepared by the Departments of the Government at the district level;
viii. Lay down guidelines to be followed by the Departments of the Government at the district level for purpose of integration of measures for prevention of disaster and mitigation in their development plans and projects and provide necessary technical assistance therefore;

ix. Monitor the implementation of measures referred to in clause
x. (x)Review the state of capabilities for responding to any disaster or threatening disaster situation in the district and give direction to the relevant departments or authorities at the district level for their upgradation as may be necessary
xi. Review the preparedness measures and give directions to the concerned departments at the district level or other concerned authorities where necessary for bringing the preparedness measures to the level required for responding effectively to any disaster or threatening disaster situation;

xii. Organize and coordinate specialized training programmes for different levels of officer, employees and voluntary rescue workers in the district;
xiii. Facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non- governmental organizations;
xiv. Set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public;
xv. Prepare, review and update district level response plan and guidelines;
xvi. Coordinate response to any threatening disaster situation or disaster;

xvii. Ensure that the Departments of the Government at the district level and the local authorities prepare their response plans in accordance with the district response plan;
xviii. Lay down guidelines for, or give direction to, the concerned Department of the Government at the district level or any other authorities within the local limits of the district to take measures to respond effectively to any threatening disaster situation or disaster;

xix. Advise, assist and coordinate the activities of the Department of the Government at the district level, statutory bodies and other governmental and non-governmental organization in the district engaged in the disaster management;

xx. Coordinate with, and give guidelines to, local authorities in the district to ensure that measures for the prevention or mitigation of threatening disaster situation or disaster in the district are carried out promptly and effectively;

xxi. Provide necessary technical assistance or give advice to the local authorities in the district for carrying out their functions;
xxii. Review development plans prepared by the Departments of the Government at the district level, statutory authorities or local authorities with a view to make necessary provisions therein for prevention of disaster or mitigation;

xxiii. Examine the construction in any area in the disaster and, if it is of the opinion that the standards for the prevention of disaster or mitigation laid down for such construction is not being or has not been followed, may direct the concerned authority to take such action as may be necessary to secure compliance of such standards;
xxiv. Identify buildings and places which could, in the event of any threatening disaster situation or disaster, be used as relief centers or camps and make arrangements for water supply and sanitation in such buildings or places;

xxv. Establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice;

xxvi. Provide information to the State Authority relating to different aspects of disaster management;
xxvii. Encourage the involvement of non-governmental organizations and voluntary social-welfare institutions working at the grassroots level in the district for disaster management;
xxviii. Ensure communication systems are in order, and disaster management drills are carried out periodically;
xxix. Perform such other functions are the State Govt. Or State Authority may assign to it or as it deems necessary for disaster management in the District.

The mitigation strategy of the district plan can be linked to the Indira Awas Yogna to ensuring that all new houses that are built contain seismic safe features and the mason's building these houses are trained in seismic safe construction. This is one example, other examples are: flood and cyclone shelter to be constructed from the existing developmental

Programme, rising of the plat form of school building etc. some of them are listed:

1. Raising platform for new building in low lying or flood prone areas.

2. Alternate income generation activities to the risk group through District Panchayat and Self Help Groups.

3. Raising the plat form of tube well in flood and cyclone areas.

4. Strengthening and abiding the local coping mechanism.

5. Construction of high raised plat forms from Forest for animal resources.

6. Road & bridges to be constructed and repair based on to reduce the vulnerability.

7. Provision of communication facility to the vulnerable areas.

8. Provision and promotion of grain bank facilities and alternative storing facility for food grains.

9. Developing the skill and capacity of various DMTs to meet the disasters. Linking of the departmental plans with long term developmental activity in the district as well as regular updating and mock drills can ensure long term sustainability.

A. List of departmental information

Emergency Operation	Taskforce Functions
1. Coordination and Planning	Coordinate early warning, Response & Recovery Operations
2. Administration and Protocol	Support Disaster Operations by efficiently completing the paper work and other Administrative tasks needed to ensure effective and timely relief assistance
3. Warning	Collection and dissemination of warnings of potential disasters
4. Law and Order	Assure the execution of all laws and maintenance of order in the area affected by the incident.
5. Search and Rescue (including Evacuation)	Provide human and material resources needed to support local evacuation, search and rescue efforts.
6. Public Works	Provide the personnel and resources needed to support local efforts to re-establish normally operating infrastructure.
7. Water	Assure the provision of sufficient potable water for human and animal consumption (priority), and water for industrial and agricultural uses as appropriate.

8. Food and Relief Supplies	Assure the provision of basic food and other relief needs in the affected communities.
9. Power	Provide the resources to re-establish normal power supplies and systems in affected communities.
10. Public Health and sanitation (including First aid and all medical care)	Provide personnel and resources to address pressing public health problems and re-establish normal health care systems.
11. Animal Health and Welfare	Provision of health and other care to animals affected by a disaster.
12. Shelter	Provide materials and supplies to ensure temporary shelter for disaster-affected populations.
13. Logistics	Provide Air, water and Land transport for evacuation and for the storage and delivery of relief supplies in and for the storage and delivery of relief supplies in coordination with other task forces and competent authorities.
14. Survey (Damage Assessment)	Collect and analyse data on the impact of disaster, develop estimates of resource needs and relief plans, and compile reports on the disaster as required for District and State authorities and other parties as appropriate.
15. Telecommunications	Coordinate and assure operation of all communication systems (e.g.; Radio, TV, Telephones, and Wireless) required to support early warning or post disaster operations.
16. Media (Public Information)	Provide liaison with and assistance to print and electronic media on early warning and post-disaster reporting concerning the disaster.

B. Coordination of Control room

The Composition of the Taskforces is given in the table below:

Sl. No.	Task Force	Taskforce Leader	Supporting members / Organizations	IRS/GS Section / Unit
1.	Planning and Coordination	Deputy Commissioner	DDC, SP, Chief Planning Officer, AC	Planning
2.	Administration & Protocol	Deputy Commissioner	DDC, SP, Chief Planning Officer, AC RDC and Mamlatdar	Finance & Admin.
3	Damage Assessment/Survey	Additional Collector	SDO, DAO, CS, Ex. Engr.Drinking Water, Ex. Engr. Building, DAHO, Ex. Engr. Electrict, Ex. Engr. Road, PWD, Fisheries, COs	Planning
4	Warning	Additional Collector	RDC, Dy. Mamlatdar, Control Room, District Information Officer (DIO)	Operation
5	Communications	RDC	Dy.Mamlatdars, Mobile Operators, TV, Radio, Port Office GMB, Police, Forests	Logistics
6	Media	District Information Officer	Information Department, Print, Media, TV, Journalists, NGOs	Public Information
7	Logistics	DDO	RTO, DSO, FPS, Private & Public sector, Municipal water supply	Logistics

			board, Mamlatdar, Dist. Supply Mamlatdar	
8	Law & Order	SP	Dy. SP, Home Guards Commandant, NGOs, Para-military and Armed Forces	Law & Order
9	Search and Rescue	Dy. Collector Civil Defence	Mamlatdar, TDO, Police, Executive Engr., Fire Brigade, RTO, State Transport, Health Deptt.	Operations
10	Public Works	Ex. Engr. R&B (State)	Irrigation, Ex. Engr., Panchayat, NGOs, Water Supply Board, Municipalities, Home Guards, Police	operations
11	Shelter	Dist. Primary Education Officer	School Principal, Teachers, Health, PHC, State Transport, Water Supply, RTO, Mamlatdar, TDO	operation
12	Water Supply	Ex. Engr. GWSDB/ Ex. Engr. Water Works	Dy. Ex. Engr., Talati, Mamlatdar, TDO, Health, Dy. Engr.	operation
13	Food & Relief Supplies	Dist. Supply Officer	FPS, PDS, Mamlatdar, NGO, RTO, State Transport, Municipality, DRDA, Police, Home guard	Logistics
14	Power	Supt. Engr. GEB	Ex. Engr., Dy. Engr. Technical, GEB, Transport	Operation
15	Public Health & Sanitation	Chief district health Officer (CDHO)	Supt. Govt. Hospital, Municipality, PHCs, CHCS, Red Cross, Fire Brigade, Civil Defence, R&B, NGOs, Doctors, TDO, Mamlatdar	Operation
16	Animal Health & Welfare	Dy. Director Animal Husbandry	Veterinary Inspector, NGOs	Operation

C. SEOC-DEOC-TEOC-Other control room (Irrigation, police, Municipal Corporation etc.)

1. District Emergency Operation Centre (DEOC)

An **Emergency Operations Center** (**EOC**) is a central command and control facility responsible for carrying out the principles of emergency preparedness and emergency management, or disaster management functions at a strategic level during an emergency, and ensuring the continuity of operation of a company, political subdivision or other organization.

An EOC is responsible for the strategic overview, or "big picture", of the disaster, and does not normally directly control field assets, instead making operational decisions and leaving tactical decisions to lower commands. The common functions of all EOC's is to collect, gather and analyze data; make decisions that protect life and property, maintain

continuity of the organization, within the scope of applicable laws; and disseminate those decisions to all concerned agencies and individuals.

Immediate first response to any disaster has to be from the district administration. Hence it is necessary to ensure that **District Emergency Operation Centers (DEOC)** are strengthened / constructed with state of the art emergency communication equipment to communicate with State EOC as well as other local level functionaries.

Description

The DEOC is a physical facility designated for the gathering and dissemination of information plus disaster analysis. It is also the facility in which decisions and policies governing the emergency response are planned and implemented. The EOC is the centre in which information is collected, evaluated and displayed. One of its primary objectives, then, is the immediacy with which that information is communicated. Maximum use of available technology and human resources becomes a priority since clear, concise and frequent communication is essential when responding to an emergency.

Definition: An EOC is the physical location where an organization comes together during an emergency to coordinate response and recovery actions and resources. These centers may alternatively be called command centers, situation rooms, war rooms, crisis management centers, or other similar terms. Regardless of the term, this is where the coordination of information and resources takes place. The EOC is not an incident command post; rather, it is the operations center where coordination and management decisions are facilitated.

The EOCs have specific roles in each stage of the disaster management cycle. Section 30 (2) (xiv) of the DM Act, 2005 DDMA setup, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public. DDMA, Sahibganj requires for activate its DEOC to coordinate interagency response to and recovery from major emergencies.

The District Collector is the focal point at the district level and assisted by Sub Divisional Officers, Tehsildars, Block Development Officers and Village Level Officers. In the wake of natural calamities, the District Emergency Operations Centre (EOC) shall be set up in the district for a day-to-day monitoring of rescue and relief operations on continuing bases.

Function of DEOC

It has been observed that at the time of a calamity/disaster, communication services are the first to go out of order. It has therefore been decided to put in place multi-mode and multi-channel communication systems so that enough redundancy is available. The communication network between the national and the State EOCs and the site of the emergency/crises has to be fail safe so that all challenges could be address successfully.

Emergency Operation Center plays a vital role in the Emergency Operation activation. It coordinates the flow of information with respect to activities associated with relief operations. During the normal times it maintains a systematic database of the resources available, important phone numbers, names and addresses of important government and non-government officials, international bodies, NGOs. During crisis it is expected to function as a center for decision-making and help flow of information horizontally and vertically to the respected departments for smoother relief operations.

The control rooms, which will function round the clock, will be composite control rooms to look after law and order issues as well as disaster management. Equipments were also provided for these control rooms under the disaster risk management to work effectively. Hazard zone-wise standard layout, structural design and construction drawings have been developed for State and District EOCs. The list of equipment to be installed in the EOCs is also given below.

To coordinate the entire disaster/emergency operations effectively, the existing Control Room at the district level has been being upgraded as District Emergency Operations center (DEOC). The DEOC is equipped with satellite phones, GPS, computers, emergency lights, GIS information system etc. in five on-site emergency coordination kits in ready-to-use mode. Staffs in the DEOC have been trained. A state of the art underground an all-hazard resistant DEOC with superior structural features and communication facilities has been set up.

The function of control room is not only to control disaster but also to look after rehabilitation and mitigation. No one knows when disaster will strike, so it's better to be prepared from beforehand to reduce loss of life. We can summarize the function of control room in three simple phases:

- Preparation
- Prevention
- Mitigation

District Emergency Operation Center monitors different disaster mitigation programme and co-ordinates with different organization. It also conducts evaluation of the programmes, and immediately takes up necessary measures. Besides, the DEOCs may act as control rooms for various other purposes such as law and order problem, elections, VIP movements and other activities requiring coordination.

Broadly speaking the DEOCs would have the following role:-

1. Collecting information about the vulnerable areas.
2. Sharing data related to disaster and vulnerable areas with all the line departments and other organization and stakeholders.
3. Carrying out assessment of damage in disaster prone areas.
4. Coordination for preparation, mitigation and response with all the responsible parties.
5. Receive and process disaster alerts and warnings from nodal agencies and other sources and communicate the same to all designated authorities and stakeholders.
6. Monitor emergency operations.
7. Facilitate coordination among primary and secondary ESF Departments/Agencies.
8. Requisitioning additional resources during the disaster phase.
9. Consolidate, analysis, and disseminate of damage, loss and needs assessment data.
10. Policy-making and planning.
11. Information gathering and record keeping on disaster events.
12. Public information and communication (IEC) on DM.
13. Early warning dissemination.
14. Resource management through web based techniques.

The activities of DEOC can be classified as normal time and emergency time activities. During normal time the DEOC would work under the Additional Collector, Nodal officer for Disaster Management. The normal time activities which are listed below are very crucial for its efficiency of response in a disaster situation.

Role of DEOC during normal time

The normal time activities of the District EOC will be to

- Ensure through appropriate statutory instruments that :
  - SDMP and DDMPs are operationalized.

- Standard Operating Procedures for various departments are operationalised.
- SDRF and DDRF are set setup and operationalised.

- Ensure that all districts continue to update DDMP on a regular basis.
- Encourage districts to prepare area-specific plans prone to specific disasters receive reports on preparedness from the district control room. Based on these, the STATE EOC will submit a summary report to the Chief Secretary.
- Setup study groups and task force for specific vulnerability studies and submit the reports to Chief Secretary.
- Identify and interact with central laboratories, research institutions within and outside the state for ongoing/collaborations to evolve mitigation strategies.

Picture of a DEOC

- Serve as a data bank to all line departments and the planning department with respect to risks and vulnerabilities and ensure that due consideration is given to mitigation strategies in the planning process.
- Receive appropriate proposals on preparedness, risk reduction and mitigation measures from various district and state departments/agencies and place the same for consideration of the Chief Secretary.
- Convey policy guidelines and changes if any in the legal and official procedures, eligibility criteria with respect to relief and compensation.
- Upgrade and update District DMP according to changing scenarios in the State.
- Dissemination of DDMP to other departments of the GOJ and state level agencies.
- Update data bank IDRN.
- Identification of agencies and institutions for locating inventory items for specialized services. DEOC will also ensure the availability of the inventory items as and when required.
- Monitor preparedness measures undertaken at the district levels including simulation exercises undertaken by various departments.
- Monitor the training imparted to state level officials, private sector and NGOs by training institutions.
- Organize post-disaster evaluation and update DDMP accordingly.
- Prepare an actions-taken report for Chief Secretary.
- Receive reports and documents on district level disaster events and submit the same to Chief Secretary, Revenue Minister and Chief Minister.
- Ensure warning and communication systems and instruments are in working condition.
- Inform district control room about the changes if any in legal and official procedures with respect to loss of life, injuries, livestock, crop, houses, to be adopted (death certificates, identification procedures, etc.)

Role of DEOC on occurrence of disaster

The DEOC will function to its fullest capacity on the occurrence of disaster. The district EOC will be fully activated during Level 0 and Level 1 disasters. The activation would come into effect either on occurrence of disaster or on receipt of warning. On the receipt of warning or alert from any such agency which is competent to issue such a warning, or on the basis of reports from Divisional Commissioner/District Collector of the occurrence of a disaster, all community preparedness measures including counter-disaster measures will be put into operation. The Chief Secretary/Relief Commissioner will assume the role of the Chief of Operations for Disaster Management.

The Level 0 disaster/event would be communicated to the following DM, SP, CMO, SDM, Commandant Home Guard, Fire Officer immediately on phone. A written report about the disaster/event would be sent in written to the DM.

The occurrence of disaster shall be immediately communicated to all the first responders such as police, fire, health, DM, SDM and other stakeholders such as NGOs, trained SAR volunteers through SMS gateway for which specific provision of group mobile directory would be made. The directory would be grouped according to the disaster specific response groups.

The occurrence of disaster would essentially mean the following activities have to be undertaken:

a. Expand the Emergency Operations Centre to include Branch arrangements with responsibilities for specific tasks depending on the nature of disaster and extent of its impact.
b. Establish an on-going VSAT, wireless communication and hotline contact with the Deputy Commissioner, and Collector/s of the affected district/s.
c. The DEOC will function as per the Crisis Management Plan and the IRS modules in DDMP and switch its role accordingly to address any emergency situation promptly.

[The EOC in its expanded form will continue to operate as long as the need for emergency relief and operations continue and the long-terms plans for rehabilitation are finalized].

Equipments for District Emergency Operation Center (DEOC)

SL. No	Main Head	Sub-Head	Equipment	Quantity
1	Communication Equipment (Fail Safe Communication)	Telephones	PSTN	2
			Internal	8
			VOIP	2
		Mobile Phones	Mobile phones	5
		Satellite Phones	Global Mobile	5
		Hot Line communication with Blocks		5
		Fax machine		1
		VSAT		1
		Wireless/VHF central unit/Switch		1
		Handsets (Walkie- talkie)		5
		Television Set		1
		H.F. Ham Radio Set		1
		Video Conference Unit (to be compatible with the NIC video conferencing network)		1
		Inverter for power Back-up (UPS with 10 batteries)		1
		Portable Diesel/Petrol/K-oil Generator set (15KVA rating)		1
		Vehicles: Jeep		1
		Two wheelers		1
2	Computer Hardware and other equipments	Desktop computers		5
		Printer, Scanner, Fax (Multi utility machine)		1
		Camera (Digital/Ordinary)		2
		GPs Unit (Hand held)		2
		Overhead Projector/LCD panel/ Projector Screen		1
		LAN		1
3	Soft ware	GIS software		1
		Designing software		1
		IDRN- ID and Pass		1
4	Data Bank	Maps of District/state (Administrative/rail/road maps)		1
		DM Plans of Districts and State levels		1
5	Other necessary office peripherals	Tables	Main Table (Conference Table)	1
			Small Table	4
		Chairs	Revolving chairs	11
			Regular chairs	10
		Cabinet	Almirah	2
		Office Stationery	Pen, Marker, Paper, pin, charts, files, etc.	1

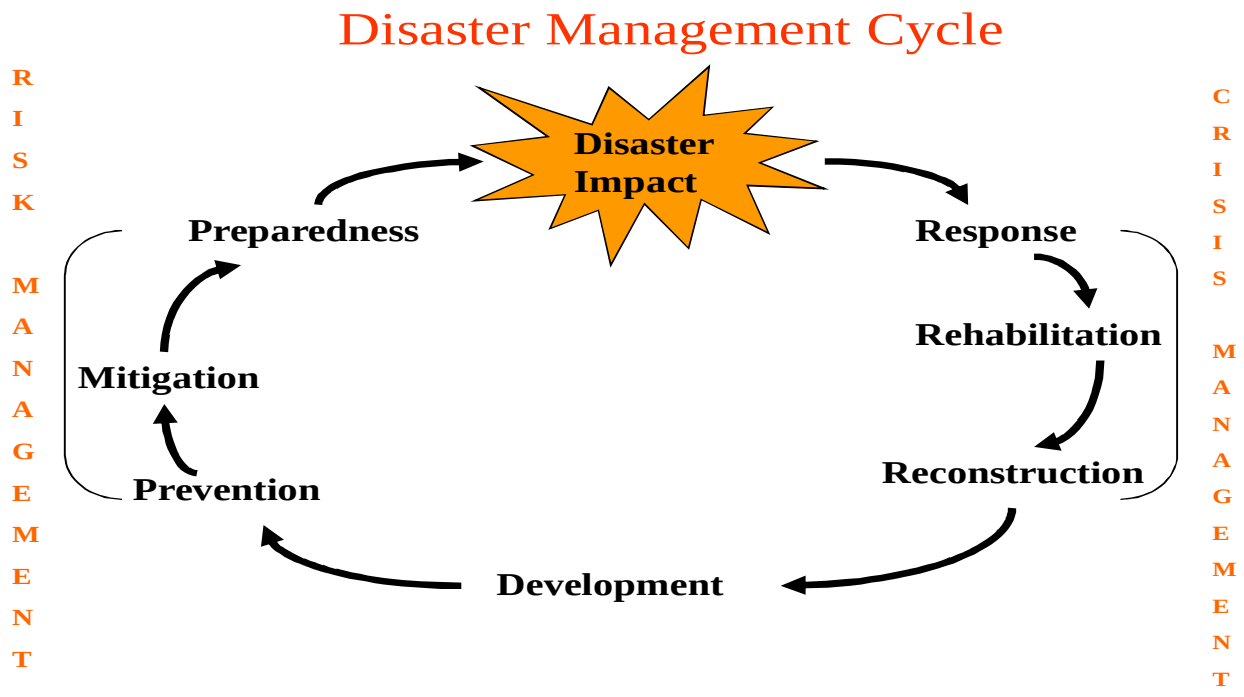
		Min-Max Thermometer		1
		CO2 Fire Extinguisher		5
		White Boards for display of maps and charts		2
		Emergency lighting	Search lights	2
			Torches	2
			LED Flashlights	2
			Chemical light sticks	2
			Emergency Lighting	2
		Public Address Systems		5
6	Support to Manpower/ Equipment needed for Staff Rest Room	Emergency Survival Kits (according to the Vulnerability nature of the area)		1
		Basic Medical Supplies (First Aid, Trauma Kits and all purposes Medical First Aid Kit)		1
		Sleeping bag and blanket		5
		Umbrella/ Raincoat		10
		Water cooler with Purifier		1
		Refrigerator		1
		Room Heater		2
		Electric stove		1
		Electric kettle		1
		Life Jacket		20
		Emergency Kit (Water bottle, Non-perishable Food etc.)		10

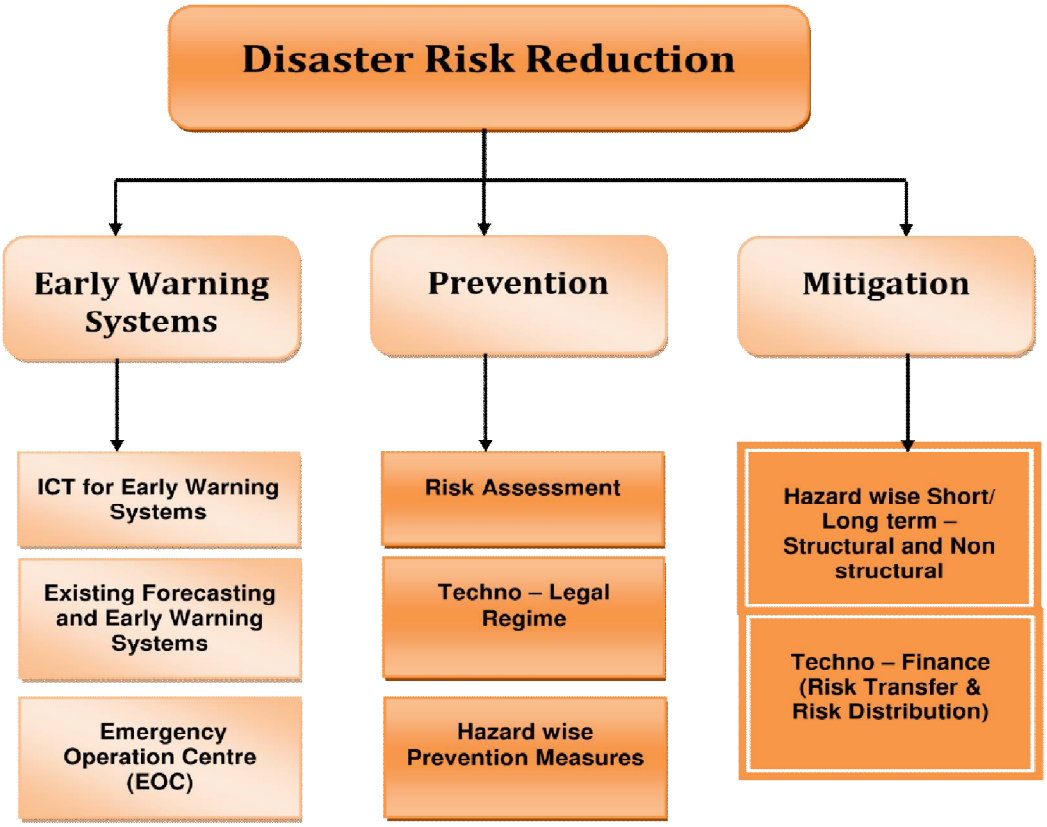
Chapter 4

Prevention and Mitigation Measures

In disaster management cycle, preparedness and mitigation are the two important stages before the occurrence of disaster. It has a great importance in reduction of loss of life and property if proper preparedness and mitigation strategies are followed.

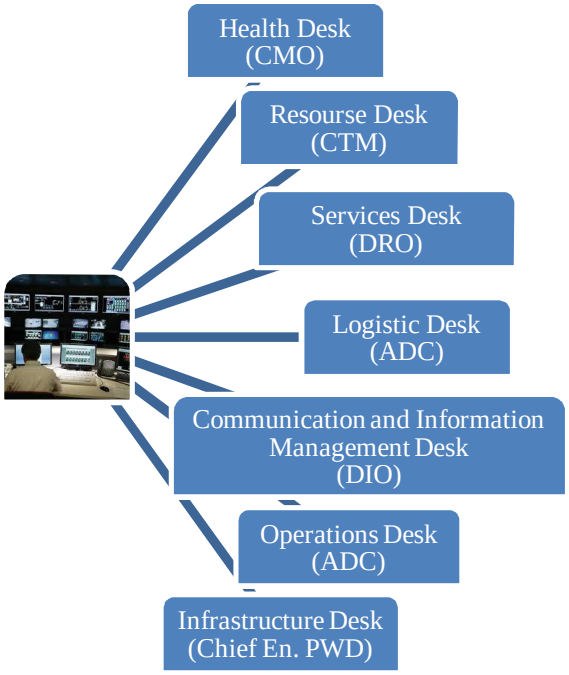
The mitigation plans will be specific for different kinds of hazards identified in HRVC section. It will be sector specific, and will deal with both aspects, structural & non-structural. The Identification of various departments, along with nodal officers, to coordinate the mitigation activities, including PRI and ULBs for implementing mitigation strategies will be the key.
Community mitigation measures will be identified and implementation modalities formulated. A training Strategy will be formulated for training major government and non-governmental cadres in the state who can aid in disaster management.





5.1 Establishment of the Control Rooms

The district administration should ensure the operation of control rooms. The control rooms are presently run by major line departments at revenue, police, hospital, etc. at block and district level should be function able. The structure of the control room should be as follows:



5.2 Update Plan

Disaster Management Plan needs to be updated at every interval. It includes the skilled manpower, their addresses and contact numbers, necessary equipment, medicinal stock, daily necessities, list of hazard prone villages etc. All these things have to be updated after a certain interval of time.

5.3 Communication System

Training needs to be given for search and rescue teams, first aid team's disaster management teams at village, block and as well as district level. These teams will provide timely help during any type of disaster. Provision of wireless sets at all Sub-division and block Offices for effective communication is essential for effective early warning. Fire Brigades at all the Municipal Offices. The widespread community awareness program in most hazard prone villages is required so that villages are sensitized about the hazard and there are no problems when there is need for evacuation.

5.4 Organization of Mock Drills

Mock drill is an integral part of the Community based disaster management plan, as it is a preparedness drill to keep the community alert. Time to time mock drills is needed in all the villages of the district to activate the DMTs and modification of the DM plan. Mock drill should be organized once in six months as per the seasonality calendar of natural disaster events that is likely to occur.

5.5 Community Awareness on Various Disasters

1. Retrofitting the weak structures
2. House insurance
3. Agriculture insurance
4. Identification of the Higher Shelter
5. Construction of Earthquake Resistant Structures
6. Awareness on Calamity Relief Fund (CRF)

5.6 Disaster wise mitigation measures may be taken as follows:

1. Disaster in the Coal Mines

a) Prevention of Mine Disaster from Explosion

- The workers should be well informed about the explosion.
- The area under explosion should be critically examined.

b) Prevention of Mine Disaster from Inundation

- Each Mine shall be critically examined for its proneness to inundation and deliberated in the safety committee of the mine and information disseminated as widely as possible.
- Suitable infrastructure at area level may be provided for drilling advance boreholes to detect presence of waterlogged working in advance.
- Embankment provided against river to guard against inundation should be constructed and properly shown in the underground plan and water danger plan.
- Detailed precautions against inundation by framing and implementation standing order for the safe withdrawal of persons with effective communication system.
- Mechanism may be developed for warning mines about impending heavy rains opening of dams in the river on the upstream side should be examined.

2. Flood

The villagers residing on the bank of river Ganges are likely to be affected due to flood.

The strict enforcement of flood zone regulations need to done to prevent constructions of any type within 200 m of the riverbanks. Engineering solutions like building of flood embankments, small dams, deepening of the channels may be considered for specific localities. Community awareness should be built up so that people respond effectively to the flooding. Persons living in the low lying parts of floodplains areas are vulnerable to flood. Some aspects of flood planning and response are:-

- Issuing warnings at the local levels.
- Participate in flood fighting by organizing mock drill.
- Keep the stocks needed materials prior to flood (Food, Medicine, tarpaulin etc).
- Facilitate agricultural recovery (agriculture insurance).
- Planning emergency supplies clean drinking water.
- Conduct trainings on search and rescue for Search and Rescue Teams formed at District, block and Village level from time to time.

Main Mitigation Strategies

- Mapping of the flood prone areas is a primary step involved in reducing the risk of the region. Warning can be issued looking into the earlier marked heights of the water levels in case of potential threat. In the coastal areas the tide levels and the land characteristics will determine the submergence areas. Flood hazard mapping will give the proper indication of water flow during floods.
- In areas where people already have built their houses, measures should be taken to relocate to better sites so as to reduce vulnerability. No major development should be permitted in the areas which are subjected to high flooding. Important facilities should be built in safe areas.
- The buildings should be constructed on an elevated area. If necessary build on platform. They should be wind and water resistant. The communication lines should be installed underground. Providing the community halls as a shelter in vulnerable locations would be an asset.
- The plantation of the tress reduces the flood damage. Therefore community should be urged to plant more number of trees.

Before Disaster	During Disaster	After Disaster

• Stream channelization by deepening and straightening stream channels • Construction of dams • Construction of levees to confine stream flow to the floodway • Construction of floodwalls • Construction of detention basins	• Proper communication of warning about the impending danger • Immediate evacuation of the people living in the danger zone • Monitoring flood discharges through the project authorities • Arrangement for food, clothing, blanket/bedding, drinking water, sanitation and hygiene, lighting arrangements and essential medicines	• Repairs, up gradation and strengthening of dams, floodwalls etc. • Strengthening and up gradation of existing flood forecasting system • Arrangements for distribution of gratuitous relief and cash doles • Special attention to ladies, children and elders

4. Road Accident

- The setting up of a Highway Safety Patrol in the road of Ranchi- Godda, which will be a specialized division of the highway police to tackle road accidents.
- The provision of full time trained fire brigade personnel in at least all the municipalities and provision of adequate signboards, speed breakers and guard stones near the accident prone spots would reduce the road accident in the highway. (NH 33).
- Some hospitals along the Ranchi- Godda highway should be upgraded with X-ray machines, blood bank and surgical facilities.
- If necessary, bypasses should be constructed wherever the highway passes through densely populated localities.

5. Epidemics

Health department needs to be provided with more water quality monitoring centres for effective reliance of water quality principally during the monsoon months and during flood events. The bleaching powder should be adequately available with all the Gram Panchayats.
The PHC and PHSC should be upgraded to include blood bank and surgical facilities.
Contingency plan for response should be prepared after identifying the epidemics that are likely to occur in the region. Maps of all the health facilities in the region with an inventory of drugs and vaccines, laboratory set ups, list of number of doctors and supporting staff etc. need to be kept ready and updated at regular intervals. First aid training will help to cope better during the emergency response period for epidemics. Personnel protection through vaccination is an effective mitigation strategy and will protect the persons at risk.

Disease	Symptoms	Environmental Risk Factors	Health Hazards
Acute Upper respiratory tract infections	All symptoms of the common cold, fever and heavy coughing. Chest pain and pain between shoulder blades in pneumonia.	Crowding, poor hygiene	Influenza and pneumonia may cause severe complications, especially in groups at risk

Diarrhea	Watery stools at least three times a day, with or without blood or slime. May be accompanied by fever, nausea or vomiting.	Contaminated drinking- water or food, or poor sanitation	Dehydration, especially in children, shown by dark colouration of urine, dry tongue or leathery skin
Measles	A disease of early childhood, characterized by fever and catarrhal symptoms, followed by maculopapular rash in the mouth.	Crowding, poor hygiene	Severe constitutional symptoms, high case fatality rate
Malaria	Painful muscles and joints, high fever with chills, headache, possibly diarrhea and vomiting.	Breeding of *Anopheles* mosquitoes in stagnant water bodies	Disease may rapidly become fatal, unless medical care is provided within the first 48 hours
Meningococcal meningitis	Infected persons may show no symptoms for a considerable time. When an epidemic is in progress, headache, fever and general malaise will suggest the diagnosis, which must be confirmed by lumbar puncture.	Crowding	Often fatal if untreated at an early stage; neurological problems in survivors
Shigella dysentery	Diarrhea with blood in the stools, fever, vomiting and abdominal cramps.	Contaminated drinking- water or food, or poor sanitation, poor hygiene	Case fatality rate may be high
Viral Hepatitis A	Nausea, slight fever, pale-colored stools, dark-colored urine, jaundiced eye whites and skin after several days.	Poor hygiene	Long-term disabling effects
Louse-borne typhus	Prolonged fever, headache, body pains.	Unhygienic conditions leading to lice infestations	May be fatal without treatment
Typhoid Fever	Starts off like malaria, sometimes with diarrhea, prolonged fever, occasionally with delirium.	As for diarrhea	Without appropriate medical care, may lead to fatal complications in a few weeks
Cholera	Modest fever, severe, but liquid diarrhea (rice water stools), abdominal spasms, vomiting, rapid weight loss and dehydration.	As for diarrhea	As for diarrhea
Dengue and Dengue Hemorrhagic	High fever, headaches, pain in muscles and joints, red spots on skin.	Breeding of *Aedes* mosquitoes in natural or	Dengue usually runs a mild course. DHF, however, is often accompanied by heavy

fever (DHF)		artificial containers, filled with water	hemorrhages, which may be fatal
Diphtheria	Inflamed and painful throat, coughing.	Crowding, poor hygiene	A secretion is deposited in the respiratory tract, which can lead to asphyxiation
Tetanus	Muscle spasms, starting in the jaws and extending to the rest of the body over several days	Poor hygiene, injury	Fatal
Rabies	Fatigue, headache, disorientation, paralysis, hyperactivity	Bite from infected animal host	Fatal if untreated
Heat Stress	Elevated body temperatures, nausea, vomiting, headache	Excessive temperatures	Risk of coma
Relapsing fever (louse-borne or tick-borne)	Acute high fever at intervals	Unhygienic conditions leading to lice or tick infestations	Often fatal in untreated persons, depending on immunity levels

6. Fires

The provision of trained manpower to the fire brigades at all the municipalities is required. All fire tenders should be equipped with wireless sets. The procedural delay for fire engines to move outside the municipal limits should be removed. The coordinating authority for this may be vested with a senior officer in the municipal administration.

Before Disaster	During Disaster	After Disaster
• To familiarize professionals like fire fighters, medical personnel with special tactics and hazards • To review the total plan, including communications and logistics, so that updating modifying and training activities can be improved	• Control emergency by arresting leakages, spillage, fighting fire • Mobilization of specialized equipments and machinery to affected areas • Arrangement for food, clothing, blanket/bedding, drinking water, sanitation and hygiene,	• To ensure that law and order is maintained at evacuation/relief centres and in the affected areas as well • Identify the trauma cases and counsel them appropriately • Arrangements for distribution of gratuitous relief and cash doles

	lighting arrangements and essential medicines	• Special attention to ladies, children and elders

7. Lighting

Lightening is a natural phenomenon of the district. Every year people as well as cattle die due to the lighting. Therefore the proper measure needs to be taken to reduce the death toll.

- If you are in a building it is advisable to stay inside. Stay away from windows, doors, fireplaces, stoves, metal pipes, sinks and other electrical charge conductors.
- Unplug TVs, radios and other electrical appliances.
- Don't use the phone or other electrical equipment.
- If you are outside, seek shelter in a building, cave or depressed area. Lightning typically strikes the tallest item in an area.
- If you're caught in the open, bend down with your feet close together and your head down. Don't lie flat - by minimizing your contact with the ground you reduce the risk of being electrocuted by a ground charge.
- Get off bicycles, motorcycles, and tractors.
- If you are in a car, stop the car and stay in it. Don't stop near trees or power lines that could fall.

Before Disaster	During Disaster	After Disaster
• Installation of an effective lightning rod system • Staying inside for at least 30 minutes after the last strike • Seeking shelter in a low area and staying away from trees while being caught up in an open area • Staying away from metal objects and tall objects, such as telephone poles, light standards, antennas and tall trees • Staying away from water sources like swimming pool, ponds, lakes or rivers	• Mobilization of specialized equipments and machinery to affected areas • Arrangements to be made for quick transportation of injured victims to the hospitals	• Arrangements for distribution of gratuitous relief and cash doles

8. Cyclone:

Before Disaster	During Disaster	After Disaster

• Cyclone alert and warning atleast 48 hours and 24 hours respectively before the commencement of the bad weather • Ensure that all critical activities (mainly industrial production) in areas likely to be affected are shutdown	• Setting up of field hospitals in the affected areas and deployment of mobile hospitals • Mobilization of specialized equipment and machinery to affected areas • Arrangement for food, clothing, blanket/bedding, drinking water, sanitation and hygiene, lighting arrangements and essential medicines	• Creation/ Retrofitting of structures – including roads, bridges that may have been destroyed/ damaged due to the disaster • Special attention to ladies, children and elders • Arrangements for distribution of gratuitous relief and cash doles

9. Industrial:

Before Disaster	During Disaster	After Disaster
• Establish employee participation and access to process safety analysis and management programmes • Prepare written safety procedures and work aids for employees and contractors • Install fail-safe process controls and inherently safe system design approaches	• Setting up of field hospitals in the affected areas and deployment of mobile hospitals • Mobilization of specialized equipments and machinery to affected areas • Arrangements to be made for quick transportation of injured victims to the hospitals	• Decontamination of the affected area, population, members of the rescue team from toxic substances • Estimate the dose via the relevant pathways • Identify the trauma cases and counsel them appropriately • Arrangements for distribution of gratuitous relief and cash doles

10. Earthquake:

Before Disaster	During Disaster	After Disaster

• Application of science and technology and engineering inputs to improve building design, construction and siting • Conducting extensive public awareness programme and dissemination of information about risks, preparedness and mitigation measures	• Setting up of field hospitals in the affected areas and deployment of mobile hospitals • Arrangement for food, clothing, blanket/bedding, drinking water, sanitation and hygiene, lighting arrangements and essential medicines • Mobilization of specialized equipment and machinery to affected areas	• Restoration of basic infrastructure facilities, for example, ports, airports, power stations etc. • Identify the trauma cases and counsel them appropriately • Special attention to ladies, children and elders • Arrangements for distribution of gratuitous relief and cash doles

11. Drought:

Before Disaster	During Disaster	After Disaster
• Dams/reservoirs and wetlands to store water • Construction of warehouses and cold storages for preservation/storage of food grains • Water rationing • Proper selection of crop for drought-affected areas • Watershed management • Education and training to the people • Participatory community programmes	• Ensuring prompt availability of food grains and fodder • Ensure availability of drinking water and water needed for basic needs	• Improvement in agriculture through modifying cropping patterns and introducing drought-resistant varieties of crops • Animal husbandry activities can help in mitigation with use of improved and scientific methods • Arrangements for distribution of gratuitous relief and cash doles

Drought Farming Situation – Upland red sandy loam soils

Farming Condition: Red Sandy lateritic soils (Upland)

Condition		Suggested Contingencymeasures		
Early season drought (delayed onset)	**Normal Crop/Cropping system**	**Changein crop/cropping system including variety**	**Agronomicmeasures**	**Remarkson Implementation**

Delay by 2 weeks 1st week of July	Directsownrice Pigeonpea, Maize, Groundnut, Cucurbits, Ladiesfinger, Maize+Ladiesfinger, Pigeonpea+Blackgram/ Greengram	Directsownrice, Pigeonpea, Maize, Groundnut, Maize+Ladiesfinger, Pigeonpea+Blackgram, Blackgram+Greengram, Cucurbits/Ladiesfinger/Cowpea/ Dolichosbean		
Delay by 4 week 4th week of July	Directsownrice Pigeonpea, Maize, Groundnut, Cucurbits, Ladiesfinger, Maize+Ladiesfinger, Pigeonpea+Blackgram/ Greengram	Direct sownrice (Vandana, BirsaVikasdhan-109), Pigeonpea(BirsaArhar-1, ICPH2671), Maize (Kanchan,BirsaMakai-1), Groundnut(Birsamungfali-2), Maize+Ladiesfinger, Pigeonpea+Blackgram, Blackgram(T-9/PantU-19/Birsaurd-1) +Greengram(PusaVishal)	Alternate row irrigation Use micro irrigation system Irrigation at only critical stage of crop	Supply of seed through NFSM
Delay by 6 weeks 1st week of August	Directsownrice, Pigeonpea, Maize, Maize+Ladiesfinger, Pigeonpea+Blackgram, Blackgram+Greengram, Groundnut/Cucurbits/ Ladiesfinger/Cow pea /Dolichosbean	Pigeonpea+Horsegram, Pigeonpea+Sesame, FrenchBean, Dolichosbean, Pigeonpea+Maize, Pigeonpea(UPAS-120) Horsegram(BirsaKulthi-1) Sesame (KankeSafed,Krishna) Frenchbean (SwarnaPriya, ArkaKomal) Dolichosbean (Swarna utkrista)	1.RidgeFurrowmethod Should be followed for propergermination 2. Conservation of soil moisture. 3.Mechanical weeding 4. Staking for Dolichos bean.	Supply of seed Through NFSM
Delay by 8 weeks 3rd week of August	Pigeonpea+Horsegram, Pigeonpea+Sesame Frenchbean, Dolichosbean, Pigeonpea+Maize	Pigeonpea+Horsegram, Pigeonpea+Sesame	1.RidgeFurrow method Should be followed for proper germination 2.Conservationof soil moisture. 3. Mechanical weeding. 4.Microirrigation system.	Supply of seed Through NFSM

Condition		Suggested Contingency measures		
	Normal Crop/cropping system	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Early season Drought (Normal onset) Normal onset Followed by 15-20 days dry spell after sowing leading to poor germination/crop standetc.	Directsown rice(Gora), Pigeonpea, Maize Pigeonpea+Maize Maize+Ladiesfinger Pigeonpea+Blackgram/ Greengram Groundnut/Cucurbits/ Ladiesfinger	1. Thinning and gap filling in the existing crop. 2. Interculturing to check evaporation. 3. Life saving irrigation	1.Intercultivation 2.Conservation furrow 3.Thinning 4. Spray of antitranspirant.	1.Supply of inter Cultural implements through RKVY. 2.Seeds supplied through NFSM
Mid season drought (long dry spell, consecutive 2 weeks rainless (>2.5mm) period) Atvegetative stage	Directsownrice Pigeonpea, Maize Pigeonpea+Maize Maize+Ladiesfinger Pigeonpea+Blackgram/ Greengram Groundnut/Cucurbits/ Ladiesfinger	Thinning Postponemet of top dressing Life saving irrigation Earthing up in Groundnut.	Conservation furrow Spray of antitransparentss	1.Supply of inter cultural implements through RKVY. 2.Farm ponds Through NREGA.
Mid season drought(long dryspell) Atflowering/ fruiting stage	Directsownrice(Gora), Pigeonpea, Maize Pigeonpea+Maize Maize+Ladiesfinger Pigeonpea+Blackgram/ Greengram Groundnut/Cucurb	Life saving irrigation, In-situ mulching Postponement of top dressing.	Spray of antitransparent	Farm ponds through NREGA.

	Directsownrice(Gora), Pigeonpea, Maize Pigeonpea+Maize Maize+Ladiesfinger Pigeonpea+Blackgram/ Greengram Groundnut/Cucurbits/ Ladiesfinger	Life saving irrigation, Pigeonpea harvested for vegetable purpose, Harvest at physiological maturity stage	Cowpea, FrenchBean, Irrigated vegetables- Potato, Colecrops,Root cropsetc.if irrigationsourceis available.	1.Farm pond through NREGA. 2. Supply of threshing implements through RKVY. 3. Ground nut digger and plucker through RKVY.

Farming Condition: Sandy loam soils (Midland)

Condition		**SuggestedContingencymeasures**		
Earlyseason drought (delayed onset)	**Normal Crop/ Cropping system**	**Change in crop/cropping system Including variety**	**Agronomic measures**	**Remarks on Implement ation**
Delay by 2weeks 1st week of July	Rice	Rice -IR-64,IR-36,Lalat,Naveen, Sahbhagi, Arize-6444, Birsamati	Rice cultivation through SRI method or plastic drumseeder. Proper bunding for water retention. Use of conoweeder for weeding.	
Delay by 4 weeks 3rd week of July	Rice	Rice–IR-36, IR-64,Lalat, Naveen, Birsamati, Arise6444, Sahbhagi	1.Transplanting through SRI method. 2. Proper bundingfor water retention. 3.Use of conoweeder For weeding.	
Delay by 6 weeks 1st week of August	Rice	Rice–IR-36,IR-64,Lalat, Naveen,Birsamati,Arise6444, Sahbhagi	1.Transplanting through SRI method. 2.Proper bunding for waterretention. 3.Use of conoweeder for weeding.	

Delay by 8 weeks 3rd week of August	Rice, Maize, Pigeonpea Blackgram Greengram, Fingermillet, Brinjal Frenchbean, Tomato, Ricebean,SweetPotato, Radish, Cauliflower, Chilies	Directsownrice, Pigeonpea, Maize, Horsegram –BirsaKulthi-1 Brinjal– SwarnaPratibha, SwarnaAbhilamb, Swarna Ajay, SwarnaSobha, Swarna Nilima. FrenchBean–SwarnaPriya, ArkaKomal, SwarnaLata) Tomato – ArkaAbha,Swarna Sampada,SwarnaVijay. RiceBean–RBL-1.SweetPotato– Kalmegh.Radish– JapaneeseWhite.Cauliflower– EarlyKunwari, Hajipurextraearly. Chilies –PusaJwala,Capsicum Bharat, Indra.	Proper bunding of Rice fields. Sowing of pulses along the slope.	Seed cumfertilizer Drill supplied by RKVY scheme.

Condition		**Suggested Contingencymeasures**		
	Normal Crop/cropping system	**Crop management**	**Soil nutrient & moisture conservation measures**	**Remarks on Implementation**
Early season Drought (Normal onset) Normal onset followed by15-20 days dry spell after sowing leading to poor germination/crop standetc.	Rice	1. Resowing or re-Transplanting through plastic drumseeder. 2. Life saving irrigation 3. Replacement of crop with short duration leguminous crop like Greengram, Blackgram, Horsegram, Sesame&Niger.	1. Weeding 2.. Postponement of top dressing 3. Properbunding 4. Strip cropping of re sown crops 5. Spray of antitranspirants.	Supply of SRI Marker and cono weeder from RKVY scheme.

Midseason drought (longdry spell,consecutive 2 weeksrainless (>2.5mm)period) Atvegetative stage	Rice(Lalat,IR-64,IR-36, Arize-6444)	1) Resowing through plastic drumseeder. 2) Lifesavingirrigationmaybe givenifpossible. 3) Replacementofcropwith short duration legume crops like Greengram, Blackgram, Horse gram, Sesame & Niger. Greengram (Pusa Vishal) Blackgram (Pant U-19, Birsa Urd1) Horse gram (Birsa Kulthi-1) Sesame (Kanke Safed, TC-25) Niger (Birsa Niger-1,2)	1. Weeding 2. Postponement of top dressing 3. Properbunding 4. Spray of anti transparent.	Supply of SRI Marker and cono weeder through RKVY scheme.
Midseason drought(longdry spell)Atflowering/ fruiting stage	1. Life saving irrigation if available. 2. Sowing ofearly Rabicrops like Mustard/Linseed/ Lentil/Pea. 3. Postponment of top dressing. Mustard (Shivani) Lineseed (T-397, Sweta) Lentil (PL-406, 639(	Spray of antitransparent.		
Terminal drought (Earlywithdrawalof monsoon)	Rice–Naveen,IR-36,IR-64, Lalat,Birsamati.	1.Harvest at physiological Maturity stage. 2.Life savingirrigation.	Chick pea–(PantG-114,Radhey,BG-256, KPG-59. Pea–(Swarna Rekha/Arkel) Linseed –Sweta/T-397) Lentil –(PL-406,PL-639). Mustard–(Shivani)	

Farming Condition: Sandy clay loam soils (Lowland)

Condition		**Suggested Contingencymeasures**

Early season drought (delayed onset)	Normal Crop/ Cropping system	Change in crop/cropping system including variety	Agronomic measures	Remarks on Implementation
Delay by 2 weeks 1st week of July	Rice	Rice (Rajshree,Arise-6444, MTU-7029)	1..Direct sowing of rice with drumseeder 2.Proper bunding for water retention.	
Delay by 4 weeks 3rd week of July	Rice	Rice (Arise-6444,Rajshree)	1.Direct sowing of rice with drumseeder 2.Proper bunding for water retention.	1.Supply of SRI Marker and cono weeder through RKVY.
Delay by 6 weeks 1st week of August	Rice	Rice (Arise-6444,Rajshree)	1.Directsowingofrice with drumseeder 2. Properbundingfor waterretention.	Supply of SRI marker,cono weeder and drum kit through RKVY
Delay by 8 weeks 3rd week of August	Rice	Rice (Anjali,BirsaDhan-201, BirsaDhan-202, Vandana,Sahbhagi).	1.Directsowingofrice with drumseeder. 3.Proper bunding for water retention. 4.Life saving irrigation.	Supply of seed & Drum seeder through NFSM & RKVY.

12 Cyclones:

Before Disaster	During Disaster	After Disaster
• Cyclone alert and warning atleast 48 hours and 24 hours respectively before the commencement of the bad weather • Ensure that all critical activities (mainly industrial production) in areas likely to be affected are shutdown	• Setting up of field hospitals in the affected areas and deployment of mobile hospitals • Mobilization of specialized equipment and machinery to affected areas • Arrangement for food, clothing, blanket/bedding, drinking water, sanitation and hygiene, lighting	• Creation/ Retrofitting of structures – including roads, bridges that may have been destroyed/ damaged due to the disaster • Special attention to ladies, children and elders • Arrangements for distribution of gratuitous relief and cash doles

	arrangements and essential medicines	

Pre-Disaster Period:

Preparation	Objective	Action initiated by
Convening District level committee on natural calamities	To suggest the least of relief work to be undertaken, advise on the precautionary measures to be taken, direction for stocking of food grain in the strategic or key point.	District Emergency Operation centre
Identification of vulnerable points according to the expected disaster	Repairing of breaches, Stocking of the sand bags, Alerting people near highly vulnerable pockets.	Additional Collector, Cos, BDOs, Executive Engineers
Identification & indent of essential commodities for the inaccessible/ scarcity pocket.	Stocking of food grains and other essential things in GP head quarter.	Cos ,BDOs
Selection of shelters	Arrangement for shelter during emergency	Additional Collector, Cos, BDOs through PRI and local people
Requirement of medicine, formation of mobile team, identifying epidemic areas	Stocking of medicine and deputation of people	Civil Surgeon
Arrangement for food and fodder for the cattle	Stocking of the same	District level officers
Organizing mock drill	Awareness generation and practice	District level officers

Immediate pre-disaster:

Preparation	Objective	Action initiated by
Receipt of information	From IMD/SRC/control room/DEOC	DEOC

Dissemination of information	From DEOC to all Cos/BDOs/line dept.	DEOC, Head of line dept. sub collectors, BDOs Tahsildaar
Immediate setting and operationalizing of control room round the clock rescue and operation	To evacuate vulnerable people to identified shelter and logistic arrangement	Civil defence unit, police personal, armed forces, fire officers, red cross team ready with rescue kits which are to be made available to them through the DEOC
Arrangement of free kitchen	To provide immediate feeding to the evacuated people	BDOs/ CDPOs/ NGOs
Sanitation and medicines	To prevent epidemic and infection	Executive engineer of PHED/ civil surgeon
Ensuring transportation of relief material to affected pockets	To ensure that the relief materials reach in time to the affected people	DSO/ SDM/ BSOs/DTO
Ensuring safety of life and belongings	To prevent anti-social activities	SP/ DSP/Inspector and SI of the affected block/ NGOs
Ensuring availability of safe drinking water, provision of health facility and minimum sanitation	To check the onset of epidemics	CS/Executive engineers of PHED
Meeting of field level officers in every 24 hours to review the situation	Better coordination	DC, DDC at dist level and SDM at sub divisional level
Collection of information by the core group of EOC and daily reporting to concerned officer	Triangular linkage between field district and state control room	Core group of EOC/ Officers of line dept.
Estimation of no.of vehicles light/medium/heavy	To ensure smooth transportation for relief works	DTO
Arrangement of road cleaner/power sow and other essential equipment	To clean the roads, cut the fallen trees, clear the debris	DTO, executive engineers, executive officers- nagar panchayat
Arrangement of the trucks loaded with generators	To move to the field immediately after the disaster is over	DTO

During Disaster:

Preparation	Objective	Action initiated by
Alertness & readiness to gear up in action ,immediately after the disaster	To rescue the trapped and injured persons	All the stakeholders
Control room functional round the clock	To mitigate the effects of the disaster	District control room, all line depts., BDOs, COs
Monitoring	To review the rescue and relief work	DC, SDM

POST DISASTER:

Preparation	Objective	Action initiated by
Distribution of relief as per provisions	To provide food and other essential commodities for survival	SDM, BDOs, Eos, NGOs
Assessment of damage	To ascertain the exact loss for reporting to the Government	All line dept., Cos, BDOs, Executive Engineers, Sub Collector
Monitoring relief operation organized by outside agencies / UN agencies Red cross / NGOs / PSUs / Other states etc. through district administration	To maintain uniformity of relief administration	DC, SDM
Restoration of communication – roads and railways	For timely and prompt delivery / transportation of relief articles / development of rescues team	Executive engineers of rural works, military and paramilitary forces, police personal
Restoration of electronic communication system	To ensure proper coordination linkages	SDE, BSNL / Technocrats of police signals
Immediate arrangement of free kitchen in the cut	To avoid starvation and further deterioration both	Sub-Collectors / BDOs / Line Dept./ PSUs
Documentation of the entire event- Black & White / Audio & Video	To assess / apprise the situation to different Central / State level dignitaries of the event and official records	SDM / BDO
Monitoring	To take stock of the day-to-day activities, sort out bottlenecks for proper implementation of relief / restoration / rehabilitation programme	DC / DDC / AC

Preventative / Mitigation measures to be undertaken- Children:

Activity	Directly Responsible	Sub-Division Monitor	District Monitor
ICDS Centres must run Without fall	CDPO	Sub-Collectors	DSWO
NCP Schools, Orphanages must run without fall	Project Directors, NCLP	Sub-Collectors	DDOs / DSWO
MDM must be given in designated school must run without fall	SI of schools / BDOs	Sub-Collectors	DSWO
BEEO of School shall remain squarely responsible for uninterrupted MDM			

Drinking water for people:

		Directly Responsible	Sub-Division Monitor	District Monitors
Drinking water for people	Repair within 48 Hrs of receiving of complaint at block / PHD / RWSS office	concern SDO / PHED	Sub-Collector	Ex.Engineer, MI / PHED
Stand post repair	response must be prompt / immediate	concern SDO / PHED	Sub-Collector	Exe.Engineer, MI / PHED
New tube-wells	Shall be sunk in order of priority	concern SDO / PHED	Sub-Collector	Exe.Engineer, MI / PHED
Drinking water wells	To be dug at the place of need in consultation with Block out of Pas fund	BDO	Sub-Collector	DRDA
Sinking of wells in ponds	To be dug at the place of need in consultation with Block out of Pas fund	BDO	Sub-Collector	DRDA
Renovation of traditional drinking water sources		BDO	Sub-Collector	Exe.Engineer, MI / PHED

Veterinary:

Drinking water for Animals	Directly Responsible	Sub-Division monitor	District Monitor
A through near each tube well should be constructed	BDOs/ TBOs	SDO	DC/ DAHO

Public Distribution System:

PDS	PDS	Directly Responsible	Sub-Division Monitor	District Monitor
Market Rates	To keep close watch on rates of essential commodities and report deviation	Inspector of supplies / MO	SDO	AC / DSO
Off take / lifting	ACOs in the sub division and inspector of supplies of the block must see off taking to retail	Inspector of supplies / MO	SDO	AC / DSO
Rice / Wheat, Atta for Hat sale	Concerned inspector of supplies of the respective hat area will look after this if situation demands	Inspector of supplies / MO	SDO	AC / DSO
The inspector of Supplies and MIOs shall remain responsible for price hike of essential commodities				

Wage Employment / Minimum wage for the able:

	Directly Responsible	Sub-Division Monitor	District Monitor
50 or more labourers wanting work shall be provided work,	BDO	SDO	DC / DRDA

model estimates of percolation tank should be dug			
Minimum wage enforcement	DLO	SDO	DLO
Govt./ SRC shall be moved to for immediate allocation of funds for taking up LI works	BDO	SDO	DC / DRDA
Only labour intensive works shall be taken up, all other work requiring labour component shall be stopped	BDO	SDO	DC / DRDA

Epidemic control and animal diseases:

	Directly Responsible	Sub-Division Monitor	District Monitor
In case of epidemic in a locality, the CDMO land his staff must get into action on war footing	Medical officer	ACMO	CS
Animal diseases: In case of epidemic of animals in the area, the CDVO shall act on war footing	BAHO	SAHO	DAHO

District monitor meet:

	Directly Responsible	Sub-Division Monitor	District Monitor
District monitor meet; Once a week, Complete feedback from the district monitor; Any negligence shall be strictly	OICs of concerned sections	Concerned sub collectors shall take up reviews on each alternative day	AC

dealt with			

Protection for drinking water source:

	Directly Responsible	**Sub-Division Monitor**	**District Monitor**
The security of every drinking water supply system shall be thoroughly reviewed and action as deemed fit for tightening its security taken. The security of drinking water supply shall be personally reviewed by the superintendent of police	Concerned SDO /PHED / OIC police station	SDO / DSP	SP of the district

Control of communicable diseases and prevention of epidemics:

Disease	Symptoms	Environmental Risk Factors	Health Hazards
Acute Upper respiratory tract infections	All symptoms of the common cold, fever and heavy coughing. Chest pain and pain between shoulder blades in pneumonia.	Crowding, poor hygiene	Influenza and pneumonia may cause severe complications, especially in groups at risk
Diarrhea	Watery stools at least three times a day, with or without blood or slime. May be accompanied by fever, nausea or vomiting.	Contaminated drinking- water or food, or poor sanitation	Dehydration, especially in children, shown by dark colouration of urine, dry tongue or leathery skin
Measles	A disease of early childhood, characterized by fever and catarrhal symptoms, followed by maculopapular rash in the mouth.	Crowding, poor hygiene	Severe constitutional symptoms, high case fatality rate

Malaria	Painful muscles and joints, high fever with chills, headache, possibly diarrhea and vomiting.	Breeding of *Anopheles* mosquitoes in stagnant water bodies	Disease may rapidly become fatal, unless medical care is provided within the first 48 hours
Meningococcal meningitis	Infected persons may show no symptoms for a considerable time. When an epidemic is in progress, headache, fever and general malaise will suggest the diagnosis, which must be confirmed by lumbar puncture.	Crowding	Often fatal if untreated at an early stage; neurological problems in survivors
Shigella dysentery	Diarrhea with blood in the stools, fever, vomiting and abdominal cramps.	Contaminated drinking- water or food, or poor sanitation, poor hygiene	Case fatality rate may be high
Viral Hepatitis A	Nausea, slight fever, pale-colored stools, dark-colored urine, jaundiced eye whites and skin after several days.	Poor hygiene	Long-term disabling effects
Louse-borne typhus	Prolonged fever, headache, body pains.	Unhygienic conditions leading to lice infestations	May be fatal without treatment
Typhoid Fever	Starts off like malaria, sometimes with diarrhea, prolonged fever, occasionally with delirium.	As for diarrhea	Without appropriate medical care, may lead to fatal complications in a few weeks
Cholera	Modest fever, severe, but liquid diarrhea (rice water stools), abdominal spasms, vomiting, rapid weight loss and dehydration.	As for diarrhea	As for diarrhea
Dengue and Dengue Hemorrhagic fever (DHF)	High fever, headaches, pain in muscles and joints, red spots on skin.	Breeding of *Aedes* mosquitoes in natural or artificial containers, filled with water	Dengue usually runs a mild course. DHF, however, is often accompanied by heavy hemorrhages, which may be fatal
Diphtheria	Inflamed and painful throat, coughing.	Crowding, poor hygiene	A secretion is deposited in the respiratory tract, which can lead to asphyxiation
Tetanus	Muscle spasms, starting in the jaws and extending to the rest of the body over several days	Poor hygiene, injury	Fatal

Rabies	Fatigue, headache, disorientation, paralysis, hyperactivity	Bite from infected animal host	Fatal if untreated
Heat Stress	Elevated body temperatures, nausea, vomiting, headache	Excessive temperatures	Risk of coma
Relapsing fever (louse-borne or tick-borne)	Acute high fever at intervals	Unhygienic conditions leading to lice or tick infestations	Often fatal in untreated persons, depending on immunity levels

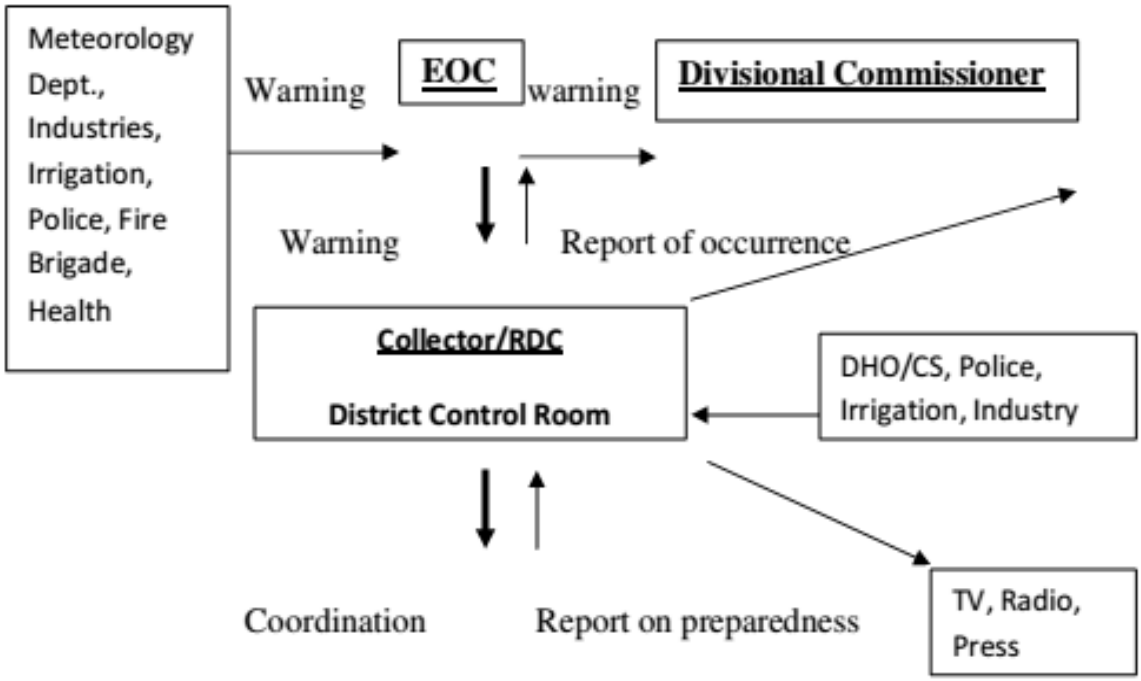
Chapter 5

Preparedness Measures

Incident Response System (IRS)

The Incident Respond System (IRS) is a management system and an on-scene, all risk, flexible modular system adaptable for natural as well as man-made disasters. The ICS has a number of attributes or system features. Because of these features, ICS has the flexibility and adaptability to be applied to a wide variety of incidents and events both large and small. The primary ICS management functions include:

1. Command
2. Operations
3. Logistics
4. Planning
5. Finance / Administration



The ICS seeks to strengthen the existing disaster response management system by ensuring that the designated controlling/responsible authorities at different levels are backed by trained Incident Command Teams (ICTs) whose members have been trained in the different facets of disaster response management.

The five command functions in the Incident Command System are as follows:

1. **Incident Commander**
   The Incident Commander is responsible for all incident activity. Although other functions may be left unfilled, there will always be an Incident Commander.

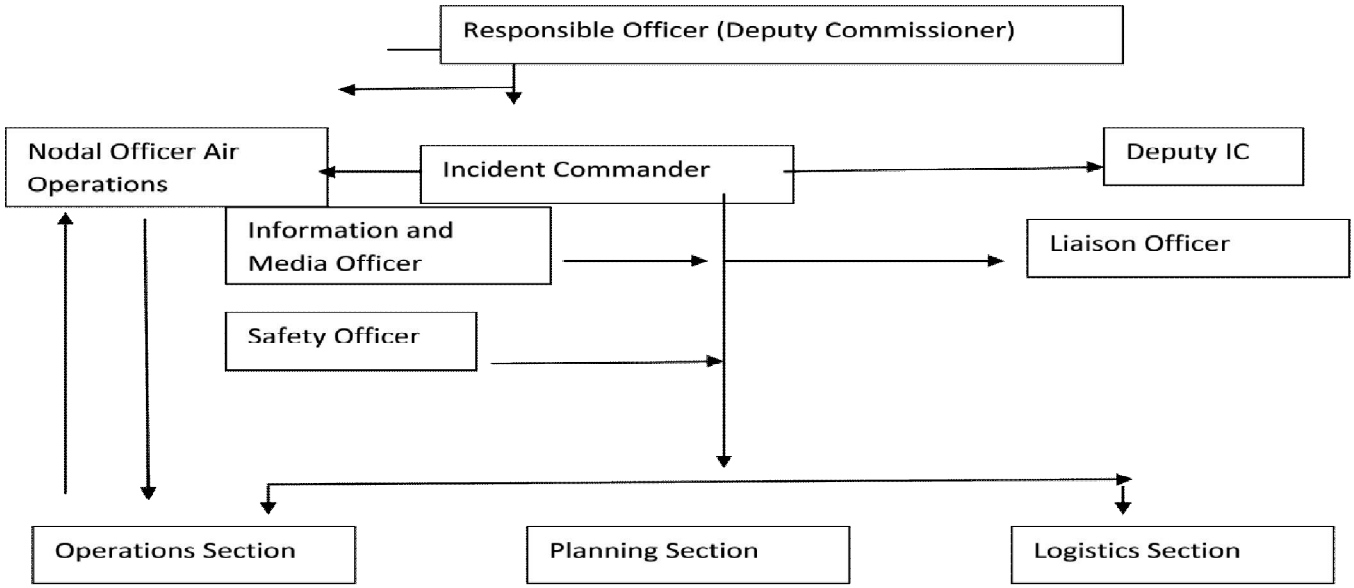
2. **Operations Section**
   Develops tactical organization and directs all the resources to carry out the Incident Action Plan.

3. **Planning Section**
   It is responsible for the collection, evaluation, and display of incident information, maintaining status of resources, and preparing the Incident Action Plan and incident related documentation.

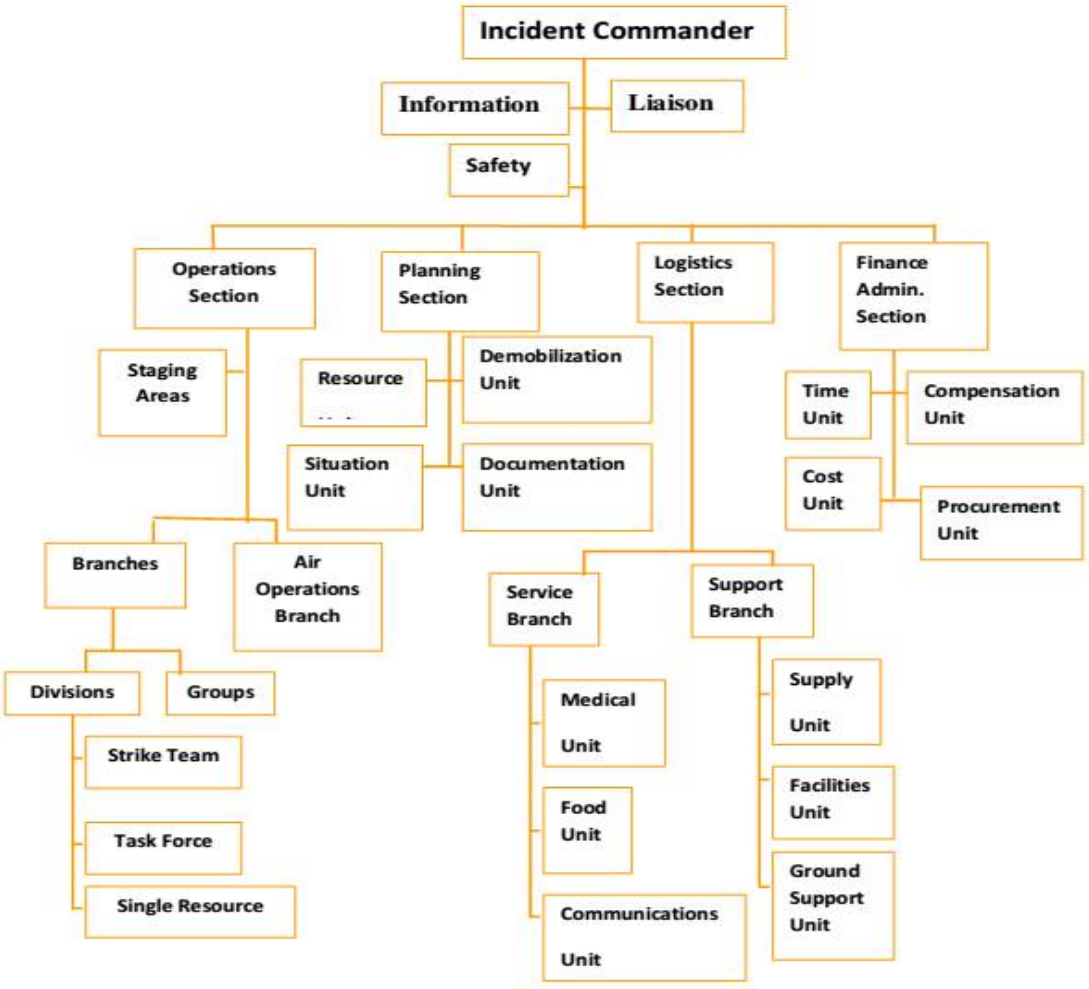
4. **Logistics Section**
   Provides resources and all other services needed to support the organization.
5. **Finance / Administration Section**
   Monitors costs related to the incident, provides accounting, procurement, time recording, cost analysis, and overall fiscal guidance.

District Incident Response System

At the district level, there will be one District Headquarters Team with the primary function of assisting the Deputy Commissioner in handling tasks like general co-ordination, distribution of relief materials, media management and the overall logistics. Suitable officers from the district administration will be carefully selected and professionally trained for the different ICS positions in order to constitute the District Level Incident Command Teams(DICTs). The teams will focus on the operational aspects of response management, duly supported by other functions in ICS, e.g. Planning, Logistics, Finance/Administration, etc. The officers drawn for this assignment will be carefully selected by the Deputy Commissioner depending upon their fitness, ability and aptitude for any of the DICT positions and they will be professionally trained to fulfill their assigned roles. Arrangements will also be made for ensuring their mobilization in a time-bound manner for their deployment to the incidence location.



INCIDENT COMMAND ORGANIZATION CHART



Role and Responsibilities of IRS Staff

The following represents the major responsibilities and duties of the Incident Commander. The incident commander's responsibility is the overall management of the incident. The Incident Commander may have a deputy who may be from the same agency, or from anassisting agency.

Incident Commander	Major responsibilities and duties of Incident Commander i. Assesses the situation and/or obtain a briefing from the prior Incident Commander. ii. Determine incident objectives and strategy. iii. Establish the immediate priorities. iv. Establish an incident command post. v. Establish an appropriate organization. vi. ensure planning meetings are scheduled as required. vii. Approve and authorize the implementation of an Incident Action Plan. viii. Ensure that adequate safety measures are in place. ix. Co-ordinate activity for all Command and General Staff. x. Coordinate with key people and officials. xi. Approve requests for additional resources or for the release of resources. xii. keep agency administrator informed of incident status. xiii. Approve the use of students, volunteers, and auxiliary personnel. xiv. Authorize release of information to the news media. xv. Order the demobilization of the incident when appropriate.
Information Officer	The information officer is responsible for developing and releasing information about the incident to thenews media, to incident personnel, and to other appropriate agencies and organizations. Reasons for the IC to designate an Information Officer i. An obvious high visibility or sensitive incident media demands for information may obstruct IC effectiveness. ii. Media capabilities to acquire their own informationare increasing. iii. Reduces the risk of multiple sources releasing information. iv. Need to alert, warn or instruct the public v. The Information Officer should consider the following when determining a location to work at the incident. vi. Be separate from the Command Post, but close enoughto have access to information. vii. An area for media relations and press/media briefings must be established. viii. Information displays and press handouts may be required. ix. Tours and photo opportunities may have to be arranged.
Liaison Officer	Incidents that are multi-jurisdictional, or have several Agencies involved, may require the establishment of the Liaison Officer position on the Command Staff. The Liaison Officer is the contact for Agency Representatives assigned to the incident by assisting or co-operating agencies. These are personnel other than those on direct tactical assignments or those involved in a Unified Command. Reasons for the IC to designate a Liaison Officer i. When several agencies send, or plan to send, agencyrepresentatives to an incident in support of theirresources. ii. When the IC can no longer provide the time for individual coordination with each agency representative. iii. When it appears that two or more jurisdictions may become involved in the incident and the incident will require on-siteliaison.

Safety Officer	The Safety Officer's function on the Command Staff is to develop and recommend measures for assuring personnel safety, and to assess and/or anticipate hazardous and unsafe situations. Only one Safety Officer will be assigned for each incident. The Safety Officer may have assistants as necessary, and the assistants may also represent assisting agencies or jurisdictions.Safety assistants may have specific responsibilities such as air operations, hazardous materials,etc. The Safety Officer will correct unsafe situations by working through the chain of command. However, the Safety Officer may exercise emergency authority to directly stop unsafe acts if personnel are in imminent life-threatening danger.

Role and Responsibilities of IRS General Staff

The General Staff consists of the following positions:

1. Operations Section Chief
2. Planning Section Chief
3. Logistics Section Chief
4. Finance/Administration Section Chief

Operations Section

The Operations Section is responsible for managing all tactical operations at an incident. The build-up of the Operations Section is generally dictated by the number of tactical resources involved and span of control considerations.

The Operations Section consists of the following components:

- Ground or surface-based tactical resources
- Aviation (Air) resources – helicopters and fixed-wing aircraft
- Staging Areas

Ground or Surface-based Tactical Resources
There are three ways of organizing tactical resources on an incident. The determination of how resources will be used will be determined on the application area and the tactical requirement. Resources can be used as: • Single Resources • Task Forces • Strike Teams Depending on the need, tactical resources can be placed into an operations organization made up of:

- Resources reporting to the Incident Commander or Operations Section
- Chief
- Divisions or Groups
- Branches

Aviation (Air) Resources

Many incidents require the use of tactical or logistical aircraft to support the incident. In ICS, all aviation resources assigned for exclusive use of the incident are assigned to the Operations Section. These include aircraft providing logistical support.

The Operations Section Chief may establish a separate Air Operations Branch when

- The complexity of air operations and/or the number of aircraft assigned to the incident requires additional management support
- The incident requires both tactical and logistical use of air support
- When the air operations organization is formally established on an incident, it will be set up as an Air Operations Branch within the Operations Section.

Staging Areas

The third component of the Operations Section is the Staging Area.

An ICS Staging Area is a temporary location for placing resources available for incident assignments. All resources within the Staging Area belong to the incident.

Resources assigned to a Staging Area are available on a three minute basis to take on active assignment.

Staging Area are temporary facilities. They can be set up at any appropriate location in the incident area and moved or deactivated as needed.

Staging Area Managers report to the Operations Section Chief or to the Incident Commander.

Planning Section

In IRS, the Planning Section is responsible for managing all information relevant to an incident. When activated, the Planning Section Chief who is a member of the General Staff manages the Section

The Planning Section collects, evaluates, processes, and disseminates information for use at the incident. Dissemination can be in the form of the Incident Action Plan, formal briefings, or through map and status board displays.

Some incidents may require personnel with specialized skills to be temporarily assigned to the Planning Section. These persons are called Technical Specialists such as

- Chemist
- Hydrologist
- Geologist
- Meteorologist
- Training Specialist

There are four units within the Planning Section that can be activated as necessary:

1. Resources Unit
2. Situation Unit
3. Documentation Unit
4. Demobilization Unit

Common responsibilities of Unit Leaders are listed below:

- Obtain briefing from the Section Chief
- Participate in incident
- Determine current status of unit activities
- Confirm dispatch and estimated time of arrival of staff and supplies Assign specific duties to staff, supervise staff
- Develop and implement accountability, safety, and security measures for personnel and resources
- Supervise demobilization of the unit, including storage of supplies
- Provide Supply Unit Leader with a list of supplies to be replenished
- Maintain unit records, including Unit Log

Resources Unit
This Unit is responsible for maintaining the status of all assigned resources at an incident. It achieves this through: • Overseeing the check-in of all resources • Maintaining a status-keeping system indicating current location and status of all the resources. • Maintenance of a master list of all the resources, e.g. key supervisory personnel, primary and support resources, etc.
Situation Unit
The collection, processing, and organizing of all incident information takes place within the Situation Unit. The Situation Unit may prepare future projections of incident growth, maps, and intelligence information. Three positions report directly to the Situation Unit Leader

- Display Processor – maintains incident status information obtained from Field Observers, resource status reports, etc. information is posted on maps and status boards as appropriate.
- Field Observer – Collects and reports on situation information from the field.
- Weather Observer – Collects current weather information from the weather service or an assigned meteorologist.

Documentation Unit

The Documentation Unit is responsible for the maintenance of accurate, up-to-date incident files. Duplication services will also be provided by the Documentation Unit. Incident files will be stored for legal, analytical, and historical purposes.

Demobilization Unit

The Demobilization Unit is responsible for developing the Incident Demobilization Plan. On large incidents, demobilization can be quite complex, requiring a separate planning activity. Planning for demobilization should begin at the early stages of an incident, particularly in the development of rosters of personnel and resources, thus ensuring the efficient and safe demobilization of all the resources.

Technical Specialists

Certain incidents or events may require the use of Technical Specialists who have specialized knowledge and expertise. Technical Specialists may function within the Planning Section, or be assigned wherever their services are required.

In the Planning Section, Technical Specialists may report to the following:

- Planning Section Chief
- A designated Unit Leader

Some examples of the more commonly used specialists are :

- Meteorologist
- Environmental Impact Specialist
- Flood Control Specialist
- Water Use Specialist
- Fuels and Flammable Specialist
- Hazardous Substance Specialist
- Fire Behavior Specialist
- Structural Engineer
- Training Specialist

Logistics Section

The Logistics Section is responsible for the following:

- Facilities
- Transportation

- Communications
- Supplies
- Equipment maintenance and fueling
- Food Services
- Medical Services
- Ordering Resources

The Logistics Section Chief manages the Logistics Section. On very large incidents, or on incidents requiring a great deal of equipment or facilities, the Logistics Section may be divided into two branches – Service Branch and Support Branch. This is most often done for span of control reasons, resulting in a more manageable organization.

Six Units may be established within the Logistics Section:

- Supply Unit
- Facilities Unit
- Ground Support Unit
- Communications Unit
- Food Unit
- Medical Unit

Supply Unit
The Supply Unit is responsible for ordering, receiving, processing and storing all incident-related resources. All off-incident resources will be ordered through the Supply Unit, including: • Tactical and support resources (including personnel) • All expendable and non-expendable support supplies. Two Managers report directly to the Supply Unit Leader: • Ordering Manager – places all orders for incident supplies and equipment. • Receiving and Distribution Manager – receives and distributes all supplies and equipment (other than primary tactical resources) and is responsible for the service and repair of tools and equipment.
Facilities Unit
This unit is responsible for set-up, maintenance, and demobilization of all incident support facilities except Staging Areas. These facilities are : • Incident Command Post • Incident Base • Camps • Other facilities within the incident area to be used for feeding, sleeping, and sanitation services. The Facilities Unit will also provide security services to the incident as needed. Three managers report directly to the Facilities Unit Leader. When established at an incident, they have

important responsibilities.

a. Security Manager – provides safeguard necessary for protection of personnel and property from loss and damage.

b. Base Manager – ensures that appropriate sanitation, security, and facility management services are in place at the Base.

c. Camp Manager – On large incidents, one or more camps may be established. Activities at the camps may include many of those regularly performed at the Base. Camp Managers are responsible for providing non-technical coordination for all the units operating within the camp.

Ground Support Unit
The Ground Support Unit is responsible for the maintenance, service, and fueling of all mobile equipment and vehicles. The Unit also has responsibility for the ground transportation of personnel, supplies, and equipment and the development of the Incident Traffic Plan.
Communications Unit
The Communications Unit is responsible for developing plans for the use of incident communications equipment and facilities, installing and testing of communications equipment, supervision of the Incident Communications Center, and the distribution and maintenance of communications equipment.
Food Unit
The Food Unit is responsible for supplying the food needs for the entire incident, including all remote locations as well as providing food for personnel unable to leave tactical field assignments. Planning is essential to the efficient supply of food. The Food Unit must anticipate the number of personnel to be fed and develop plans for supplying food to all incident areas.
Medical Unit
The Unit will develop an Incident Medical Plan, develop procedures for managing major medical emergencies, provide medical aid, and assist the Finance/ Administration Section with processing injury-related claims.

Finance / Administration Section

The Finance/Administration Section is responsible for managing all financial aspects of an incident. There are four units, which may be established within the Finance/Administration Section:

- Time Unit
- Procurement Unit
- Compensation /Claims Unit
- Cost Unit

Time Unit

The Time Unit is responsible for ensuring the accurate recording of daily personnel time, compliance with specific agency time recording policies, and managing commissary operations if established at the incident.
Procurement Unit
All financial matters pertaining to vendor contracts, leases and fiscal agreements are managed by Procurement Unit. The Procurement Unit establishes local sources for equipment and supplies, manages all equipment rental agreements and processes all rental and supply fiscal document billing invoices.
Compensation / Claims unit
The Claims Unit is responsible for investigating all claims involving property associated with or involved in the incident. This can be an extremely important function on some incidents. Two Specialists report to the Compensation / Claims Unit Leader : • Compensation –for- injury Specialist - Administers financial matters arising from serious injuries and deaths on an incident. Work is done in close cooperation with the Medical Unit. • Claims Specialist – manages all claims related activities (other than injury) for an incident.
Cost Unit
The Cost Unit provides all incident cost analysis. It ensures the proper identification of all equipment and personnel requiring payment, records all cost data, analysis and prepares estimates of incident costs, and maintains accurate records of incident costs

Response Plan vis- a- vis Various Disasters

DROUGHT	
Response Action of Administration	i. The DC shall ensure calling to tenders through advertisement in at least one English and one vernacular newspaper by end of April for supply of potable drinking water throughout the district. ii. The DC shall ensure identification of suppliers and fixation of rates for transportation of drinking water through tankers/tractors Sub-division wise by the first week of April in case of poor rainfall during the preceding winter and otherwise by end of May. iii. The DC shall authorize the SDMs for issuing orders for supply of drinking water through tankers as per need. iv. The DC shall identify nearest market in adjoining district/ state from where fodder (Straw is easily available and direct SDMs to advise people to procure fodder from such place. v. The DC shall submit report to the Government regarding crop loss due to drought and seek funds for utilization in employment generation.

	vi.	The DC shall submit report to Government with regard to situation of drinking water supply.
	vii.	The DC in consultation with Animal Husbandry dept. shall assess requirement of fodder on the occurrence of drought and submit report to the Government.
	viii.	The DC shall constitute joint emergency Sub-Division level and Tehsil level teams consisting of Executive Magistrate, Doctor, SDO (I&PH) for monitoring outbreak of water borne diseases.
	ix.	The DC shall issue direction regarding cleaning of Traditional water Bodies prior to onset of summer and succeeding rainy season.
	x.	The DC shall review availability of stock in all fair price shops in view of crop failure.
	xi.	The DC shall issue prohibitory orders with regard to sale of over ripe/rotten fruits and vegetables.
	xii.	The Health Department shall ensure stocking of medicines for water borne diseases in all health institutions.
	xiii.	The I& PH Department shall ensure availability of Chlorine tablets and bleaching powder at the village/ Panchayats level.
	xiv.	The DC shall converge various programmes and schemes of government for tackling drought situations.
Response Action of SDM	i.	SDM shall submit weekly report regarding drinking water availability in respective jurisdiction from first week of May to the DC.
	ii.	SDM shall prepare route chat for distribution of drinking water in consultation with the Executive Engineer I&PH department.
	iii.	SDM shall identify source of drinking water in consolation with the I&PH dept. from where shall take their supply.
	iv.	SDM shall direct deployment of water tankers for supply of drinking water.
	v.	SDM shall monitor smooth supply of water through tankers. There shall be made at least two trips in a day by the tankers.
	vi.	SDM shall keep record of movement of water tankers in coordination with the I&PH dept.
	vii.	SDM shall constitute a team comprising of panchayat Pradhan, Patwari and Veterinary Doctors at local level for verification of fodder procured.
	viii.	SDM shall ensure proper voucher/ invoice/ bill produced for providing transport subsidy as per relief manual.
	ix.	SDM shall have the drinking water transportation bills verified through the I&PH dept. and release payment for the same.

Response Action by I&PH	i. The XEN shall submitted weekly reports of status of water supply in departmental schemes from the week of May to the Superintendent Engineer. ii. The SE shall compile status of water in the district and submit same to the DC on weekly basis. iii. The XEN shall submitted demand of supply of water through tankers to the SDM. iv. The XEN shall identify source for filling of water tanker. v. The XEN shall ensure chlorination of such water supply. vi. The XEN shall ensure purification of natural water sources and all departmental schemes. vii. The XEN shall deploy personal (eg. Water guard) with each tanker to ensure proper and equitable distribution of water. viii. The XEN shall maintain a register of movement and supply by each tanker which shall be verified by officer authorized by him. ix. The XEN shall try to install more hand pumps in areas which chronically face water scarcity during summer.
Response Action by Agriculture Department	i. The Agriculture Officer shall monitor the situation for impact of drought on crop growth and consequent yield. ii. The Agri. Officer shall submit weekly report starting from last week of May and first week of January regard to status of Kharif and Rabi crops. iii. The Agri. Officer shall prepare contingency plan for any crop failure due to drought and submit same to the Government and DC. iv. The Agri. Officer in view of drought shall organize extensive field camps to advise farmers on alternative crop and strategies.
Response Action by Horticulture Department	i. The Deputy Director Horticulture shall monitor the situation for impact of drought on tree growth and consequent fruit yield. ii. The Deputy Director shall submit weekly report starting from last week of May and first week of January with regard to status of fruit beating trees. iii. The Deputy Director shall prepare contingency plan for any crop failure due to drought and submit same to the Government and DC. iv. The Deputy Director shall view of drought shall organize extensive crop and strategies.
Response Action by Health Department	i. The CMO shall ensure all medical institutions are stocked with adequate medicines, especially for water borne diseases. ii. The CMO shall constitute emergency medical teams at all PHC level to attend to outbreak of any epidemic (eg. Water borne disease.). iii. The CMO shall convene a meeting under the DC of all concerned departments including Revenue, Rural Deptt. I&PH, Ayurveda with regard to prevention of water borne diseases. iv. The CMO shall ensure issuance of notification banning sale of over ripe/rotten and uncovered fruits/vegetables/flood by the District Magistrate.

ROAD ACCIDENT	
Response Action by SDM	i. The SDM shall immediately inform the DC of occurrence of accident. ii. The SDM shall immediately direct SHO concern to rush Police personnel to sport. iii. The SDM shall immediately direct the Tehsildars/Naib-Tehsildar to rush to the spot. iv. The SDM shall immediately put the Health Dept. on the alert by information CMO/BMO concerned. v. The SDM shall depend upon the magnitude of the accident request for assistance from Commandant Home Guard, PWD etc. vi. The SDM shall depend upon the magnitude rush to the spot of the accident. vii. The SDM shall arrange for search & rescue on the spot taking assistance of Police, Home Guard, Fire Brigade, PRIs, NGOs and local population. viii. The SDM shall evacuate people directly involved in the accident and also general public if it is deemed necessary. ix. The SDM shall direct the health dept. to depute ambulance and paramedical and medical staff to the spot immediately for on the spot treatment and first aid. x. The SDM shall arrange for dead van if so required. xi. The SDM shall coordinate between the Police, Health dept. Victims and their kith and kin for search and rescue, low and order, traffic management post shall coordinate with the health dept. For conduct of immediate post mortem and early handing over of dead bodies to kith and kin. xii. The SDM shall ensure submission of a brief and comprehensive detailed report of the accident within 12 Hrs to the DC. The report shall contain the following information. - Location and details of vehicle involved in the accident. - Prima facie cause of accident. - Detail of passengers with identification if any. - Detail of relief provided in from of medicines and cash. xiii. The SDM shall keep the DC informed on action being taken on the spot from time to time.
Response Action for Health Department	i. The CMO on receiving information regarding the accident shall immediately put on casualty/ emergency ward of District Hospital for referred cases. ii. The CMO shall inform the BMO concerned and the SMO of the concerned sub-divisional hospital for similar action. iii. The CMO shall arrange for immediate movement of ambulance with medical and paramedical staff to the site of accident. iv. The CMO shall ensure portable stretchers are available site for evacuation on the injured and the dead. v. The CMO shall ensure availability of first Aid on the spot. vi. The CMO shall depute doctors from surrounding PHC/CHC to the CHC where the injured have been evacuated if staff strength is not enough at that health institution.

	vii. The CMO shall maintain a detail of victims admitted to various health institutions including those referred to specialized health institutions outside the district. The CMO submit in writing to the DC such detail including status if health within 12 Hrs. in consultation with the SDM.
Response Action of SHO	i. The SHO shall immediately inform the SDM, SP and DC regarding the incident with details of site. ii. The SHO shall immediately deputy a team of police personal to the site iii. Depending upon the magnitude, the SHO shall rush to the site and personally coordinate search and rescue, evacuation, traffic regulation, low and order. iv. The SHO shall communicate factual information to the SP on reaching the spot on the following. - Exact location - Prima facie cause of accident - Vehicles involved, transport company - No. of injured - No. of fatalities - Status of driver and conductor - Status of injured v. The SHO shall arrange for search and rescue in consultation with the SDM. vi. The SHO shall ensure smooth movement of traffic. vii. The SHO shall divert the traffic if required in consultation with the SDM. viii. The SHO shall arrange for a guard to protect the property of the victims at the site. ix. The SHO shall take necessary legal action as low and also initiate an inquiry into the causes of the accident. x. The SHO shall arrange for early post mortems and quick release of bodies to the kith and kin. xi. The SHO shall submit a brief and comprehensive report regarding the accident in consultation with the SDM to the SP with in 12 Hrs of the accident.
Response Action of PWD	i. The XEN concerned shall provide equipment and manpower to the SDM at the accident site on request. ii. Equipment such as crane, JCB, Bulldozer, Gas cutter etc shall be provided by the XEN as per request of the SDM. iii. The XEN/SDO/JE shall supervise such operations at site depending upon the magnitude of the accident as assessed by the SDM. iv. The XEN shall ensure manpower is provided at site on the request of the SDM.
Response Action of Home Guards	i. The Commandant shall ensure movement of fire brigade immediately to the site when called for by the SDM. ii. The Commandant shall provide manpower for assistance in search and rescue, removal of dead, traffic management, first aid etc.

Incident Response System- IRS Sahibganj with Role

SL. No.	Head role in IRS	Sub Head	Designated Officer	Name of the Officer	Contact Details				
					Office	Residence	Fax	Mobile	E-mail
1	RESPONSIBLE OFFICER		Deputy Commissioner (DC)	Dr. Sailesh Chowrasia	06436-222100	06436-222001 222202	222352	9431152021	dc-sah@nic.in
2	Incident Commander		Deputy Commissioner (DC)	Dr. Sailesh Chowrasia	06436-222100	06436-222001 222202	222352	9431152021	dc-sah@nic.in
3	Deputy		DDC	Mrs. Nancy Sahaya	222138	222179		9199270135	
4	Safety Officer		Superintendent of Police (SP)	Mr. P. Murugan	06436-22160	06436-222033		9431139230	sp-sahebganj@jhpolice.gov.in
			Chief Medical Surgeon (CS)	Dr. B. Marandi	224577			7295906940	
			District Animal Husbandry Officer (DAHO)	Mr. Bishnudev Manjhi	225993			7739752141	
5	Liason Officer		Additional Collector (AC)	Mr. Anmol Kumar Singh	06346-222102			9431396642	acsahibganj2010@gmail.com
6	Information & Media Officer		Additional Collector (AC)	Mr. Anmol Kumar Singh	06346-222102			9431396642	acsahibganj2010@gmail.com
			District Public Relation Officer (DPRO)	Mr. Prabhat Shankar				9155672262	
			District Information Officer (DIO)	Mr. Umesh Kumar	222439			7033690425	
OPERATIONS SECTION									
	OPERATIONS CHIEF	District Chief	Additional Collector (AC)	Mr. Anmol Kumar Singh	06346-222102			9431396642	acsahibganj2010@gmail.com
	(Rescue & Relief)	Branch 1	SDO, Sahibganj	Mr. Amit Prakash	222093	222030		9431139143 9199063272	sdosahibganj@gmail.com
	(Rescue & Relief)	Branch 2	SDO Rajmahal	Mr. Chintu Dorai Buru	228115	228114	228114	9973205019	sdorajmahal@gmail.com
	(Rescue & Relief)	Division 1	BDO Sahibgaj	Mr. Angarnath Swarnakar	222062	222062		9955229279	sbgbdo2011@gmail.com

	(Rescue & Relief)	Division 1	CO Sahibgaj	Mr. Ram Naresh Soni	252083			9102903889	
	(Rescue & Relief)	Division 2	BDO Rajmahal	Mr. Binay Ku Soni				7782063794	bdorajmahal@gmail.com
	(Rescue & Relief)	Division 2	CO Rajmahal	Mr. Mohan Lal Marandi				7762923023	
	(Rescue & Relief)	Division 3	BDO Udhwa	Bijay Kumar	06426-276431			8092893086 9955268191	bdoudhwa@gamil.com
	(Rescue & Relief)	Division 3	CO Udhwa	Mr. Yamun Ravidas				7870926819	ravidasy@gmail.com
	(Rescue & Relief)	Division 4	BDO Taljhari	Mr. Dhiraj Prakash	246303			8757794521	taljhari.sbg@gmail.com
	(Rescue & Relief)	Division 4	CO Taljhari	Mr. Naresh Munda				8084804121 9835537006	anchal.taljhari@gmail.com
	(Rescue & Relief)	Division 5	BDO Borio	Mr. Gautam Ku Bhagat	252083				boriobdojh@gmail.com
	(Rescue & Relief)	Division 5	CO Borio	Mr. Naresh Munda				8084804121 9835537006	
	(Rescue & Relief)	Division 6	BDO Barharwa	Mr. Sadanand Mahato	278353	278353		7563862133	bdobarharwa@gmail.com
	(Rescue & Relief)	Division 6	CO Barharwa	BDO Incharge					
	(Rescue & Relief)	Division 7	BDO Mandro	Mr. Roshan Kumar	274438			8757320144	bdomandro@gmail.com
	(Rescue & Relief)	Division 7	CO Mandro	BDO Incharge					
	(Rescue & Relief)	Division 8	BDO Barhait	Mr. Rajiv Kumar	268819	268819		8002648400	bdobarhait@gmail.com
	(Rescue & Relief)	Division 8	CO Barhait	BDO Incharge					
	(Rescue & Relief)	Division 9	BDO Patna	Mr. Bijay Prakash Marandi	278865				bdopatna@gmail.com
	(Rescue & Relief)	Division 9	CO Patna	BDO Incharge					
	Branch (Transportation)	Transportation	District Transport Officer (DTO)	Mr. Amit Prakash (Incharge)	8294041010			9430741414	

PLANNING SECTION									
	Planning Chief		SDO, Sahibganj	Mr. Amit Prakash	222093	222030		9431139143 9199063272	sdosahibganj@gmail.com
			SDO Rajmahal	Mr. Chintu Dorai Buru	228115	228114	228114	9973205019	sdorajmahal@gmail.com
			District Planning Officer	Mr. Ram Nibara Singh				9973669140	
			DDMO	Mr. Amit Raj Deep				8002320203	deepamitraj@gmail.com
	Resource Unit		Deputy Collector Land Reforms (DCLR)	Mr. Amit Prakash	8294041010			9430741414	
			Nazarat Deputy Collector (NDC)	Mr. Ram Naresh Soni (In charge)	252083			9102903889	
	Situation Unit		District Forest Officer (DFO)	Mr. K. K. Tiwari	222065	222066		7295906940	
			District Agricultural Officer (DAO)	Mr. Marshal Khalko	222429			9431181027 9693929906	
	Documentation Unit		District Statistics Officer (DSO)	Mr. Binay Ku Mishra in charge	06436-225065			9934096667	sahibganjdso@gmail.com
	Demobilization Unit		BDOs/Cos						
LOGISTICS SECTION									
	LOGISTICS SECTION	Logistics Chief	Additional Collector (AC)	Mr. Niranjan Kumar	06346-222102			9431396642	acsahibganj2010@gmail.com
	Service Branch	Service Branch Team	Executive Engineer, DW & S	Mr. Anil Kumar	222039	222040		8409536914	
		Service Branch Team	Executive Engineer ROAD	Mr. Upender Sharma	222103			9431129642	
		Service Branch Team	Executive Engineer BUILDING	Mr. Debendranath Devnath				9162458095	
		Service Branch Team	Executive Engineer ELECTRICAL	Mr. Sailendra Besra	222106			9431135857	
	Service Branch	Communication Unit	District Public Relation Officer (DPRO)	Mr. Prabhat Shankar				9155672262	
			National Information Centre, Sahibganj	Mr. Umesh Kumar	222439			7033690425	

		Medical Unit	Chief Medical Surgeon (CS)	Dr. Ambika Prashad Mandal	224577			7295906940	
		Food Unit	District Supply Officer, Sahibganj	Mr. Mritunjaya Ku Barnawal (IC)	222093	222030		9431139143 9199063272	sdosahibganj@gmail.com
	Support Branch	Support Branch Head	District Land Reforms Officer, Sahibganj	Mr. Binay Ku Mishra				9934096667	
		Resource Provisioning Unit	President, Bazar Samiti Sahibganj	Mr. Satis Kumar	290098	225678		9431534978	
		Facilities Unit	Director, DRDA	Mr. Sripati Giri	22118			9470154775 9934861818	
		Ground Support Unit							
	Finance Branch	Finance Branch Head	Deputy Commissioner, Sale Tax	Mr. Suresh Mahoto				9771870758	
		Time Unit							
		Compensation/ Claim Unit	District Treasury Officer	Mr. Amit Prakash				8294041010 9430741414 7292982424	
		Procurement Unit	District Najir, Sahibganj	Mr. Goutam Jha				8252577176	

Chapter 6

Capacity Builiding and Training Measures

Introduction

Presently Disaster Management is an alarming issue immerged due to climate change and the issue is growing faster and faster. None of the district has remained safe from Disaster and the concern is that we cannot stop any disaster. The phenomenon has changed from relief centric approach to prevention, mitigation and preparedness for effective management of Disaster. Many policies and Act, activities and programs have been formulated by the Centre and State Govt. to make Disaster Management a prime focus to save the life, property and Environment. But the situation has not changed at different level due to unawareness among the administration. So it is important to sensitise the all the administration on Disaster Management and Climate Change Adaptation through capacity building and Training programs at all levels. More they will be aware and sensitise more they will be resilient to face any type of disaster and ready for quick rescue, relief, response and rehabilitation.

Proposed Plan

Looking into the need and emergency District Disaster Management Authority (DDMA), Sahibganj has planned to organize training for the administration as well as stakeholders on Disaster Management and Climate change Adaptation at all levels to sensitise all the administration and stakeholder.

The DDMA will organize capacity building and training programs at both Block and District level to target all levels of stakeholders like village, Gram Panchayat, Block and District. There are two types of training one is scheduled for 2days and other is 1day training program.

1. Block Level Training- There are 9 blocks in the District so training for all the 9 blocks have been planned which will be based on the 5topics for 5 different groups. A total of 45 training will be organized at block level which comes to 5 trainings for a block.

Sl. No	Name of the training	Training Details	Participants Details
1	Training of DM for PRI members on Community based DRR and Formulation of Village Disaster Management plan.	2 days training Programmes at all 9 blocks have to ogranize 5 trainings on the given 5 modules. This training has to organize in 5 months. (monthly One training on one topic in 9 blocks)	All PRI members at all 9 blocks of Sahibganj (Sarpanch and Panchayat Sevak)
2	Training programme on School Safety Programme and Preparation of Scholl Disaster Management Plan'		Principals or Teachers or Administrators of the School/College
3	Training Programme on Hospital Disaster Management & Hospital Disaster Management Plan		Hospital staff, Doctors, Nursing Staff & Administrators
4	Training Programme on Disaster Management and Block Disaster Management Plan.		Training on DM and IRS for block administration.
5	Training of DM and IRS for Police Department.		Training on DM and IRS for Police Administration for Police Department.

Note: the details of the training budget and proposed date are attached in Annexure- 1

2. District level Training- There will be also district level trainings for all the district level Administration, Departments and stakeholders. The details of the training topics and participants are given below.

Sl. No	Name of the training	Training Details	Participants Details
6	Traing on DEOCs Roles, Responsibilities and functions for the District officers.	1 day Training programme for all the District officer on DEOCs.	District Administrations
7	District level workshop with different stakeholders for HRVC analysis and Updation of DDMP	1 days Training programme for all the Departments and stakeholders at District.	Head of the Deprtments and representatives
8	School Safety Disaster Management Plan	1 day District level meeting with Education Department on School DM Plan.	District/ Block School Administration and staffs.
9	Preparation and Implementation of Hospital Disaster Management Plan	1 day District level meeting with Hospital Department on Hospital DM Plan.	District/ Block Hospital Administration and staffs.
10	Community Based DRR & Formulation of Village Disaster Development Plan	1 day District level meeting with PRI for Village or Panchayat level DM Plan.	District/Block PRI Administration and staffs.
11	Training of DM & CCA and IRS for District Administration and Departments.	Set- up a Training Institute who will train on DM & CCA training.	District PRI Administration, Hospital, Police, Education Department and other stakeholdres.
12	Monthly DDMA and District Executive meeting.	One day training and Meeting of DDMA and District Executive committee meeting.	DDMA Members

Note: the details of the training budget and proposed date are attached in Annexure- 1

Implementation Plan-

The trainings are two types- i. e. type-1 is 2 days training program and type-2 is one day training programme. All the trainings have been planned for 40 participants and the participants are planned according to the modules to be taught.

Block level trainings will be organized at Block level by the Circle Officer (CO), as he is the nodal officer for Disaster Management. It is also suggested that the Block level training budget could be transferred to block and all the arrangements and implementation will be done at block level but it will be facilitated by DDMO and supervised and monitor by Additional Collector (AC), Sahibganj.

District level trainings will be organized at District level and it will be implemented by Disaster Management Department, Sahibganj and facilitated by DDMO and supervised and monitor by Additional Collector (AC), Sahibganj.

Chapter 7

Response & Relief Measuers

NDMA Guidelines on Minimum Standards of Relief To be followed by District Disaster Management Authority, Sahibganj And Incorporated in DDMP, Sahibngaj

Introduction

Disaster Management Act (Section 12) mandates National Disaster Management Authority (NDMA) to recommend Guidel ines for minimum standards of relief to be provided to persons affected by disaster which shall include:

(a) The minimum requirements to be provided in the relief camps in relation to shelter, food, drinking water, medical cover, sanitation
(b) Special provisions to be made for widows and orphans.
(c) Ex gratia assistance on account of loss of life as also assistance on account of damage to houses and for restoration of means of livelihood
(d) Such other relief as may be necessary

According to Section 19 of the Act, the State Authorities shall lay down detailed guidelines for providing standards of relief to persons affected by disaster in the state and such standards shall in no case be less than the minimum standards in the guidelines laid down by National Authority, Hence, NDMA, as mandated by the Act, has worked out the basic minimum standards of relief to be provided to the persons affected by disaster.

Before finalizing the above Guidelines, various meetings were held in NDMA with the representatives of Nodal Ministries / Departments of Govt of India in which senior officials from State Govt. also participated to offer their views. It was observed during the above meetings that the Guidelines on Minimum Standards need to be simple and implementable by the States.

1. Definition of Relief and Rehabilitation Camp:-

Relief shelters and Rehabilitation camps shall be set up in order to accommodate people by a disaster. The camp shall be temporary in nature, with basic necessities. People in the camp shall be encouraged to return to their respective accommodation once the normalcy is returned.

The State Govt/ District administration sometimes may not be able to implement all the basic guidelines recommended by NDMA from the day one of the disaster and therefore, the following method shall be followed:-

(a) First three days—Basic norms to the possible extent may be followed.
(b) 4 to 10 days--- Efforts should be made to follow most of the norms recommended by NDMA in this Guideline.
(c) 11 days and above--- NDMA's prescribed norms shall be followed.

The factors like terrain, climatic conditions at the site of disaster etc. will also impact the requirement and ability of the administration and other stakeholders to deliver relief. These should also be kept in view while prescribing minimum standards of relief.

2. Minimum Standard in respect to Shelter in relief camps:-

(a) State/ UT/ District Administration shall take necessary steps to pre-identify locations / buildings like local schools, anganwadi center/ cyclone shelters/ community centers/ marriage halls etc. which can be used as Relief shelters where people can be accommodated in case of disaster in the area. In such centers, necessary facilities like sufficient number of toilets, water supply, generators with fuel for power back up during disasters shall be ensured.

(b) After a disaster, large covered space shall be required to accommodate the affected people. In order to avoid last minute arrangement and high cost, State/UTs can explore the option of advance MOUs with manufacturers/ suppliers for supply of factory made fast track pre-fabricated shelters/ tents/ toilets / mobile toilets and urinals etc. which can be dismantled anti taken back by the supplier after the closure of the camp. This arrangement shall avoid delay in setting up of camp and exorbitant billing of essential supplies.

(c) In the relief centers, 3.5 Sq.m. of covered area per person with basic lighting facilities shall be catered to accommodate the victims. In mountainous areas, minimum covered area shall be taken for safety and privacy of inmates, especially for women, widows and children. Special arrangements should be temporary in nature and be closed as soon as normalcy returns in the area.

(d) Relief centers shall be temporary in nature and be closed as soon as normalcy returns in the area.

(e) Sufficient number of sites based on population density shall be identified as relief centers and earmarked well in advance at the time of planning and development of a metro/city/town.

3. Minimum Standards in respect of Food in relief camps:-

(a) Milk and other dairy products shall be provided for children and lactating mothers. Every efforts shall be taken in the given circumstances to ensure sufficient quantity of food is made available to the affected people (especially for aged people and children) staying in the relief shelters / camps.

(b) Sufficient steps shall be taken to ensure hygiene at community and camp kitchens. Date of manufacturing and date of expiry on the packaged food items shall be kept in view before distribution.

(c) It shall be ensured that men and women are supplied food with minimum calorie of 2,400 Kcal per day. In respect of children / infants, the food to be supplied would be 1,700 Kcal per day.

4. Minimum Standards in respect of Water in relief camps:-

(a) Sufficient quantity of water shall be provided in the relief camps for personal cleanliness and hand wash.

(b) It may be ensured that the minimum supply of 3 litters per person per day of drinking water is made available in the relief camps. Further, the State / UT / District authorities shall adjust the minimum quantity of water etc as per the geographic, demographic and social practices of the region. If other

means for providing safe drinking water is not possible at least double chlorination of water needs to be ensured.

(c) In order to ensure adequate water supply, the location of the source of water supply shall preferably be within the premises of relief shelter / Camp. However, the maximum distance from the relief camp to the nearest water point shall not be more than 500 mtrs. if tapped water supply is available.

5. Minimum Standards in respect of Sanitation in relief camps:-

(a) Number of toilets: 1 toilet for 30 persons may be arranged / built. Separate toilet and bath area be catered for women and children. At least 15 litters of water per person needs to be arranged for toilets / bathing purposes. Hand wash facility in toilets should be ensured. Steps may be taken for control of spread of diseases. Dignity kits for women shall be provided with sanitary napkins and disposable paper bags with proper labelling.

(b) Toilets shall not be more than 50 mtr. away from the relief camps. Pit Latrines and Soak ways shall be at least 30mtr. from any ground water source and the bottom of any latrine has to be least 1.5mtr. above the water level.

(c) Drainage or spillage from defecation system shall not run towards any surface water source or shallow ground water source.

6. Minimum Standards in Respect of medical cover in relief camps:-

(a) Mobile medical teams shall visit relief camps to attend the affected people. Steps shall be taken to avoid spread of communicable diseases.

(b) If the relief camps are extended over a long time, then necessary arrangement may be made for psychosocial treatment.

(c) Helpline should be set up and contact number and details of which shall be displayed at the relief/shelters and adequately publicized to inform the people.

(d) For pregnant women, necessary basic arrangements shall be made by the local administration safe delivery.

(e) Advance tie up / arrangement shall be made with the Govt. / private hospitals so that necessary doctors / para-medical staff are available at short notice for relief camps to attend to the affected people. In respect of people who are affected and being referred to hospitals for treatment/ operation etc. suitable transportation shall be arranged to reach to referred hospital.

(f) In order to manage mass casualty in a disaster, advance contingency plans for management of multiple casualties shall be developed.

7. Minimum Standards of Relief for Widows and Orphans:-

(a) In each camp, a separate register shall be maintained for entering the details of women who are widowed and for children who are orphaned due to the disaster. Their complete details shall be entered in the register, duly counter signed by the concerned officials and this register, duly counter signed by the concerned officials and this register shall be kept as a permanent record with the District administration.

(b) Special care shall be given to widows and orphans who are separated from their families. For widows, certificate by the District administration shall be issued stating that she lost her husband in the disaster and the same shall be issued within 15 days of disaster.

(c) As the window/family shall be economically weak, the State administration shall provide a reasonable amount for the funeral rites of her husband and this payment shall be deducted from the subsequent financial compensation / relief that shall be paid by the Govt.

(d) Necessary financial compensation and other government assistance need to be arranged within 45 days of the disaster to the widow and to the orphaned children. In respect of orphaned children, similar certificate shall be issued and the children need to be taken care of properly and the funds that may be given to the children by the Govt. shall be duly deposited in a PSU Bank in a Joint A/c where the Collector / DC shall be the first account holder of the Bank account. Interest from the fund can be given to the child / guardian every month for his / her proper upkeep. Education for the child shall be ensured by the District / local administration.

(e) As far as ex gratia assistance on account of loss of life as also assistance on account of damage to houses and for restoration of means of livelihood, the norms provided by Govt of India (Ministry of Home Affairs) for assistance from SDRF should be the minimum standard of relief.

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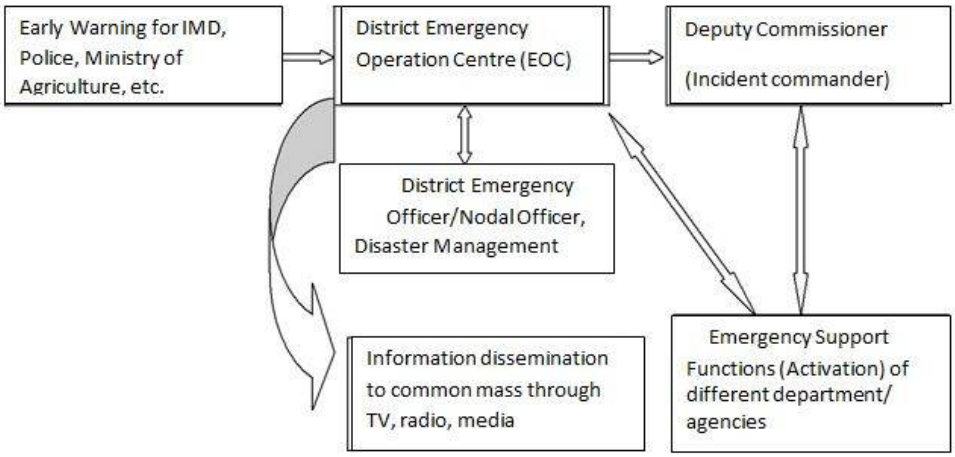
DDMA SAHIBGANJ

Response mechanism during Warning Stage

At district level, before the occurrence of disaster and immediately after the disaster, the district administration will activate the district control room so that proper information will be provided to the concerned authorities.



7.2 Incident Command System

The Incident Command System (ICS) is a management system and an on-scene, all risk, flexible modular system adaptable for natural as well as man-made disasters. The ICS has a number of attributes or system features. Because of these features, ICS has the flexibility and adaptability to be applied to a wide variety of incidents and events both large and small. The primary ICS management functions include:

1. Command

2. Operations

3. Logistics

4. Planning
5. Finance/Administration

The ICS seeks to strengthen the existing disaster response management system by ensuring that the designated controlling/responsible authorities at different levels are backed by trained Incident Command Teams (ICTs) whose members have been trained in the different facets of disaster response management.

The five command functions in the Incident Command System are as follows:
1. Incident Commander

The Incident Commander is responsible for all incident activity. Although other functions may be left unfilled, there will always be an Incident Commander.

2. Operations Section

Develops tactical organization and directs all the resources to carry out the Incident Action Plan .

3. Planning Section

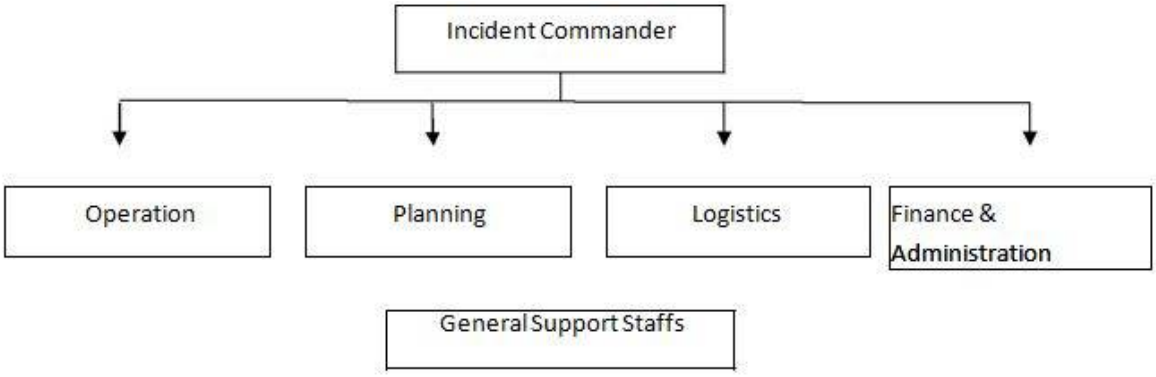
It is responsible for the collection, evaluation, and display of incident information, maintaining status of resources, and preparing the Incident Action Plan and incident related documentation.

4. Logistics Section
Provides resources and all other services needed to support the organization.

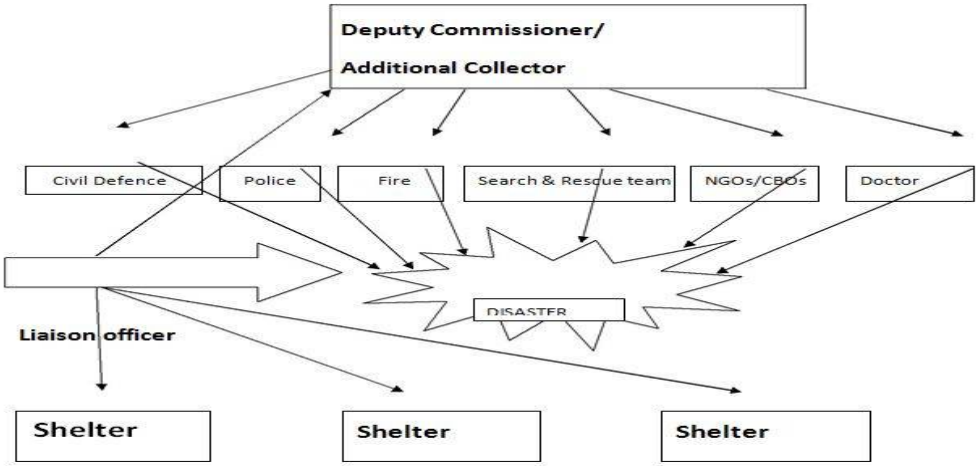
5. Finance / Administration Section
Monitors costs related to the incident, provides accounting, procurement, time recording, cost analysis, and overall fiscal guidance.

7.2.1 District Incident Command System

At the district level, there will be one District Headquarters Team with the primary function of assisting the Deputy Commissioner in handling tasks like general co-ordination, distribution of relief materials, media management and the overall logistics. Suitable officers from the district administration will be carefully selected and professionally trained for the different ICS positions in order to constitute the District Level Incident Command Teams (DICTs). The teams will focus on the operational aspects of response management, duly supported by other functions in ICS, e.g. Planning, Logistics, Finance/Administration, etc. The officers drawn for this assignment will be carefully selected by the Deputy Commissioner depending upon their fitness, ability and aptitude for any of the DICT positions and they will be professionally trained to fulfil their assigned roles. Arrangements will also be made for ensuring their mobilization in a time-bound manner for their deployment to the incidence location.



7.3 Evacuation Plan



Chapter 8

Reconstruction, Rehabilitation & Recovery Measuers

Key Tasks and Activities in Recovery Operations

Key action areas	Tasks and activities
Immediate Responses (days to weeks after event)	• First Aid • Essential services restoration • Support services restoration • Recovery aid appeal • Recovery logistics • High level briefings • Information dissemination and Management • Network with local and external agencies • Medical Emergency Response
Short & Medium Term Recovery (weeks to months after disaster)	• Development of Recovery Plan for this disaster • Repair of houses and other buildings • Restoration of utilities and related facilities • Repair and replacement of infrastructure • Welfare assistance – building materials and financial assistance programmes • Restoration of social services such as education • Restoration of commercial & economic activities and services • Replacement of critical facilities such as ports, jetties and fuel depots • Coordinate inter-agency actions • Monitoring, evaluation and accounting • Restoration of external communications and transport arrangements • Network with local and external Agencies • Support communities to restore food security. • Support resumption of normal running of essential services to local authorities and government line ministries.
Long Term Recovery (months to years after disaster)	• Mitigation and risk reduction Planning • Physical Planning • Zoning • Supportive legislation • Building zones and permit Management Vulnerability Reduction • Retrofitting of critical facilities • Relocation of vulnerable groups • Environmental and vulnerability Impact Assessments • Hazards evaluations and mapping • Strengthening of multi-hazard end-end early warning systems.

	Capacity enhancement for recovery • Training and personnel development • Exercising and rehearsals of plans • Public awareness and education • Environmental Management • Coastal Zone protection • Reforestation and soil conservation • Development of GIS systems • Advocacy

Chapter 9

Financial Resources for Implementation of DDMP

Budget and other financial allocations:

(According to ACT No. 53 of 2005 – the Disaster Management Act, 2005, Chapter IX, Finance, Account and Audit.)

48-Establishment of funds by the State Government

The State Government shall immediately after notifications issued for constituting the StateAuthority and the District Authorities, establish for the purposes of this Act the following funds, namely:-
a) The fund to be called the District Disaster Response Fund;
b) The fund to be called the District Disaster Mitigation Fund;

50 – Emergency procurement and accounting

Where by reason of any threatening disaster situation or disaster, the National Authority or theDistrict Authority is satisfied that immediate procurement of provisions or materials or the immediate application of resources are necessary for rescue or relief, -
a) It may authorize the concerned department or authority to make the emergency procurement and in such case, the standard procedure requiring inviting of tenders shall be deemed to be waived;
b) A certificate about utilization of provisions or materials by the controlling officer authorized by the National Authority, State Authority or District Authority, as the case may be, shall be deemed to be a valid document or voucher for the purpose of accounting of emergency, procurement of such provisions or materials.

Special budget at district, taluka and village level should be allocated for training of various teams against disaster, purchasing of equipment to save the life and property of the people, organizing mock drills to create awareness among the people, updating the disaster management plans, etc.

Fund allocation should be made by Zilla Parishad, Panchayat Samiti and Gram Panchayat to carry out the following DRM activities:-
a) To train Search and Rescue, First Aid groups
b) To create awareness among the people
c) To procure search and rescue materials
d) To evacuate and set up temporary shelter for disaster victims

Chapter 10

Procedure & Methodology for Monitoring, Evaluation, Updation & Maintationce of DDMP

10.1. Detail of review and evaluation plan

The District Disaster Management Plan shall be reviewed periodically and also after every disaster that occurs in the district or in a neighboring district where support relief was provided by Deoghar district. The effectiveness of the DDMP and Sub-plans shall be reviewed against the below mentioned criteria:

- The plan specifies roles and responsibilities of all lead combat and support agencies in response and recovery.
- The plan identifies key individuals by title who are responsible for carrying out specific functions in response and recovery.
- The plan identifies individuals by title with responsibility for plan development and maintenance.
- The plan includes a logical aim.
- The plan is consistent with higher level plans.
- The plan provides for special needs of vulnerable community groups (e.g. the aged, disabled or destitute).
- The plan is reviewed and agreed to by all agencies assigned responsibilities.
- Provision is made for distribution of amendments to all plan holders.
- Private sector and voluntary organizations that can provide assistance are identified.

10.2. Post disaster Review Plan

The District Disaster Management Plan is to be reviewed and updated after the occurrence of a disaster in the district. The main objective of the review is to record the event facts and first hand experiences of the department personal. This activity will help to make the DDMP better by identification of gaps and suggestions for filling of the same.

10.3. Periodic updation Plan

The District Disaster Management Plan is to be reviewed every 6 months. This is to check for changes in the district conditions from the past 6 months and update based on the impacts of these changes. The updation is to be undertaken by all the Functional Departments at their levels. The following schedule is to be followed for periodic updation.

Month	Activity
Jul	Review of DDMP by departments
Jul	Submission of recommendations to DDMA
Aug	Amendments are distributed to all stakeholders

10.4. Creation of District Disaster Resources Network and Link up SDRN & IDRN

As there are a lot of possible issues that might cause a lot of commotion and public distress. **A permanent NDRF team**stationed in the district will be required to take control of these gatherings and other religious crowd pulling holy places in the district.

S. No	Teams required, Location	Remarks
1	**A permanent NDRF team stationed in the district**	Controlling all the holy gatherings and stampede issues that are most possible throughout the Year
2	**A permanent Rapid Action Force (RAF) for Flood & Fire**	A RAF team dedicated to Saawan Gatherings of about 5 million people in entire season at Baidyanath Mandir
3	**A Fire Sub-station at Makhmalpur**	There is only one fire station in entire district that succumbs to fire accidents and a sub-station will be of greatest use
4	**Diver Teams - 1**	At Ferry loading site & NH-80 (ganga kataw) where drowning cases are frequently reported

Detailed List of Items required at District for Disaster Management

Item Code	Item Name	Required Number	Availability	Remarks
166	**Suit – Fire Entry**	6	NA	Temple, Fire Stations
176	**Fire Extinguisher – ABC Type**	45	NA	Temples, Aashram, Collectorate, Civil Court, Circuit House and other Govt. Buildings
177	**Fire Extinguisher – CO2 type**	45	NA	Temples, Aashram, Collectorate, Civil Court, Circuit House and other Govt. Buildings
140	**Search Light**	220	NA	All panchayat Grain banks, Temples, Other Govt. Buildings
152	**Rescue Back Boards**	4	NA	
153	**Diving suits**	16	NA	

154	**Under Water BA Set**	4	NA	
155	**Lifebuoy**	60	NA	
156	**Life Jackets**	650	NA	
	CPR Equipment	4	NA	
160	**Fiber Boats**	40	NA	
161	**Motor Boats**	20	NA	
205	**First-Aid Kits**	450	NA	All panchayats, religious places and Govt. Buildings and Fire Office
220	**Mobile Medical Van**	1	NA	Required during emergency
252	**4WD Vehicle for Emergencies**	1	NA	Required during Emergency and also during the peak season of religious gatherings
246	**Tarpaulin**	5000 Mts	NA	For all the Grain Banks in village panchayats
201	**Stretcher**	10	NA	Holy Places and other public Gathering locations

Chapter 11

Co-ordination Mechanism For Implementation Of DDMP

Involvement of Defence, Para Military Forces and NGOs:

At district level whatever help would be required during disaster that will be immediately informed to the various departments by the district collector and possible support NGOs and other line agencies in the district would be tapped up. If the District Collector thinks that it cannot cope with the disaster then he can ask help from the defence and paramilitary force.

NDRF in Disaster Management

Ministry of Home Affairs, Government of India National Disaster Response Force, has raised the National Disaster Response Force (NDRF). The two broad mandate of NDRF is to undertake search and rescue operations during disaster and conduct training and capacity building program during peace time. During disaster, the NDRF may be called for search and rescue operation while services of NDRF can also be utilized for conducting capacity building and training programs for different response groups.

Temporary Shelter Management

In many emergencies, local authorities would set up public shelters in schools, municipal buildings and places of worship. While they often provide water, food, medicine and basic sanitary facilities.

Living in Designated Emergency Shelters

- Stay in the shelter until the local authorities say it's safe to leave
- Restrict smoking and ensure that smoking materials are disposed safely.
- Cooperate with local authorities and others staying in the shelter.
- Listen to radio broadcasts
- Watch out for fires
- Assist local authorities and volunteers in the management of water, cooked food and other relief supplies including medical care, if required.
- Make arrangement for pets and cattle before going to a public shelter.
- Organize recreation for children.
- Assist local authorities with the assistance of community members to maintain law and order.
- Immunize the population against epidemics.

Chapter 12

Standard Operating Procedures & Check List

District Disaster Management Authority, Sahibganj
Office of the Deputy Commissioner, Sahibganj

Note- Review of Crisis Management Plan (CMP) of MHA dated 21st July 2017 is with DDMA Sahibganj to deal with Natural Disaster as well as in the event of CBRN Disaster (Chemical, and Biological, radiological & Nuclear) and Man Made disaster (Breakdown or Potential breakdown of Public Order, Terrorist Attack, Mutiny and Migration/exodus/infiltration).

CRISIS MANAGEMENT PLAN 2016

(For Emergencies falling within the sphere of the Ministry of Home Affairs)

Introduction

1.1 The CRISIS MANAGEMENT PLAN addresses the following crises situations for which Ministry of Home Affairs has been identified as the nodal ministry by Cabinet Secretariat-
Public order, Terrorist Outrages, Mutiny, Migration/Exodus/Infiltration, Major breakdown of law and order, Natural Disasters, Major Breach in Security of Metro Services in Delhi and Kolkata.

1.2 This Plan has two chapters: Chapter- I deals with Natural disaster while Chapter-II comprises manmade disasters.

1.3 The different Ministries of the Central Government/State Government are required to issue detailed instructions on aspects identified in this Disaster Response Plan/CMP as requiring action by them.

1.4 All State Government will prepare Crisis Management Plans/ Disaster Management Plans laying down the protocol for the sequence of actions for discharging the responsibilities assigned to the State in this Plan.

1.5 Each Central Armed Police Force will prepare Contingency Plans/Standard Operating Procedures to deal with any large-scale mutiny/desertion in the Forces.

1.6 List of critical infrastructure and key resources (important from national economy, communal harmony and security points of view) may be added as annexure with District Crisis Management Plan of the concerned district.

CHAPTER-1

NATURAL DISASTERS

Role of the Central Government

2.1 The Ministry of Home Affairs is the nodal agency at the National level for coordination of response and relief in the wake of natural disasters like Avalanche, Cyclone, Cloud brust,

earthquake, Tsunami, Flood, Fire and Landslide. Drought Cold wave/forest, pest attacks, hail storm are dealt by Agriculture Ministry. MHA will provide financial and logistic support to the State Governments, keeping in view, their resoures, the severity of the natural disaster and the capacity of the State Governments to respond in a particular situation.

2.2 National Executive Committee (NEC)- The NEC is the prime responder at national level under Section 10(2)(k) of the Disaster Management Act. The National Executive Committee (NEC) comprises the Union Home Secretary as the Chairperson, and the Secretaries to the GOI in the Ministries/Departments of Agriculture, Atomic Energy, Defence, Drinking Water Supply, Environment and Forests, Finance (Expenditure), Health, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development, Water Resources and the Chief of the Integrated Defence Staff of the Chiefs of Staff Committee as members, Secretaries in the Ministry of External Affairs, Earth Sciences, Human Resource Development, Mines, Shipping Road Transport & Highways and Member Secretary, NDMA will be special invitees to the meetings of the NEC. Joint Secretary (DM), MHA is the convener of the NEC meeting.

2.3 The NEC will meet at least once in six months and during the disaster as and when required.

2.4 The other concerned Central Ministries/Departments/Organizations will render Emergency Support Functions (ESF) wherever Central intervention and supports are needed by the state Governments.

2.5 The Government of India has constituted the National Disaster Response Force (NDRF) for specialist response to various types of disasters including CBRN. The State Governments are also required to raise their own disaster response force (SDRF).

2.6 Each NDRF Battalion/Team has been assigned respective areas of responsibility in terms of State/UTs and Districts. The NDRF Battalion/Teams can be requisitioned by the State Governments/District Administration directly in cases of rapid onset disasters where early warning/alerts is not available and through the Director General, NDRF and NDMA in cases where sufficient lead time is available. The State Government /District Administration will maintain close liaison with NDRF Commander earmarked to the respective States/Districts for rapid deployment in case of threatening disasters situation/disasters.

2.7 During the stay of NDRF in the State/UT for impending or during disaster, local Government shall extend administrative supports by providing POL, heavy machinery/equipment required for removal of debris, communication facilities, barracks/rented accommodation with toilet facilities, adequate transport etc as it would be improving the efficiency of the NDRF.

Role of the State Government-

3. State Executive Committee (SEC)

3.1 It will be the primary responsibility of the State Government to respond to natural disasters and provide relief to the affected people: Section 22(2) (g) of the Disaster Management Act stipulates that the SEC under the State Chief Secretary shall 'coordinate response in the event of any threatening disaster situation or disaster'. SEC shall give directions to any Department of the State Government or any other authority or body in the State regarding actions to be taken in response to any disaster.

3.2 Department of Relief/ Disaster Management shall be the nodal department for disaster management and Secretary of the Department / Relief Commissioner shall implement the decisions of the SEC pertaining to State level Response to natural disasters.

3.3 Disaster response being a multi-agency function, other Departments of the State Government will provide emergency support in their relevant domains at the State/District levels.

3.4 The SEC shall meet at least once in three months and as and when required when disaster strikes.

Role of the District Administration-

4. **District Disaster Management Authority (DDMA)**

4.1 Section 30(2)(xvi) of the Disaster Management Act stipulates that the DDMA under the chair of the Collector or District Magistrate or Deputy Commissioner, as the case may be and the co-chair of the elected representative of the local authority, shall coordinate response to any threatening disaster situation or disaster.'

4.2 Under the network, the EOCs/Control Rooms of all the States will be directly connected with the NEOC/Control Room of MHA at the National level. The district EOCs/Control Rooms will be connected with the respective State EOCs/Control Room. All these control rooms will function on 24X7 basis and will be functional round the year. Suitable personnel will be selected and imparted training in the operation of Control Rooms and will be posted to man these EOCs/Control Rooms.

4.3 The DDMA shall meet at least once in three months and as when required when disaster strikes.

4.4 Dos and DONTs for DMs in case of Natural Disasters may be seen at Annexure-'A'

5. Search and Rescue Teams

5.1 The National Disaster Response Force (NDRF) has been constituted by up-grading 10 battalions of Central Armed Police Forces (CAPFs), 2 each of Central Industrial Security forces (CISF), Indo-Tibetan Border Police (ITBP), 2 each of Border Security Force (BSF) & Central Reserve Police Force (CRPF). The command and supervision of the NDRF will be vested in DGCD & NDRF and the general superintendence direction and control of NDRF will be vested in and exercised by National Disaster Management Authority. The specialists Search & Rescue (SAR) teams of NDRF are being trained, equipped and located at various places and deployed as and when required. A decision has also been taken to raise two more battalions of NDRF by upgrading two battalions of SSB, which will contribute efforts to SAR functions.

5.2 Each State will have Search and Rescue Teams who will be trained, equipped and placed at various locations for rapid deployment within the State.

6. Communication

6.1 The States will set up Emergency Operations Centres at the State level and at the district levels under the District Magistrates. The Emergency Operations Centres will be responsible for monitoring and responding to all emergencies/crises. The Emergency Operations Centres will be linked to the National Emergency Operations Centre of the Ministry of Home Affairs by telephones, fax, internet and satellite phones.

6.2 The National Emergency Operation Centres, the State and District Emergency Operation Centres will have GIS based maps indicating the roads/railways/hospitals and other essential infrastructure. They will have online access to India Disaster Resource Network (IDRN), which is a nationwide electronic inventory of resources, for locating and mobilizing resources for speedy response action.

6.3 The National Emergency Operation Centres, the State and District Emergency Operation Centres will have written protocols for their functioning and also maintain a log book in which all information received as well as arrivals/departures of officers will be entered along with time.

6.4 The State Emergency Operation Centres will be responsible for informing the Ministry of Home Affairs and all concerned agencies about any emergency/crisis.

6.5 The Member (TO) in the Department of Telecommunications or his nominee will be available in the National Emergency Operations Centre of Ministry of Home Affairs during a crisis situation to ensure that communication lines remain in order.

6.6 Communication channels of other central organizations throughout the country shall extend all assistance to the National Crisis Management Committee and the Crisis Management Group of MHA in the event of crisis.

7. Media Handling

7.1 Information dissemination plays an important role not only in maintaining public morale but also maintaining normalcy. Countering of false propaganda by making factual information available to the public will go a long way towards defeating the designs of terrorists/saboteurs. Media handling is therefore a critical aspect of crisis management.

7.2 A senior representative of the Press Information Bureau shall be associated with the Crisis Management Group. He will seek briefing from the designated nodal officer of the MHA at a pre-scheduled time daily. It shall be the responsibility of the representatives of the PIB and the Ministry of Information and Broadcasting to keep the members of the press/media briefed and counter any false information/rumours/propaganda.

7.3 The State Director of Public Relations of the State shall be a part of the State Crisis Management Group. It shall be this officer's responsibility to handle the media, as also to ensure that rumours/false information do not gain currency.

7.4 The District Magistrate/Commissioner of Police will brief the media suitably from time to time regarding the progress in handling the contingency/emergency.

7.5 No Officer other than the officer designated by the Central/State Government shall interact with the Media.

7.6 It shall be ensured that the operational area is cordoned off and access control is exercised. Media shall be kept away from the scene of action till the whole operation is completed, by the local law enforcement agencies.

8. Post Crisis Management

8.1 The end of the emergency would signal the standing down of arrangements made under this Contingency Plan. The end of alert should, however, be specially communicated to terminate the precautionary or the active stage of the Contingency Plan. This would normally be decided by the NCMC/CMG. The Member Convener of the CMG as applicable i.e. Joint Secretary (DM/Joint Secretary (IS-I). Ministry of Home Affairs shall communicate the termination of the precautionary or the active stage to the concerned members as well as control rooms of the Ministry of Home Affairs and IB. When State authorities have also been alerted, due notice of the termination of the alert should be communicated to the States/UTs concerned.

8.2 The CMG of Ministry of Home Affairs will examine each contingency situation after the termination of the alert to identify practical difficulties and defects noticed in the smooth functioning of this Crisis Management Plan. Annual review of Disaster Response Plan, 2015 will be undertaken in the light of lessons learnt through the year.

CHAPTER-II

MAN MADE DISASTERS

1 Manmade disasters include Public order, Terrorist Outrages, Mutiny, Migration/ Exodus/ Infiltration, Major breakdown of law and order, Major Breach in Security of Metro Services in the country.

1.1 The following four committees will handle man made emergencies/crisis:

i. A National Crisis Management Committee headed by the Cabinet Secretary.
ii. The Crisis Management Group headed by the Union Home Secretary for dealing with different types of crises.
iii. State Crisis Management Group headed by the State Chief Secretary.
iv. District Crisis Management Group headed by the District Magistrate.

Role of the Central Government-

2 **NATIONAL CRISIS MANAGEMENT COMMITTEE**- The National Crisis Management Committee (NCMC) would be the apex body of high-level officials of the Government of India for dealing with a major crisis, which has serious or national ramifications. The composition of the Committee, which would be deemed modified in accordance with CMP 2014 of Cabinet Secretariat, is as under:

a)	Cabinet Secretary	-	Chairperson
b)	Secretary/Principal Secretary to PM	-	Member
c)	Secretary, MHA	-	Member
d)	Secretary, MoD	-	Member
e)	Secretary (Security)	-	Member
f)	Secretary (I&B)	-	Member
g)	Director (IB)	-	Member
h)	Secretary (R & AW)	-	Member
i)	Deputy NSA	-	Member
j)	Member of Secretary, NDMA	-	Member

Joint Secretary (TS Cell), Cabinet Secretariat will be the Convener of the NCMC. The NCMC will be free to co-opt members depending upon the natural crisis, as and when required.

3. CRISIS MANAGEMENT GROUP- The Crisis Management Group in the Ministry of Home Affairs will comprise of the officials as follows:

i.	Home Secretary	-	Chairman
ii.	Secretary (BM)	-	Member
iii.	Special Secretary, MHA	-	Member
iv.	Member Secretary, NDMA	-	Member
v.	Director, IB	-	Member
vi.	Director General, BSF	-	Member
vii.	Director General, CRPF	-	Member
viii.	Director General, ITBP	-	Member
ix.	Director General, NSG	-	Member
x.	Director General, CISF	-	Member
xi.	Director General, SSB	-	Member
xii.	Director General, NIA	-	Member
xiii.	CP of Delhi Police	-	Member
xiv.	Joint Secretary (CS)	-	Member
xv.	Joint Secretary (Police)	-	Member
xvi.	Joint Secretary (UT)	-	Member
xvii.	Joint Secretary (PM)	-	Member
xviii.	Joint Secretary (DM)	-	Member
xix.	Joint Secretary (IS-I)	-	Member Convener
xx.	JS level Officer, MoD	-	Member
xxi.	JS level Officer, MoHFW	-	Member
xxii.	JS level Officer, MoES	-	Member
xxiii.	JS level Officer, DAE	-	Member
xxiv.	JS level Officer, MoCA	-	Member
xxv.	JS level Officer, MoR	-	Member

3.1 In addition, a senior representative of the Press Information Bureau shall be associated with the Crisis Management Group, who will be fully briefed by the convener of CMG of MHA from time to time for disseminating correct information through the media.

3.2 In the event of an emergency situation, the CMG shall keep abreast of all developments in the State/Union Territories by obtaining situation reports on phone/hot lines and by wireless/fax messages. It shall keep the State/UT Governments informed of all such developments, which have bearing on general law and order and security in the concerned State/UT. It will communicate guidelines as laid down by the NCMC, wherever necessary and may advise and suggest preventive and other measures in dealing with the situation in the State or which may develop as repercussion of developments in other places. It shall also guide the State Committees in matters such as liaising with other states for the deployment of force, providing reinforcement of Central Paramilitary Forces and coordinating the intelligence efforts of the States/UTs and central intelligence agencies.

3.3 A minimum of three negotiating teams will be developed at the Central level. Each team will consist of a team leader an officer of the Intelligence Bureau, a psychiatrist, a linguist in the relevant language, a member of the lead operation force and support personnel in the form of technicians, stenographers and photographers. The Intelligence Bureau in consultation with

Bureau of Police Research & Development (BPR &D) will draw up a panel of trained negotiators, psychiatrists as well as linguists/interpreters. BPR&D will give training/refresher training and Intelligence Bureau will ensure their availability on call.

3.4 Mock Exercises for activating the National/State level Negotiating Teams will be held at periodic time intervals.

3.5 Intelligence Bureau, R&AW and the Special Branch shall monitor any emerging crisis situation and advise the Government. These agencies shall interact with each other to have a consensus view on any situation.

3.6 Each relevant Ministry/Department of the Government/organisation as decided by the CMG will nominate a Nodal officer (not below the rank of Joint Secretary) to ensure follow up action on the decisions of the CMG.

3.7 In crises, the Crisis Management Group shall meet as often as may be required to assess the situation and the intelligence received from the State Government and other agencies and seek instructions of the NCMC as and when necessary.

3.8 The Crisis Management Group will meet at least twice a year and as and when a crisis is at hand.

Role of State Government

4. **STATE CRISIS MANAGEMENT GROUP**

4.1 At the State level, there shall be a State Crisis Management Group (SCMG) as under:

i.	Chief Secretary	-	Chairman
ii.	ACS (Home)/Home Secretary	-	Convener
iii.	DGP	-	Member
iv.	ADG/IG, Special Branch	-	Member
v.	JD, IB	-	Member
vi.	Relief Commissioner/Secretary (DM)	-	Member

4.2 ACS (Home)/ Home Secretary shall be the convener of the SCMG. An alternate member shall be designated for each member of the State Group. The Convener of the Group as well as the State Control Room shall update list of members with their addresses/telephone/cellular from time to time. The State Group may co-opt any other member whom it considers necessary as member of the said Group. Senior most Commanding Officer of the Armed Forces in the State may be included in the SCMG. Senior most officer of each of the CAPFs and NDRF, wherever available in the State, may also be co-opted in the SCMG, DIG (Ops & Trg), NSG may also be included as invitee member of the SCMG.

4.3 The SCMG shall keep the NEC and the Crisis Management Group in the Ministry of Home Affairs informed of the evolving situation and the steps being taken.

4.4 Each State will constitute a State Negotiating Team consisting of a team leader, one officer from the Special Branch, one representative of the Intelligence Bureau, a member of the lead operation force and one psychiatrist. Support personnel in form of technicians, interpreters, stenographers and photographers should be readily available so that their services can be

requisitioned at a short notice. A panel of names of trained negotiators, psychiatrists etc. will be kept ready.

4.5 Mock exercises for activating the National/State level Negotiating Team will be held at periodic time intervals.

4.6 There will be Control Room at the State level and at the district levels. The Control Room will be linked to the Control of the Ministry of Home Affairs by telephones, fax, internet, and satellite phones.

4.7 The State Crisis Management Group will also meet periodically at least once in three months and as when a crisis is at hand.

4.8 The State Director of Public Relations of the State Shall be a part of the State Crisis Management Group. It shall be this officer's responsibility to handle the media, as also to ensure that rumours/false information do not gain currency.

Role of the District Administration:-

5. DISTRICT CRISIS MANAGEMENT GROUP

5.1 The District Magistrate will head the District Crisis Management Group. It will have the following members:

i. Commissioner of Police/Superintendent of Police
ii. A representative of IB
iii. Dy. Development Commissioner/Additional District Magistrate

Any other district officer, as appropriate may be co-opted as a member. Senior most officers of the Armed Forces and CAPFs posted in the district be also included in the Group. Where the NSG have been requisitioned for assistance, the NSG Task Force Commander may be co-opted as a member. Where NDRF is deployed or stationed, their representative may be co-opted as a member.

5.2 This Group will be responsible for on-scene management of the incident/emergency in the district level. All agencies will provide resources to this Group as required. Where a specialist Response team is deputed by the State/Central Group, this Group will be normally abide by the advice of the said specialist Response team; but the ultimate decision will be that of the District/State Crisis Management Group.

5.3 There will be Control Room at the State level and at the district levels. The Control Room will be linked to the Control of the Ministry of Home Affairs by telephones, fax, internet and satellite phones.

5.4 Regular communication exercise shall be conducted with all stakeholders.

5.5 District Crisis Management Group will also meet periodically at least once in three months and as and when a crisis is at hand.

5.6 The District Magistrate will brief the media suitably from time to time regarding the progress in handling the contingency/emergency.

5.7 DOs & DON'Ts for the District Magistrates on natural disaster and CBRN disasters are at Annexure-A and Annexure- B respectively.

6. MISCELLANEOUS

6.1 It shall be responsibility of the Ministry of External Affairs to inform the countries whose citizens are involved in any contingency in India.

6.2 As this Crisis Management Plan envisages action in various States/UTs in conformity with the existing Internal Security schemes, it is essential that the internal security schemes prepared by District/State authorities be reviewed and updated regularly.

6.3 The CMG, SCMG & DCMG shall meet regularly as envisaged in the Disaster Response Plan, even if there is no disaster.

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Ministry of Home Affairs
(Disaster Management Division)

DOs & DON'Ts on Disaster Response for use of District Magistrates on Natural Disaster

1. WHERE DISASTERS OCURS WITH EARLY WARNING

Nodal Agencies for Early Warning

Following are the Nodal agencies in the Government of India mandated for early warning of different natural hazards:

Disasters	Agencies
Cyclone	Indian Meteorological Department
Tsunami	Indian Tsunami Early Warning Centre (ITEWC) Indian National Centre for Oceanic Information Services
Floods	Central Water Commission
Landslides	Geological Survey of India
Avalanches	Snow and Avalanche Study Establishment
Heat & Cold Waves	Indian Meteorological Department

These agencies shall be responsible for keeping track of developments in respect of specific hazards assigned to them an inform the designated authorities/agencies at National, State and District levels about the impending disasters. All these agencies have developed guidelines for early warning of disasters.

Categorization of Alerts /Early warnings

i. Specific hazards have different categories of alerts as indicated below. For the purpose of dissemination of alerts to PMO/Cabinet Secretariat, a uniform system has been devised by categorizing each type of alert in stages- Yellow, Orange and Red.
ii. Alerts falling in Yellow stage will be communicated to PMO/Cabinet Secretariat through EMS.
iii. Alerts falling in Orange stage will be communicated to PMO/Cabinet Secretariat with 12 hourly updates or when it is upgraded to the Red Stage, whichever is earlier.
iv. Alerts falling in Red stage will be communicated to PMO/Cabinet Secretariat with 3 hourly updates or at more frequent intervals as warranted by the situation.
v. Any changes in the category of alerts will be suitably integrated in the next message due as per the previous categorization.
vi. Alert message will be sent to PMO/Cabinet Secretariat at the periodicity indicated above. For any other, unprecedented event on disaster situation, alert messages to PMO/Cabinet Secretariat will be sent in consultation and with the approval of JS (DM).

DOs

Preparations required before the onset of Monsoon or any calamity:

1. Call the meeting of District Disaster Management Authority & discuss preparedness. Also discuss these DOs & DON'Ts.

2. Meeting with the Forecasting Agencies on weekly basis. It should start four weeks before monsoon and continue during the monsoon (June to Sept)

3. Meeting with all the possible supplies or relief and rescue materials who deal with the following:-

    i. Equipment to restore telecommunications & mobile.
    ii. Equipment to restore power supplies
    iii. Drinking water
    iv. Relief materials
    v. Heavy machines line cranes, loaders, excavators, earth movers.

4. (a) Replenish the stock of medicines particularly Life Saving Drugs at the District Hospitals & Primary Health Centres.

    (b) Tablet like Biocullum & Sanitrate be kept in sufficient quantity to take care of rotting carcasses.

    (c) Ensure all major hospitals are having Generator Back up.

    (d) Ensure adequate medicines to take care of snake bnites & dog bites.

    (e) Ensure availability of blood in the Blood Bank of the District.

5. Civil Defence Volunteers and Home Guards be mobilised and mock drill should begin.

6. Status of fire engines / extinguishers to be checked and additional equipment requisitioned.

7. Advance requisition be placed with neighbouring district/ State for all requirements relating to restoration of power like transformers, towers, transmission cables to be delivered at the District headquarters after the impact of calamity.

8. All private hospitals, cinema houses, market associations, schools be asked to purchase dewatering pumps, fire extinguishers & bleaching power and keep them ready in their stock.

9. Meeting with FCI & other connected State Government Departments be held to line up supply of food grains after the impact of calamity is reduced.

10. Helipads should be constructed at various strategic places in a district and the existing one be maintained.

11. Draw up an inventory of available boats & tents in the District. If need be additional Boats & tents be purchased.

12. Executive Engineers of PWD, Electricity and Water Supply should be alerted and their teams should be constituted in advance so that they move so that they move to damage sites immediately after the calamity.

13. Railway Authorities be alerted.

14. Carry out inspection of Flood embankments, Dams, culverts, etc and take immediate steps for their strengthening and dredging of waterways.

Three days Before the Approaching Calamity:-

i. Control Room shall be beefed up to be set up at the District level.
ii. Relief camps and other facilities such as staging area, camp, base and helipad to be indentified in the district and made operational with provisions of food, shelter, medicines, fire tenders / extinguishers, water tankers.
iii. A Vehicle Cell be set up & adequate number of buses, trucks & tractors be requisitioned to help in rescue & then transportation of relief materials.
iv. Alert the nearest NDRF battalion, Armed Forces and CAPF establishments. Alert the SDRF battalion also, if available.
v. Administration should go on TV/Radio and through SMSs urge people to evacuate and move to Relief camps. People should also be told about precautions as per following:-
   (a) Keep listening to the radio and TV
   (b) Store water and food to their capacity.
vi. Call a meeting of local shopkeepers, PDS dealers, Associations, Chambers of Commerce, Chambers of Commerce, Chemists and Druggists and suitably advise them not to jack up prices artificially as people will resort to panic buying, not to try to change exorbitant prices or resort to hoarding.
vii. The standard size of food packets (not exceeding 5 kg.) be prepared. It should ideally contain dry ration like Rice, Dal, Salt, Suger, Spices etc. These packets can be immediately distributed within first 24 hours of the calamity. These packets should be less than 5kgs so that it is easier for NDRF/Army boats to carry & distribute.
viii. If there is need to evacuate, then evacuation should be resorted to. Forcible evacuation should also be undertaken U/S 34 of the Disaster Management Act, 2005, if felt necessary.

ix. A meeting of all the Mobile Services Providers be called and adequate amount of diesel/kerosene/petrol be issued to them so that they can continue to operate their mobile towers or telephone exchanges even when there is no electricity. It may be ascertained that they have generators, if not generators be provided to them.

x. A meeting of all the Petrol Pump Dealers be called and they be asked to keep their stocks full so that there is no scarcity.

xi. Satellite phones available with the State administration, SDRF/NDRF/local defence establishment be requisitioned and placed at strategic locations, preferably at major relief camps or cyclone shelters.

xii. Police be deployed at deserted areas to ensure safety of the properties of people who have moved to cyclone shelters/relief camps.

After Disaster

The moment, the district or the area suffers the area suffers the disaster in the form of cyclone/ floods/ landslides/ earthquake / the District Administration should respond in the following manner:-

i. Immediate rescue & evacuation of stranded people to the relief camps. While evacuation priority should be given to elderly, sick and infirm.

ii. Quick Reaction Medical Teams (QRMT) to be activated under the aegis of CMO with resuscitation equipments and life saving drugs.

iii. Attempt should be made to restore power supply & drinking water supply.

iv. Communication / mobile services to be restored.

v. Dewatering pumps to be installed at important Government buildings, Govt. & private hospitals and communication centres so that these can be made operational immediately.

vi. Disposal of dead bodies will entail their collection and transportation following due procedures, storage in temporary mortuaries with all necessary prerequisites to ensure positive identification.

vii. All dead bodies of animals must be immediately removed.

viii. In case of flood / cyclone, immediate distribution of bleaching power & chlorine tablets be done at relevant places.

ix. Each NDRF Battalion/ Team has been assigned respective areas of responsibility in terms of State/UTs and Districts. The NDRF Battalion/ Teams can be requisitioned by the State Government/ District Administration directly in cases of rapid onset disasters where early warning/alerts is not available and through the Director General, NDRF and NDMA in cases where sufficient lead time is available. The State Governments/ District Administration will maintain close liaison with the NDRF Commanders earmarked to the respective States/ Districts for rapid deployment in case of threatening disasters situation/disasters.

x. During disaster situations, the dissemination of accurate information through electronic and print media is very important. Regular press briefings shall be made by District Magistrate/ Collector or his authorized representative at pre-designated time as a single source of information from Government.

Long-term Relief Operations

After rescue & immediate relief distribution in the first 72 hours, the District Administration should launch relief operations. During that process, following should be followed:-

i. Ex-gratia amount be immediately paid to the next of kin of people who died in the calamity.

ii. All roads should be kept open and therefore heavy earth movers and cranes should be kept at strategic points.
iii. While moving relief supplies, priority must be given to fuel tankers, water tankers and trucks carrying LPG, oil, etc.
iv. Relief in the form of dry ration should be distributed as per the State Government Directives.
v. Relief camps should be continued to be operational till such time as the State Executive Committee decides as per laid down norms.
vi. Immediately after the calamity, special Police Task Force must be made operational. This Police Force should be dedicated totally for hunting out missing persons and more particularly, with regard to human trafficking angle.

II. WHERE DISASTER OCCURS WITHOUT EARLY WARNING

In disaster situations where no early warning signals are available, the primary objective of he trigger mechanism shall be to mount immediate rescue and relief operations and set the process in as a quickly as possible. The following procedure shall be followed in such situations:

i. The field functionary at ground zero shall inform the DEOC, District Magistrate of the incident.
ii. DEOC shall be fully activated for managing the incident.
iii. DEOC/District Magistrate shall inform the SEOC/SDMA, SEC and seeks assistance if required.
iv. SEC is activated and NEOC is informed, FIR is submitted to NEOC.
v. Quick Response Teams (QRTs), Search and Rescue Teams, medical and Para-medical teams shall be deployed.
vi. District Magistrate shall review the situation and activate coordination, command and control.
vii. Incident Command Teams shall be deployed.
viii. Meeting of DDMA shall be convened to review situations.
ix. Team for rapid assessment of damage shall be deployed.
x. Line Departments/agencies shall begin work for restoration of power, tele-communication, surface transport etc.
xi. Arrangements shall be made for supply of food material, drinking water etc.
xii. Thereafter, follow up action shall be undertaken by all concerned at all levels as envisaged under Response and Relief Phases.

DON'Ts

1. Don't take the complaints of missing person lightly as they may be victims of human trafficking.
2. Don't allow rumors to spread and take counter measures.
3. Don't let dead bodies of human beings and animals to rot.
4. Don't accept relief material through private sources and NGOs directly. They may be advised to route their relief contribution either in cash or in kind through the District Red Cross Society or the District Chambers of Commerce for the sake of proper accounting.
5. Don't let untrained volunteers to get involved in rescue operations.
6. Don't allow over supply of relief items not required by disaster victims.

Ministry of Home Affairs
(Disaster management Division)

DOs & DON'Ts for the District Magistrates in the event of CBRM (Chemical, Biological, Radiological & Nuclear) disasters

DOs

1. Chemical Disaster

In case of accidental release of a quantity of toxic chemicals into environment, resulting in death or injury to workers or members of nearby communities, then it is a case of chemical Disaster. In the event of a Chemical Disaster, the District Magistrate should immediately contact:

1) The Nodal Ministry for Chemical disaster i.e. Ministry of Environment, Forest and Climate Change.
   Contact details: Shri Bishwanath Sinha, Joint Secretary, Tel No. + 91-11-4695274 (O), Fax No. +91-11-24695277, +91-11-26160515 (R) Mob: 9999711816, or to Shir R. N. Jindal, Director, Telephone: +91-11-24695325 (O), +91-11-24695387 (F), +91-11-22246550 (R), +91-9868113036 (M)
2) MHA control Room: [1070 (Toll Free), 011 23093563, 011 2309366]
3) NDRF Control Room 011 26107953

2. Biological Disaster

Biological disasters are events caused by microbial agent or its toxin in humans, animals or plants that is beyond the coping ability of the State. Such an event may occur due to (i) epidemic of infectious diseases caused by a microbial agent or toxin in humans, animals or plants (ii) Non-intentional accidental release of microbial agents such as from laboratories or during transportation of samples (iii) Intentional use of microbial agents to cause harm such as use of biological agents or toxins as weapons of mass destruction (biological warfare) or (iv) microbial agents or toxins used by terrorists to cause panic/harm to humans, crops or livestock (bioterrorism/agro-terrorism).

In the event of Biological disasters, the District Magistrates should immediately contact:

1) The nodal Ministry for Biological disasters i.e. the Ministry of Health& Family Welfare. The contact details: Shir Anshu Prakash, Joint Secretary, Tel. No. 011-23061195 (O), 011-26889166 (R) Mob: 8130966661, or to Dr. P Ravindran, Addl, DDG & Director EMR. Tel No. 011-23061302 (O), 011-45639559 (R), Control Room- 23061469.
2) MHA control Room: [1070 (Toll Free), 011 23093563, 011 2309366]
3) NDRF Control Room 011 26107953

3. Nuclear/Radiological disasters-

Any radiation incident resulting in or having a potential to result in exposures and/or contamination of the workers public or environment in excess of the respective permissible limit can lead to a nuclear/radiological emergency.

In case of theft/ loss of radioactive source from the institution/industrial unit/ hospital premises / during transportation, it would normally be noticed first by the field person responsible for handling the same. The head of the concerned organization would be next person to get this information from his own field person. He is turn, would bring the incident to the notice of the local police station as well as to the Atomic Energy Regulatory Borad (AERB) who is the regulator (as per Radiation Protection Rule 2004 under the Atomic Energy Act) for transportation, storage

and use of radiation sources in the public domain. This will be the trigger mechanism for initiating any mitigation processes by stage agencies.

Further in case of loss/theft of radioactive source, the recommended response plan/ SOP for recovery /retrieval and disposal of the radiological source would be as follow:

1) AERB will inform the Crisis Management Group (CMG), DAE through DAE Emergency Control Room (DAE-ECR), Contact Details of 24*7 operational DAE-Emergency Control Rooms are- Main DAE-ECR [022*22023978, 022-22021714,(Mobile) 09969201364] & alternate DAE-ECR [022-25991070, 022-25515283, (Mobile) 09969201365]. In addition, it is envisaged that the concerned public officials will follow their own SOP & intimate the concerned agencies for ensuring appropriate response.
   i) MHA control Room: [1070 (Toll Free), 011 23093563, 011 2309366]
   ii) NDRF Control Room 011 26107953
2) Expert response agencies (police/NDRF /relevant state authorities) after reaching the incident spot, if feel that they need an expert advice or technical support from nodal ministry (DAE); they should contact CMG, DAE through DAE-Emergency Control Room. While informing, they are requested to provide exact location, contact numbers of concerned DM/SP/local police station and details of incident with brief description of the object (if possible, along with photograph taken from the distance).
3) Upon receipt of such information, the CMG, DAE will get activated and will get in touch with the local authorities to decide about further course of actions.
4) CMG will decide and constitute a team of experts as per requirements. The team of experts will be dispatched to the site by quickest means possible.
5) Member Secretary, CMG (who is also the designated Nodal Officer of DAE) will get regular updates from concerned DAE experts/ field agencies and will keep concerned authorities informed and as per scenario, will also keep MHA Control Room updated.
6) DAE experts on recovery / retrieval of the source will examine the integrity of the radiation source & accordingly, AERB will decide about further course of action regarding safe keeping/disposal of the material.
7) Responsibility of secure transportation of radioactive material from incident site to a safe storage place should be undertaken by local police.
8) If there is local contamination due to radioactive materials, documentation activities should be taken up by expert response agencies like NDRF and / or be performed under guidance of DAE's technical experts. Local district authorities should provide adequate resources for handling and transportation of the contaminated material to the safe disposal site.
9) In case required, media briefing will be done by the designated state official. He may seek technical inputs from AERB, if he desires.
10) After recovery / retrieval of the source and after completion of activities related with decontamination and safe, disposal (as per scenario requirements), with due concurrence of AERB, the closure of radiological emergency scenario will be declared by the concerned DM/SP.

DON'Ts

The DM shall send local police force or trained responders with proper protective gears and detection equipments in case of the above mentioned CBRN Disasters.

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Standard Operating Procedures & Check List

Section 30(2) (xvi) of the Disaster Management Act stipulates that the DDMA under the chairmanship of the Collector and the co-chair of the elected representative of the local authority, shall 'coordinate response to any threatening disaster situation or disaster'. The Collector/District Magistrate as the head of administration at the district shall be the focal point in the command and control for disaster response at the district level, in accordance with the policies/guidelines/instructions from the national and state levels. Depending on the nature of disaster and response he will be the Incident Commander himself or delegate the responsibility to some other officer.

The Procedures for dealing with disasters will be as per the District Disaster Management Plan for Cyclones, Floods, Drought, etc. In the normal times a high powered committee holds a meeting of the stakeholder departments twice in a year in the 2nd /3rd week of April and September every year, headed by the district collector. DDMA meetings shall be held once every half yearly.

Objective of SOPs:

To provide, in a concise and convenient form, a list of major executive actions involved in responding to natural disasters and necessary measures for preparedness, response and relief activities to be taken

To prevent/ reduce potential losses/damage due to hazards.

To attain and resilient recovery.

To indicate various actions this would be required by the District Administration within their sphere of responsibilities so that they may prepare and review the Departmental Action Plans accordingly.

To ensure that all concerned Departments of the Government, know the precise measures required of them at each stage of the process and also to ensure that all actions are closely and continuously monitored.

1. REVENUE DEPARTMENT

The Revenue Department has been the main department entrusted with the responsibility to coordinate and manage the disasters caused by the Hazards. The department is assisted by the concerned departments/agencies to fulfill the responsibilities assigned. Pre disaster period is the normal times before the disaster months and also the time period just before the first hazard alerts are given by the meteorological department or the CWC/ Irrigation department (Floods).

NORMAL TIMES:

1. Holding a meeting of DDMA and with district officials concerned twice in a year before the months of April and September for reviewing the precautionary measures to be taken as per the DM Plans.

2. Updating the District Disaster Management plan once every six months. This will be done by the specified officer by the Collector.

3. Ensure the communication systems are fully functional for easy and quick dissemination of information. Identify any additional requirement of equipment and operating personnel.

4. Updating the list of Voluntary Organizations and NGOs their contact addresses in the district, and provide them to MROs and Panchayats.

5. Ensure Mock drills are carried out periodically. Plan and organize training programs, mock drills etc. for improving community awareness and preparedness for facing the disasters till the other agencies step in.

6. Prepare an exhaustive list of equipments used during emergencies such as tractors, bulldozers, transport vehicles, communication equipments, pump sets, power generators etc., their availability with Govt. and private agencies and ensure that they are in operational condition.

7. Identify vulnerable points/areas in the flood banks.

8. Prepare a list of all utility items for meeting any emergency, check their availability in sufficient quantities, make inventory and provide them for reference and use at all levels.

9. Devise and implement continuous plan of action to cut, remove and destroy all thorny bushes and trees in vulnerable areas. They become death traps for people.

10. Keep adequate number of floats like tyres, inflated rubber tubes, wooden planks, bamboos tied as small platform for people to use for floating during floods.

11. Ensure positioning of adequate quantities of vaccines in the respective storage depots. And medical facilities should be increased and Hospitals/PHCs equipped in such a way that they are able to meet emergency situations and requirement of the affected people.

12. Ensure that the Veterinary Dept. should plan and strengthen the systems for ensuring prompt veterinary services to the animals and poultry birds. And ensure positioning of adequate quantities of life saving drugs and constitution of medical / Para medical teams.

13. Identification of suitable higher places for construction of Helipads. And Plan for construct shelters in any newly identified vulnerable areas. Ensure that the existing shelters are maintained in fit condition.

14. Storage facilities for food and essential items should be augmented and inventories are maintained.

15. Review the existing flood control structures such as river dams and bunds of rivers, canals and tanks. Based on previous experience, build new bunds and raise/strengthen the existing bunds.

16. Review thee power distribution system the transmission and distribution towers should be designed to with stand the extreme condition of winds in cyclone.

17. Ensure that the line departments mainstream DM activities in their departmental Plans and also review the progress made during each year.

PRE- DISASTER:

1. The control Rooms should function round the clock till the necessity ceases. Its contact numbers should be notified in the district editions of the News Papers and also communicated to all Officers in the district. All reference data, copies of all the contingency plans of district and departments with maps and updated DM Plan should be made available.

2. Appoint Nodal Officers to oversee the implementation of Disaster Situation to cover all the vulnerable mandals and Villages. They should be positioned in the threatened area to coordinate the evacuation and response action of the stakeholders.

3. Inspect the Cyclone Shelters and take up repairs as necessary. And indentify all vulnerable points/areas in the flood banks. Ensure that inspection of lock points of rivers and mouths and outlet points of drains.

4. Ensure inspection of flood and cyclone stores and make available the required material.

5. Organize mass media campaign for Awareness generation among public on natural hazards, which will help build the knowledge, attitude and skills of the people in vulnerability reduction and suitable disaster risk management measures.

6. Communicate immediately the first flood warning to the likely affected area up to Village level and alert all concerned to prepare for facing the disaster. The Control Room at Dist. will keep in constant touch with flood warning centers, obtain updates and communicate at frequent intervals.

DURING DISASTER PHASE:

1. The Officer in-charge of the Control Room should maintain a record of incoming and outgoing messages. All the incoming messages should be sent to Collector and Joint Collector and in their absence the DRO.

2. All the warnings should be communicated immediately to all the district officers, Divisional officers, Tahasildars by-e-mail, wireless, Telephone etc. Record of the messages sent should be maintained.

3. The Collector shall convene a meeting with all the District Officer at the earliest and issue instructions to all the Nodal Officers or Special Officers to proceed to the areas allotted immediately and report to the Collector that they have reached their Mandal headquarters, allotted to them and should not leave the area till the clearance is received from the Collector.

4. Evacuate marooned and stranded people to safer places such as flood shelters, high raise buildings, schools etc.

5. Monitor and rescue people continuously by organizing search through Army, Navy, Air force, Voluntary and youth organizations by deploying navy boats and helicopters. Make arrangements for moving such affected people to the nearest relief camps.

6. Keep details of availability of equipment such as power generators, tractors, bulldozers, transport vehicles, communication equipments, pump sets etc; their availability with Govt. and Private agencies, for evacuation and ensure that they are in operational condition. (District, Division, Mandal)

7. Keep adequate number of vehicles ready at the nearest possible point/area to evacuate people in time before the hazard strikes. (District, Division, Mandal)

8. Keep adequate number of floats like tyres, inflated rubber tubes, wooden planks, bamboost tied as small platform for people to use for floating during flood situation.(Community, village and Mandal)

9. Provide fist aid and medical assistance for injured and sick people. Special care should be taken for the aged and disabled people, children and pregnant women.

10. Deployment of staff in their respective areas with medicines. Nominate medical officers to coordinate with mandals officers.

11. Finalize shelter places in the villages as per the inventory and indentified locations in the map, and arrange temporary shelters using tents, Tarpaulins, Plastic sheets etc. Provision of electricity to the identified shelters.

12. Deploy Police personal and Volunteers for law and order and provide medical help, if needed transport cases to nearby PHCs/Medical Aid-posts. Liaise with Railways, APSRTC and RTA to provide rescue and relief to stranded passengers.

13. Relief camps for provision of food and drinking water for the evacuated people. Provide temporary sanitation measures for men and women. Ensure adequate security through police at relief camps and at the evacuated villages.

14. Identify safe elevate places for animals and advise cattle owners to move them as soon as the order for evacuation is given. And provide fodder & water to the animals where feasible, Carcasses of dead animals should be done quickly to prevent outbreak of infection.

POST DISASTER:

1. Huge relief material stocks would be arriving from out side of the affected area and this requires advance planning, provision of staff for receiving, sorting, distribution and dispatch to the areas needing the material.

2. Restoration of Road and tele-communication, Electricity, Drinking Water Supply and House construction to the effected people on priority basis.(District, Mandal, Village)

3. Proper record should be made for the dead and missing persons and notify to the concerned authorities for providing compensation on short and long term basis.

4. Ensure Mass inoculation and vaccination programmes in the affected areas to prevent outbreak of epidemics by coordinating with Medical & Health Department. Additional medical facilities, hospital and PHCs may be planned and built for meeting increasing requirements.

5. Continue Search and disposal of the dead bodies and the carcasses. Ensure sanitation of highest order is maintained at relief camps and affected villages.

6. It is essential that spread of epidemics is prevented among people and animals. Respective Departments should take adequate measures by improving sanitation, drinking water and by vaccination. NGOs and other voluntary organizations should be encouraged to run community kitchens at relief camps and marooned.

7. The Dist. authorities and Line departments should provide comprehensive loss reports to the visiting State and central Govt. teams for arranging compensation. Record all the relief measures taken

8. Supply of all essential commodities, such as rice, wheat, pulses, salt, kerosene, diesel etc. should be ensured to all the habitats in the disaster affected areas.

9. Sub- Collector/ Tahasildar to arrange for documentation/ record of relief items received from various agencies, distributed and remaining and remaining balances. Reports to be sent to the district administration

10. Enumeration of Losses and Damages in a systematic manner, documenting and reporting the same.

Divisional level:

1. Holding on divisional level Committee meeting under the Chairmanship of the Revenue Divisional officer/ Sub- Collector in the months of April and September, every year, inviting peoples Representatives in the Division.

2. Updating the list of mandals and Villages vulnerable to disaster.

3. Organize teams for evacuation, enumeration of damages and distribution of relief in the division. Gazetted Officers or an officer not below the rank of a Deputy Tahasildar should be Head of the teams. Ensure they are fully conversant with their responsibilities.

4. Organization of training to the members of the above teams on the activities entrusted to them in the months of April and August of every year.

5. Updating the telephone numbers of Mandal Level Officers, Railway Station Masters, Depot Managers of RTC, and Police stations including their Cell Nos. located in the Division.

6. Identification of the availability of Generators in the Division and the place as which the generators are to be placed.

7. Updating of the list of cyclone shelters, buildings of educational institutions Temples, Churches, Masques, and other public buildings.

8. Plan for emergency accommodation at Mandal Headquarters for Officers and staff coming from outside the jurisdiction of the Division.

9. Coordinate with Divisional level Officers in the implementation of department wise disaster plans.

10. Ensure keeping adequate stock of essential commodities with the Fair Price Shop dealers.

Mandal Level:

1. Identification of villages vulnerable to disasters in the Mandal on a map.

2. List of names of villages likely to be marooned

3. Preparation of list of PBL families, village wise.

4. Holding madal level meetings with the Mandal level Officers/ RIs, VROs, and elected representatives of Panchayat Raj Institutions in the months of April, and September.

5. Updating of the list of building of Education Institutions, Temples, Churches, Mosques and Public buildings other community Buildings.

6. Updating the list of Governemnt Hospitas, Private Hospitals, and Primary Health Centers and Sub-Centers with addresses and telephone numbers.

7. Identification of godowns (both Government and Private) with location and capacity .

8. Updating of the list of telephone numbers, addresses of local as well as the District and state level Functionaries concerning with Disaster management .

9. Preparation of Village level Contingency plans for all villages in the Mandal.

10. Preparation of inventory of rescue and relief materials available and listing them in register with the addresses of owners to make them available when any calamity strikes.

11. Inspect the functioning of the Rain gague stations and early warning systems.

12. Prepare an exhaustive list of equipments used during emergencies such as tractors, bulldozers, transport vehicles, communication equipments, pump sets, power generators etc., their availability with Govt and private agencies and ensure that they are in operational condition.

13. Updating the list of available Government and civilian vehicles. Review deployment of vehicles as per plan.

14. Updating the Village Organizations, SHGs and Youth Clubs.

15. Identify adequate number of floats like tyres, inflated rubber tubes, wooden planks, and small bamboo platforms for people to be used for floating during floods.

Village level:

1. Convening of the meetings of the Village Committees under the Chairmanship of the concerned Sarpanch during the first week months of April and September to discuss about the preventive steps.

2. Formation of Village Level Teams for assisting evacuation, patrolling etc.,

3. Identification of area from which people are like to be evacuated to safer places in case of cyclone or floods.

4. Identification of low lying areas in the village.

5. Identification of areas which people are likely to be evacuated to safer places in case of cyclone or floods.

6. Preparation of list of phone numbers of Officials concerned at District, Divisional, Mandal and Village level.

7. List of fishermen families and particular of boats with addresses of owners, if it is a fishermen village.

8. Identification of Relief Centers and the areas tagged and on to the Relief Centers. Preparation of the list of BPL families in the village.

9. List of fishermen families and particulars of boats with addresses of owners, if it is a fishermen village.

10. Identification of storage facilities.

11. Availabilities of cooking vessels.

12. List of private vehicles such as Tractors, Jeeps, etc., in the village.

13. List of nearby private hospitals with phone numbers of Doctors etc.,

14. List of tanks affecting Railway, if any, in the village.

15. Identify higher places for the standing for the cattle in the case of flooding.

16. List of cyclone shelters, other public & Private buildings, temples, churches etc.,

2. POLICE DEPARTMENT

The Police Department is one of the key Government departments. Both in the normal times when no disasters occur and in times of disasters, this department is an asset to community and it has to respond very well in various critical events.

NORMAL TIMES:

1. SP of Dist. will make arrangements for providing adequate number of mobile VHF sets up to District/Mandal/village Police stations for meeting the exigencies.

2. Ensure that Police stations are equipped with sufficient number of cars/jeeps fitted with wireless sets and trained personnel to handle them.

3. List out trained persons responsible at Dist., Mandal and Village level Police stations for disaster management activities with details of address and phone numbers. Provide this list to Dist Collector and concerned line departments.

4. Prepare a Dist. wise list of retired/reserve constables/drivers/ other use-full personnel. Their services could be used during future emergencies. The lists will be kept in all Police stations in vulnerable areas.

5. Plan and execute Dist. wide training programs for Police personnel with improved techniques for better management of disasters in future.

PRE DISASTER PHASE:

1. The Police authorities shall provide VHF/Mobile wireless sets with operators in Control Room at Dist. Collectorate and at other temporary Control Rooms already setup. Ensure adequate numbers of VHF sets are provided at Mandal and vulnerable villages for effective communication.

2. Establish communication with Control Room. Wireless station to be kept round the clock if necessary wireless stations to be set near the villages. And keep the officers standby.

3. Collect information of vulnerable points and diversion routs for all Roads in the district from the engineering departments responsible for the maintenance and plan for traffic control.

4. Procurements of necessary equipment, storage of petroleum and other lubricants.

5. Pass effectively all communications of warnings and precautions received from Control rooms and media to the public through announcements and by loud speakers.

6. Shall obtain sufficient maps from the Collectorate regarding vulnerable village's areas/habitations. These maps shall be distributed to the sub-divisional officers/circle inspectors on as required basis.

7. Training to teams on Disasters, roles and responsibilities and allotment of duties to these affected areas.

DURING DISASTER PHASE:

1. Ensure passage of warnings and precautions to the people in affected areas of Mandals and Village Police Communication network. Alert teams and arrange to deploy them at risk points.

2. Keeping closes contact with District Collectarate, and collects all vital information and inform district authorities. And Coordinate the search & rescue operations.

3. Superintendent of Police will coordinate with District Collector, DROs and other agencies for providing assistance to rescue and evacuate people in the affected areas of Mandals and Villages.

4. Provide guidance and assistance for forming task forces by MROs for evacuation, rescue and emergency relief operations.

5. Help revenue and medical department in transporting Injured and sick persons to Medical centers.

6. Ensure enforcement of law and order in the affected/evacuated villages and at shelters to avoid thefts and unlawful acts.

7. Assisting the community in organizing emergency transport for injured.

POST DISASTER PHASE:

1. Continue to pass warnings and precautions to the people in affected areas. Introduce latest transport and communication facilities.

2. Assist local officers in identifying the dead persons and for making proper records. Continue to Coordinate with DCs for rescue, relief and rehabilitation. Police Dept. should provide maximum services by getting additional persons from Police stations of unaffected Districts. They should further coordinate and assist NCC, Scouts, Guides, Army, Navy and Air force personnel in all rescue, relief and rehabilitation activities.

3. Update list of trained Police personnel at Districts. /Mandals and provide them to concerned authorities. And up-date lists of retired constables and drivers in each Dist. /Mandals for use during future disasters.

4. Provide assistance to people who are in a position to move from relief camps to their places where ever normalcy returns. Ensure strict maintenance of law and order in the affected/evacuated villages and at shelters.

5. Officers made available to inquire into and record of deaths, and make arrangements for post mortem of dead person with legal procedure for speedy disposal. Assistance to district authorities for taking necessary action against hoarders, black marketers and those found manipulating relief material and Provide security / bandobust to VIPS.

3. MEDICAL & HEALTH DEPARTMENT

NORMAL PHASE:

1) District Superintendents of District Hospital shall prepare a Hospital Disaster management Plan to deal with mass causality management and emergencies.

2) Take precautionary measures for hospital safety during disasters since hospitals are life line buildings son as to serve unitereptduliy. All structural and non- structural measures shall be taken up to make hospital safe.

3) Conduct mock drills in normal times to have an idea about hospital preparedness.

4) To identify the requirements of equipment and medical stocks that is needed during various kinds of emergencies.

5) To build network with referral hospitals, blood banks, ambulance services, etc.

6) To prepare a contingency plan as a part of Hospital DM Plan to handle specialized emergencies during Chemical, Industrial, Nuclear Disasters, etc**.**

PRE DISASTER PHASE:

1. Prepare a list of precautions to be taken by the public before, during and after the disaster to ensure that they maintain normal health under adverse conditions during the disasters and arrange for propagation in the Dist.

2. DMHO to prepare and circulate in vulnerable areas, a list of precautions to be taken by the public before, during and after the disaster to ensure that they maintain normal health under adverse conditions.

3. Plan methods for quick transportation of seriously injured and sick person from disaster areas to specialties hospitals for effective treatment.

4. DMHO will have arrangements for providing funds to Dist./Mandal/Village medical centers during emergencies. DMHO will nominate a nodal officer from his Dept.to be with MRO-MPDO, assist and coordinate all the medical relief activities during the disaster.

5. After receiving the first flood warning, alert Dist. Medial Health Officer (DMHO) to plan and keep in readiness mobile hospitals, emergency field medical teams, Para medical teams, surgery facilities, first aid kits etc. with sufficient equipments and medicines at Dist. Hospitals and PHCs. They should be in a position to move to the affected areas at short notice.

6. Keep teams of doctors ready with stocks of medicines required for relief to move to vulnerable areas in short time. Stock adequate quantities of medicines, life saving drugs, disinfectants, vaccines, inoculations and chlorination equipment.

7. Ensure availability of adequate doctors, trained personnel, medical stores and equipment for movement at short notice to vulnerable areas. Make provision of sufficient number of ambulances and transport vehicles. Plan additional space for extra beds in hospitals/PHCs.

8. Plan for establishment of field medical centers, mobile clinics, emergency operation centers and trauma counseling centers at vulnerable areas on short notice.

9. Plan for stocking sufficient quantities of blood of different groups at near by Blood banks. Update the list of Govt. /private doctors and supporting staff whose services can be utilized during emergencies. Instruct them to be in readiness to move at short notice.

10. DMHO to prepare and circulate in vulnerable areas, a list of precautions to be taken by the public before, during and after the disaster to ensure that they maintain normal health under adverse conditions.

DURING DISASTER PHASE PHASE:

1. DMHO will be in regular touch with District Collector and Control room to know the severity of situation and extend medical services accordingly in the affected areas. A medical control room at district and division levels shall be established with help lines.

2. Where ever necessary seriously injured and sick persons are shifted to Dist./State/Referral hospitals for specialist services. Provide fist aid and medical assistance for injured and sick people. Special care should be taken for the aged and disabled people, children and pregnant women.

3. DMHO will move maximum number of medical and Para medical teams, ambulances and mobile hospitals with adequate equipments, medicines etc. to the affected area and provide medical assistance round the clock to the people. Each team should be allotted specific place in the disaster area and specified relief centers.

4. DMHO should take all measures to ensure that replenishments are made continuously. DMHO will requisition the services of medical teams from unaffected Districts. for use in disaster affected areas. DMHO will liaise with State for providing additional specialists teams and equipments from State headquarters and other States.
5. Ensure that sufficient numbers of temporary medical camps are set up in the affected areas. DMHO will take maximum precautions to prevent breakage of epidemics/water borne diseases in the disaster areas.

6. Utilize the services of private doctors, allopathy, ayurveda and Homeopathy in the disaster-affected areas. Organize mobile health units and temporary hospitals for providing medical relief and for preventing break of epidemics. Teams of specialist doctors will tour affected areas with adequate medicines and equipments for providing on the spot specialist services.

POST DISASTER PHASE:

1. Ensure that DMHO and other medical authorities at Dist. and Mandal levels are in constant touch with Control rooms, know the latest situation and expand medical facilities accordingly. Ensure continuation of educating people on precautions to be taken for maintaining hygiene and health in adverse conditions.

2. DMHO to continue provision of medical facilities at the affected areas and relief camps till the people return to their places. Ensure adequate measures to continue for preventing break of epidemics by using disinfectants and chlorination.

3. DMHO will obtain information on the medical relief provided at disaster areas, quantities of medicines used, the quality of services provide by medical and Para medical staff, the adequacy of medical facilities available at vulnerable areas and forward to State for future action.

4. Maintain a record of persons treated with full details and particulars for reference at later date. Update and send plans for additional requirement of facilities, infrastructure to be created at vulnerable areas. Prepare a document on the event and send to State authorities for reference in future.

5. Ensure that DMHO and other medical authorities at Dist. and Mandal levels are in constant touch with Control rooms, know the latest situation and expand medical facilities accordingly.
6. Ensure continuation of educating people on precautions to be taken for maintaining hygiene and health in adverse conditions. DMHO to continue provision of medical facilities at the affected areas and relief camps till the people return to their places.

7. Ensure adequate measures to continue for preventing break of epidemics by using disinfectants and chlorination. DMHO will obtain information on the medical relief provided at disaster areas, quantities of medicines used, the quality of services provide by medical and Para medical staff, the adequacy of medical facilities available at vulnerable areas and forward to State for future action.

8. Maintain a record of persons treated with full details and particulars for reference at later date. Update and send plans for additional requirement of facilities, infrastructure to be created at vulnerable areas. Prepare a document on the event and send to State authorities for reference in future.

9. Vector borne like malaria, filarial, dengue, chikungunia, Japanese encephalitis, sprinkling of bleaching power and lime on the drains and roads to prevent gastro enteritis with the help of Sanitation team.

10. During the natural calamities the immune states of the children will reduce naturally. Hence there is need of Post disasters immunization like Polio, Measles and Vitamin- A.

4. ANIMAL HUSBANDARY DEPARTMENT

NORMAL PHASE:

1. Demographic profile of families engaged in fishing, fish farming, poultry, dairy, sheep, goat and pig rearing, their location, unit size etc will be mapped and provided to Mandal and Village levels. The fishing activity includes, fishing on sea, rivers, canals, lakes, tanks, brackish waters etc.
2. Cattle rearing community at vulnerable places will be advised not to go for heavy animals, since shifting them during disaster period would be difficult. Plan and implement schemes for educating fishermen and animal rearing communities of the vulnerable villages, on the measures to be taken before/during/after cyclones to avoid loss of lives and properties and animals.

3. Sufficient publicity will be planned at villages through visual education, training and mock drills. Identify safe shelter places for animals with adequate fodder and water facilities in all vulnerable villages for use during disasters.

4. The department has to prepare a departmental DM plan including resource inventories, list of shelter places, medical needs, awareness generation plan, etc. The mitigation measures for life loss shall be detailed worked out.

PRE DISASTER PHASES:

1. District authorities will activate control rooms, flood-warning centers. Ensure that flood warnings and precautions are properly received by the vulnerable communities and prepare them to face the disaster.

2. Demographic profile of families engaged in fishing, fish farming, poultry, dairy, sheep, goat and pig rearing, their location, unit size etc will be mapped and provided to Mandal and Village levels. The fishing activity includes, fishing on sea, rivers, canals, lakes, tanks, brackish waters etc.

3. Cattle rearing community at vulnerable places will be advised not to go for heavy animals, since shifting them during disaster period would be difficult. Move cattle, sheep, goats, pigs etc to safer cattle yards from vulnerable areas and provide fodder and water

4. Ensure that boats and other equipments of fishermen are moved to safer places and secured in association with fisheries department. Staff meant for emergency duties will be sent to their respective places of work and will be ready to undertake rescue and relief measures.

5. Provide medical help to distressed animals.

6. Chalk out a strategy to deal with drought situation so as to ensure continuous supply of fodder and water to the animals.

DURING DISASTER PHASE:

1. The control rooms and flood-warning centers at Districts will provide/send warning and other information to all affected areas. The dept will ensure that flood warnings and precautions are properly received by the vulnerable communities and face the disaster.

2. Mandals and Villages will arrange for shifting fishermen staying very near the sea and at low lying areas to safer places and relief camps. Ensure that boats and other equipments of fishermen are moved to safer places and secured.

3. Ensure that poultry farms take measures to safeguard their poultry birds and equipments. Move cattle, sheep, goats, pigs etc to safer cattle yards from vulnerable areas and provide fodder and water

4. Arrange for providing medical help to distressed animals. Ensure sufficient quantities of medicines and vaccines are stored at places nearer to the vulnerable villages. Arrange for visits of veterinary doctors to affected villages.

POST DIASTER PHASE:

1. Ensure that control rooms and flood-warning centers at Mandals will continue sending messages to the affected villages.

2. Plan and implement schemes for educating fishermen and animal rearing communities of the vulnerable villages, on the measures to be taken before/during/after floods to avoid loss of lives and properties and animals. Sufficient publicity will be planned at villages through visual education, training and mock drills.

3. For increasing the awareness among fishermen community, provide training/conduct mock drills.

4. Coordinate for veterinary help to distressed animals. Ensure supply of medicines and vaccines at places nearer to the vulnerable villages. Coordinate for mass vaccination wherever necessary. Plan for strengthening storage facilities for medicines and vaccines.

5. Private Doctors to establish veterinary service centers in vulnerable areas. Plan for more mobile health units for cattle.

6. Provide sufficient food/fodder/water for animals kept at safe yards. Coordinate for veterinary help to distressed animals. Ensure supply of medicines and vaccines at places nearer to the vulnerable villages.

5. AGRICULTURE DEPARTMENT

Agriculture Department always sustains losses/damage when floods and cyclone occur in the State. The quantum of losses is proportional to the intensity, time and duration of the hazard. It is difficult to prevent such losses but remedial measures can be taken to save the crops and if this is not possible to go in for alternative measures suitable for the area and type of soil.

NORMAL PHASE:

1. Plan and equip the Dist. to have latest technologies to asses the standing crop position, with reference to probable disaster, mechanism to advice farmers for safe guarding and in case of losses, procedures to estimate the damages and to inform State authorities.

2. Ensure that regular feedback is provided by Mandals indicating seriousness of disaster, level of distress, position of standing crop and likely losses.

3. Districts will prepare a long term action plan for meeting relief requirements of farmers in vulnerable areas.

4. Estimate drought proneness and plan for such contingencies

5. Create awareness among farmers on various kinds of threats and possible mitigation measures

6. Prepare departmental action plans with all plausible mitigation measures to minimize crop losses with long term perspective

PRE DISASTER PHASE:

1. Collect standard data base village wise, crop wise, survey number wise, former wise data from village revenue officer (VRO)

2. Formation of village, mandal, division, and district level disaster team with other departments consisting Agriculture, veterinary, Sericulture, Fisheries, Horticulture, Revenue, Pahcayat Raj, Irrigation, and Drainage etc.

3. Contingency crop plans prepared by ANGRAU may be made available up-to mandal level in the month of May. Prepare vulnerability maps of villages likely to be prone in the mandal based on previous year's data (viz. irrigation sources wise areas prone to flood).

4. Existing seed storage godowns (Seed store/oil seed godowns etc) are to be repaired for storing of seeds during calamities. Formation of seed banks with the help of RMGs. RMGs are encouraged to construct pucca godwons to store harvested produce under Govt. schemes(Grameena Bandar Yojana Scheme)

5. Update credit facilities and crop insurance details from financial institutions

6. Ensure that sufficient quantities of agricultural inputs such as seeds, fertilizers, pesticides, equipments and fodder are available at three levels. If necessary, they will be supplied at short notice at vulnerable areas.

7. Move and position the staff meant for disaster management duties at their pre-decided places. They should move in villages and advise farmers on precautions to be taken for protecting the standing crop.

8. The nodal officer should ensure that suitable instructions are issued to their field officers including their duties and function before, during and after disasters.

DURING DISASTER PHASE:

1. Coordinate with Mandals and Villages to get feed back on seriousness of disaster, level of distress, relief provided, steps taken for saving maximum standing crop, extent of flooded agricultural lands and estimated loss of crop.

2. Dist. will direct Mandals/Villages to be in close coordination with other line departments to ensure adequate relief is provided to the farming community.

POST DISASTER PHASE:

1. Village level team should visit the vulnerable cropped area and give suitable technical advices received from MAO's.

2. Ensure that adequate and timely relief/credit is made available to farmers for purchase of agricultural inputs through Govt. /private and easy loans through banks.

3. Seeds, fertilizers and pesticides should be provided at subsidized rates. Ensure all relief measures, credit facilities and inputs are made available continuously to farmers till their next crop is harvested.

4. Develop data base village wise crop wise, irrigation, source wise, insurance details, credit facilities tec., with an objective of forecast of damages due to disasters.

5. Fodder should be supplied in sufficient quantities at low prices.

6. The enumeration team while enumerating the crop loss, should also record the names of the tenant farmers, along with the owners name. They should also record extent cultivated byte tenant farmer.

Responsibilities of Officials:

S.NO.	Designation	Roles & Responsibilities
1.	Joint Director of Agriculture	• Formation of Teams • Formation of Control room • Trainings to ADAS & MAOs • Preparation of advanced precautionary measures, Pamphlets • Advance indent of seeds & other inputs etc.
2.	Deputy Director of Agriculture	• In charge of Disaster Management and control room with the assistant technical assistants & subordinate staff.
3.	Assistant Director of Agriculture	• Data base collection • Trainings to MAOs, and AEOs • Inputs requirement • Disseminating warning to MAOs& AEO • Supervision & Inspection of crop and land, damage prone areas in advance & consolidation of crop & land damage information. • Conducting meetings with formers once in season and divisional level.
4.	Mandal Agriculture Officer	• Information to AEO & Adharasa Rythu about warnings. • Training AEOs Adharsa Rythu and VROs etc. • Inspection of prone areas & preparation of vulnerability maps. • Preliminary data collection of crop & land damage. • Detailed crop / land damage farmer wise through village committee.

Checklist:

S.NO	Action to be taken	Yes/No	Details/Remarks
A	**Before Disaster**		
1	Planning of team and control room		
2	Preparation of data base information		
3	Preparation of damage prone maps in advance		
4	Preparation of schedule of trainings in advance		
5	Advance indent and positioning of inputs duly make ready of seed store		

	and oil seeds godowns for storage of inputs		
6	Preparation of pamphlets on cyclone/flood damage areas		
7	Make ready of plant protection equipments in the villages		
8	Removal weeds & cleaning drainage to avoid flood.		
B	**During Disaster**		
1	Disseminating warning to lower level officers AEO has to conduct trainings to farmers at villages		
2	Inspections damage prone sources		
3	Suggestions to the farmers about precautionary measures		
C	**After Disaster**		
1	Preliminary enumeration		
2	Preparation pamphlets on control measures to protect the moderate damaged crops		
3	Meetings to be conducted at village level on rejuvenation of crops		
4	Breaches to sources to be closed locally		
5	Detailed assessment of damages in proforma		
6	Positioning seeds and other inputs etc.,		
7	Credit facilities to affected farmer liaison with financial institutions		

6. PANCHAYAT RAJ INISTITUTE (PRIs) DEPARTMENT

NORMAL PHASE:

1. Convening the special meeting of Gram Panchayat meeting inviting VOs, CBOs, Youth Groups, Village elders, NGOs, and other organizations institutions and officials working in the Gram Panchayat to discuss on the management of disasters and constitution of Gram Panchayat Disaster Management Committee.
2. Energize the Control Rooms to monitor warning signals and to pass on necessary information through wireless, HAM Radio sets, etc.

3. Identification of Vulnerable areas discusses for various activities and prepare database.

4. Selection of Cyclone shelters/ relief centers for shifting people / livestock to safer places. Ensure periodic inspection and repair of shelters and other buildings identified for running relief camps.

5. The plans prepared for disaster management for implementation at Mandal and Village levels will include all works related to drinking water, minor irrigation canals, minor tanks and bunds, safe shelters, sanitation, food other essential items. These plans will be sent to district and mandals much in advance for implementation.

6. Direct Districts. Mandals and Villages to implement plans for provision of safe drinking water. Lay down procedures and mechanism for implementing long term sanitation requirements and their maintenance.

7. Plan and provide sufficient number of hand pumps, bilge pumps and other suitable equipment to drain water quickly. Drinking water hand pump sets should be planned and constructed about the normally expected flood level.

8. A list of water tankers available with public/private departments /agencies will be prepared with requisite details. Their services will be used during floods for supply of safe drinking water.

9. Depending on the topography, high and low levels of lands in Mandals and Villages, the natural drainage routes for rainwater will be identified. They will be suitably mapped. Steps will be taken to ensure that these routes are maintained and never blocked.

10. Private buildings will be identified suitable for use as shelters by the departments at Districts. and Mandals. Prepare list of such buildings and provide them to necessary authorities.

PRE DISASTER PHASE:

1. District level committee shall have public representatives and the will participate and take steps for facing the disaster. The control room will be activated.

2. Mapping of resources of NGOs/CBOs/ Charitable Organization to arrange training programmes and to make special arrangements for evacuation of old, handicapped, children, expectant and lactating mothers.

3. Identification of alternative road/ path/ route to reach the cyclone centers/ relief centers safely. And constitute volunteers teams in consultations with the members present in the Gram Panchayat meeting habitation wise.

4. Conduct training programme and Mock drills on the disaster management for the following:

- Members of Gram panchayat
- Members and officials of other institutions
- NGOs and other voluntary organization

5. Ensure flood shelters and other buildings identified for running relief camps are kept ready for operation. And maintain keep the shelters and other identified public buildings in good condition ready for use.

6. Direct the 3 levels to take advance action for provision of safe drinking water during crisis. Make arrangements for maintaining continuous supply and availability of food, kerosene and other essential items.

7. Direct line authorities to position sufficient number of hand pumps, bilge pumps and other suitable equipment to drain water quickly.

8. Alert the Dept.to position water tankers available with public/private departments/agencies for providing safe drinking water in the likely affected areas.

9. Direct authorities to ensure that the natural drainage routes are kept free in all vulnerable villages to allow flooder to drain quickly. Rural Water supplies should be maintained efficiently to avoid disruption. Chlorine/bleaching powder should be stocked in sufficient quantities.

10. Identify low-lying areas and arrange for bailing out water in case of inundation. Clear all the drains to ensure free flow of storm water.

11. The village Disaster management committee should be in tough should be in tough with the revenue authorities convened for supply and storage of essential items like K.Oil, food grains saws, axes, old tyres, ropes, lantern lights, gas lights, etc and keep tem ready on hearing cyclone warning.

12. The village Disaster Management Committee shall procure tarpaulins other materials from agricultural market committee, corporations and locally, to meet the future requirements.

13. Identity dried branches of trees of roads sides and cut them to avoid accidents, the dried up wood stored and may be used at cooking centres.
14. The Gram Panchayats shall take steps to keep the required sand bags and wooden poles at the vulnerable points like M.I of tanks, ponds etc.

15. The Gram Pahchayat shall clean the drainage system and arrange additional drainage system to drain the excess water.

DURING DISASTER PHASE:

1. The control room will be further strengthened.

2. Control Room will monitor warning singles / precautions and pass the information to the people through wireless, HAM Radio sets.

3. Direct the 3 levels to take suitable action for provision of safe drinking water in affected villages and at relief camps through tankers and other means.

4. Coordinate with line authorities to drain water quickly. First priority for water pump hoses, sub stations hospitals etc. Second priority will be residential areas. Ensure that flood water drains out through natural drainage routes by removing obstructions if any.
5. Direct officials to make up stocks of essential food items, medicines etc. required for distribution to affected villages and relief camps. Similarly for items required for repair works and for de- watering.

6. Keep ready the required rice and other provisions at centers, along with Civil Supplies Department, and required fire wood, gas, gas stoves. Assist Civil Supply Department in keeping ready the requirement in keeping ready the required rice and other provisions at centers and required fire wood, gas, gas stoves.

7. Keep ready for first aid teams with required medicines by contact the PHC, M.O. and Mandal Tahsildar/ MPDO and position them at the cyclone centers/ relief centers.

8. Arrange vehicles for transport of people from the low lying areas to cyclone shelters. Assist Revenue department in evacuating the people from low lying areas to safe places. Inform the people through mikes, tom-tom through the volunteer teams and help people prepare for to evacuation from the areas.

9. Inform the people to drive away the cattle sheep and goat to the safe and elevated places.

10. Make arrangement for the cooking and supply of food at the cooking centers identified. And keep all the sanitation material at cyclone centers/ relief centers.

POST DISASTER PHASE:

1. Removal of dead bodies, animal carcasses with the help of Revenue, Police and Medical Departments. Arrange for their disposal/ cremation, to prevent any epidemic.

2. Planning and implementation of Rehabilitation of affected people, Rehabilitation of affected people; Repair and Reconstruction of damaged houses, physical infrastructure, etc., and return to normal economic activities including farming etc, should start immediately

3. Assist Revenue department in the assessment for dead persons, livestock and damages to houses and properties of individuals, agriculture, community assets.

4. Supervise the preparedness levels of Gram Pachayat by inspecting the vulnerable houses, roads, buildings, water sources contingency plan etc.

5. The long term mitigation plan should integrated normal development plan in such manner that protective and preventive measures against the disasters are included in the implementation of all development projects under each and every sector.

6. Identification of material availability locally for construction of temporary sheds.

7. Ensure communication facilities such as Telephone, cell phones, wireless sets and their functioning. And procure sanitation material like lime, phenyl, bleaching power, with equipment.

8. The repair and reconstruction activities should be integrated with the long term mitigation planning so that the quality of reconstruction and repair is in consonance with the specifications provided for disaster resistant structure.

9. List out donor's philanthropists, trusts, and request them to assist in relief and rehabilitation measures.

10. Mapping of Hazards and vulnerability should be initiated, if it is not done and detailed maps should be prepared for each block and district and should be placed in both district and blocks.

11. Control room will continue its activities. Restore normal communication, power and drinking water facilities on priorities.

12. Coordinate with line authorities to drain water quickly. First priority for water pump houses, sub stations, hospitals etc. Second priority will be residential areas.

13. Special funding should be made available for the construction of physical infrastructure to include disaster resistant technologies particularly in the construction of Houses, Roads, Electric Transmission Lines, Drinking Water facilities, Bridges and Culverts, Tele – Communication Irrigation Canals, Tanks and Reservoirs, etc., for the sections which are most vulnerable. And supervise all construction and developmental activities.

14. District Officials to make stocks of essential food items, medicines etc and continue supply to affected people and relief camps. And make arrangement supply of food, kerosene and other essentials items.

Roles and Responsibilities of PR Officials:

Sr. No	Designation	Roles and Responsibility
1.	Gram Panchayat Secretary	• Convene meetings to ensure timely warning • Update information on civic amenities/ population, etc. • Select safe locations for people and livestock. • Arrangements to evacuate the disable people. • Sanitation facilities at relief camps

		• Storing food grain, drinking water, sanitation material. • Keep emergency fund in Panchayat funds at Panchayat level. • To establish village level teams for various tasks.
2.	Mandala Parishad Development Officer, Mandal Praja Parishad	• Supervise Preparedness of GP. • Consolidate village level Assessing preparedness of l information on items listed under GP • Assessing Preparedness of primary health centers. • Engineering staff at the Mandal level should repair drainage, road etc. • Function as link between district and village level counter disaster activities. • Provide Emergency Fund at mandal level
3.	A.E.,/ D.E.E./ E.E/ S.E	• Inspection and emergency repairs of roads/ bridges, public utilize and buildings. • To ensure alternative routes/means of communication for movement of relief material and personnel to marooned areas or likely to be marooned. • Clearing of roads and establish connectivity, restore, roads, to traffic at the earliest. • Incase of floods, the district level team headed by SE will be coordinating with the district administration regarding intensity
4.	Chief Executive Officer, Zilla Parishad	• Convene a meeting of all Engineering staff, MPDOs DLPOs, DPOs, and ZP members before the start of likely cyclone period. • To take up necessary repair and maintenance and related works for preparedness • Check inventories of items required at short notice for rescue and relief operations • Providing Emergency Fund at Zilla Parishad.

7. ROADS AND BUILDINGS DEPARTMENT

NORMAL PHASE:

1. Private buildings will be identified suitable for use as shelters by the departments at Districts. and Mandals. Prepare list of such buildings and provide them to necessary authorities.
2. Direct Dist. and Mandal authorities to inspect and identify roads, bridges, culverts and buildings which are vulnerable for floods and repair/strengthen them.
3. The identified weak bridges and culverts weak once should be demolished and the new ones are to be constructed. Buildings which are in collapsible stage should be demolished. New roads/repair of roads should be carried out. The roads/buildings should be made hazard proof.
4. Ensure that building codes are strictly followed by public in disaster prone areas. They should be made mandatory.
5. In case of heavy rains, the roads are prone to breaches. Vulnerable points have to be listed out in advance and indicated in maps. They shall be reviewed every year before the monsoon and repair accordingly.
6. Ensure that the new construction does not block natural drainage lines. Enough culverts etc. may be provided.

7. A good network of motorable roads should be constructed in all vulnerable coastal areas. This not only facilitates quick evacuation at the time of need, but also the supply of relief to the needy, in the aftermath of flood.
8. Retrofitting of buildings, building foundations and structures should be made as a component of disaster management policy, applicable in vulnerable areas. Suitable guidelines may be issued for retrofitting.
9. Dist. authorities will inspect and identify roads, bridges, culverts and buildings which are vulnerable for floods and repair/strengthen them.
10. The identified weak bridges and culverts should be demolished when the new ones are constructed. Buildings which are in collapsible stage should be demolished. New roads/repair of roads should be carried out. The roads/buildings should be made hazard proof.
11. Ensure that building codes are strictly followed by public in disaster prone areas. They should be made mandatory.
12. In case of heavy rains, the roads are prone to breaches. Vulnerable points have to be listed out in advance and indicated in maps. They shall be reviewed every year before the monsoon and repair accordingly.

PRE DISASTER PHASE:

1. S.E shall conduct the disaster preparedness meeting twice in a year and advice the field functionaries to gear up for the situation such meetings shall be organized well advance before the onset of monsoon.
2. The AEE shall keep the available machinery such as Power saws under the control of one competent Work Inspector/ Gang mazdoor who frequent trails so that the available machinery will be in working condition, at all times.
3. The Dy. EE shall verify the working condition of the machinery once in three months.
4. Shelters and private buildings identified for use as relief camps should be checked and strengthened where ever necessary. Special attention should be given for securing weak doors, windows and compound walls.
5. Direct Districts. And Mandals to make a final check of roads, bridges, culverts and buildings and carry out urgent repairs where ever necessary.
6. Shelters and private buildings identified for use as relief camps should be checked and strengthened where ever necessary. Special attention should be given for securing weak doors, windows and compound walls.
7. Dist. authorities to make a final check of roads, bridges, culverts and buildings and carry out urgent repairs where ever necessary.
8. Shelters and private buildings identified for use as relief camps should be checked and strengthened where ever necessary. Special attention should be given for securing weak doors, windows and compound walls.
9. Move machinery and equipment meant for repair of roads and buildings. And for removing obstructions nearest to the vulnerable areas for use during emergency.

DURING DISASTE PHASE:

1. Observation of the cyclone movement and situation

2. Alerting of field teams.

3. Enquiring the availability of machinery and requesting them to keep them ready for deployment were ever necessary.

4. Deputing of field staff from non-affected areas to assist staff in likely affected areas.

5. Staff on leave should return to their Head Quarters.

6. No leave shall be sanctioned at the time of disaster.

7. Preparation for post disaster activities.

POST DISASTER PHASE:

1. Ensure restoration of traffic movement where ever possible by quick repair of breaches. Inspection of roads and removal of traffic obstruction. And inspection of roads for assessment of damages and reporting in higher authorities and preparation of its estimations.

2. Coordinate with State and plan for providing adequate number of drains by the side of roads, particularly considering the past experience.
3. Sanction and entrustment of temporary restoration works. And updation of maps

4. Steps will be taken for raising the stretches of roads passing through low areas and increase drainage facilities with prior approval of the State.

5. R&B/PRE will create a reliable road network that connects vulnerable areas and selected nodal centers, from where transport, relief and rehabilitation operations can be undertaken during future disasters.

Roles and Responsibilities:

Sr. No	Designation	Roles and Responsibilty
1.	Assistant Engineer / Asst. Exe. Engineer	• Identification of vulnerable points • Preparation and submission of estimates for taking up and strengthening of vulnerable points. • List out the machinery like power saws, JCBs etc., with their conditions and submit to the Dy. Executive Engineer. • List out the contractors with their address and contacts numbers. • Inspection of weak and narrow Bridges, Culverts and cause ways with details of repairs to be taken up. • Identification of over flowing locations impending disaster. • Identify and removal of weak and dried trees along the road side. • Alternate routes to be identified and listed out. • Execution of works approved and preparation and submission of bills for payments. • Submission of Utilization certificate.
2.	Deputy Executive Engineer	• Verification and submission of items 1 to 8 and 10 to Executive Engineer. • Check measurements of all the works executed by the AE/ AEE and submission of bills for payments
3.	Executive Engineer	• Sanction of estimates submitted Deputy Executive Engineer. • Entrustment of works to the contractors on nomination basis or short tender basis. • Verification and super check measurement of all works executed by AE/AEE and DEE • Payment of bills to the contractors.
4.	Superintending Engineer	• Sanction of estimates submitted Executive Engineer (Works above 10 lakhs below 50 lakhs). • Entrustment of works to the contractors on nomination basis or short tender basis. • Verification and super check measurement of all works

		executed by AE / AEE and DEE. • Getting all correspondence regarding activities to be taken including all repairs or construction pre, during and post disaster with district administration

8. IRRIGATION AND COMMAND AREA DEVELOPMENT

NORMAL PHASE:

1. Materials such as empty cement bags, sand, metal, stone bellies etc. will be stocked in adequate quantities in all flood stores for immediate use before and during floods.
2. Ensure no human encroachment near the drains and settlements in the low-lying areas.
3. Ensure repair /restoration of canals, Irrigation tanks and desalination of damaged agricultural fields.

PRE DISASTER PHASE:

1. Catchments maps are to be ready for all irrigation sources. And all the vulnerable locations in the sources are to be identified along with the Water Users Associations / Distributory Committees / Project Committees.
2. Check and repair the main Irrigation canal system and control structures.
3. After receipt of first flood warning discharge through dams all lower riparian rights villages downstream of the dam are required to be given the information along with District Collector/ RDO/ MRO of the concerned district.
4. During the closure period the irrigation staff has to procure required stores i.e. empty gunny bags, sand, bullies of 1m length with 100mm dia, gaslights, bamboo thatties, gamelas, country twine, needles, crow bars, hammer with handles, torch light etc.
5. One flood store will be maintained under the control of each Dist. Collector. The flood store will keep empty sand bags, dewatering pumps, diesel generators, tarpaulins, tents etc.
6. The Asst. Engineer should make arrangement to intensify patrolling of river banks round the clock and as soon as the reservoir comes to full tank level and the spillway gates are to be operated to avoid further storage in the reservoir with intimation to Revenue Authorities.
7. Before cyclone / flood the AEE / DEE will inspect each and every vulnerable points and the areas prone for inundation for taking precautionary temporary measures and the summary of all actions intimated to the higher officers.
8. Materials such as empty cement bags, sand, metal, stone bellies etc. will be stocked in adequate quantities in all flood stores for immediate use in the event of disaster.
9. Strengthen the weak bunds of all irrigation sources and arranges for patrolling weaker points to avert breaches.
10. Ensure that all the irrigation drains are cleared of blockades and obstructions.
11. Move all emergency duty officers/staff and equipments to vulnerable area.
12. They should be ready to take up emergency works.

DURING DISASTER PHASE:

1. Materials such as empty cement bags, sand, metals, stone bellies etc. will be stocked in adequate quantities in all flood stores for immediate use for plugging the breaches.

2. After receiving 1st warning the status of flood is to be intimated to the District Collector, RDO, and NGOs, MRO to address public by in all adjacent villages & it is to be intimated to AIR and for live telecast channels.

3. Strengthen the weak bunds of all irrigation sources wherever necessary to prevent breaches. Assistance from local people will be used.

4. After receiving cyclone/ flood warning from catchment area to source utilization location the departmental field officers have to inspect all the sources jurisdiction wise including luskers.

5. After flood / cyclone warning, control room are to formed at SE/EE/ offices respectively and required vehicles are to be kept at store sheds to carry the materials to the spot required. Ensure that all the irrigation drains are cleared from obstructions.

6. Continue to clear the mouths of all drains for free flow of flood water.

POST DISASTER PHASE:

1. After floods recede necessary arrangements have to be made to the farming community to safe guard agriculture by making temporary restoration arrangements to the affected irrigation sources, which include forming ring bunds, close breaches, removing of all shoals and rectifying damages to structures.
2. The officers involve for restoration of post disaster damaged irrigation sources are AEE/ AE, DEE, EE, and SE. and identify the breaches and take up restoration work.
3. Restore the damaged infrastructure. Attempts will be made for farming community to start agriculture within minimum possible time to bring the socio economic life back to normal in the affected areas.
4. Review and request for construction of dams, check dams and new irrigation/drainage canals for long term improvement and for sustained economic growth.
5. Suggest measures for strengthening the river banks and canal bunds to avoid breaches.

9. FISHERIES DEPARTMENT

PRE DISASTER PHASE:

1. Demographic profile of families engaged in fishing, fish farming. The fishing activity includes, fishing on sea, rivers, canals, lakes, tanks brackish water etc.

2. Establish control room and a monitoring Cell with operational field teams with available staff; assist district administration and co – ordinate with line departments.

3. Arrange medical relief to fishermen. Provide medical help to distressed animals. Stock sufficient quantities of medicines and vaccines at places nearer to the vulnerable villages.

4. The FDO and fisherman elder will elder ill identify the vulnerable fishermen colonies likely to be damaged by floods/ cyclones including the assessment of emergent requirement of food and drinking water supply, kerosene, clothing, medical aid etc.

5. List of NGOs involved with fishermen activities and their capability for providing assistance.

6. Identification of vulnerable habitations, creek points, likely marooned areas, rate of inundation and receding waters, identify the locations where fishing craft are anchored and prone do damages.

7. Fisheries department should educate fishermen families to stop sea fishing activity soon after receiving first flood warning.

8. Up keeping of the available life saving appliances, communication equipment i.e., life jackets, life floats, Very High Frequency communication sets, cyclone warning kits etc.,

9. Assessment of probable damages to the boats ad nets, fishermen huts, house hold articles in terms of quantity and value i.e. onetime pre cyclone survey.

10. Constitution of teams with officers/ NGOs for pre, during, and post disaster activities.

11. Ensure that boats and other equipments of fishermen are moved to safer places and secured. And ensure positioning the relief boats and expert swimmers, life saving appliances at vulnerable points for preventive and rescue activities.
12. Conducting Mock drills to alert all fishermen, about the precautions and rescue measures to be followed during disasters.

13. Telephone numbers and others contact of officers of officers also to be collected and shall be provided to all concerned up to habitation level.

14. The fisheries development officer shall check the functioning of life saving appliances and provide and render services of such equipment.

15. List to be prepared active fishermen, families with Livelihood activities and complete address for identification in case of emergency.

DURING DISASTER PHASE:

1. Mandal and villages will arrange for shifting fishermen staying very near the sea and at low lying areas to safer places and relief camps.

2. Ensure that boats and other equipments of fishermen are moved to safer places and secured.

3. Dissemination of cyclone warnings, weather reports to the fishermen localities, fishing boat operator's departmental personnel and liaison.

4. Alerting fishermen elders and fishing boat operators at sea to return to shore.

5. Collect data of number of boats operating at sea and guide them to a probable route of escape for safe return.

6. Evacuation of field staff / volunteers from other safe areas to provide assistance in most vulnerable areas.

7. Mobilize expert swimmers to the cyclone / flood hit areas. And alerting the teams for post disaster activities.

8. Arrange for providing medical relief to fishermen.

POST DISASTER PHASE:

1. Plan and implement schemes for educating fishermen communities of the vulnerable villages on the measures to be taken pre/during/post disasters to avoid loss of the lives and properties.

2. For increasing the awareness among fishermen community, provide training/ conduct mock drills.

3. Coordinate for medical relief to fishermen. And plan for strengthening storage facilities for medicines and vaccines.

4. Ensure quick disposal of carcasses.

5. Seek help of Coast Guard in case of any emergency for search operations and asses the casualties if any

6. Asses the loss/damages to household articles, fishing implements.

7. Visit of teams to the affected fishermen habitations, shore areas to inspect the type of loss/ damages to the fishing boats and nets.

8. Preparation of estimated value of such loss/ damages

9. Consolidation of the assessed losses/ damages and reporting.

Roles and Responsibilities:

Sr. No	Designation	Roles and Responsibility
1.	Fisheries development Officer	• The FDO shall be responsible for data gathering within the jurisdiction and liaison with the fishermen community and the Divisional officers and furnish timely reports to the Divisional level cyclone and flood relief committee and officer for Fisheries activities. • He will record the movement of fishing vessels and ensure registration/ licences and monitor the same • Identifies the vulnerable areas and cyclone / flood maps in the jurisdiction. • Identifies the requirement of field level teams and NGOs and required assets. • Transport and guide the expert swimmers, relief boats and rescue team before the crisis situation and supervise the search and rescue and relief activity. • Assess the requirement of funds and furnish to the ADF for the emergency relief work • Co-ordinate and work with other Line department for proper relief operations • Assess the value and quantity of losses, make proposals on such losses and temporary restoration as per norms of calamity relief fund (CRF) • Distribution of compensation to the affected fishermen as per norms
2.	Director of Fisheries / FDO at Division Level	• He is the member of the divisional level cyclone, flood relief committee • Identify and consolidate the information on vulnerable areas and cyclone / flood maps and information • Review and ensure the movement and registration of fishing vessels • Consolidate the requirement of field level teams and NGOs • Timely reports and appraise progress of all activities to the District monitoring cell • Deployment of expert swimmers relief boats and rescue teams in areas noted • Monitoring the flood / Cyclone areas and related activities • Liaison with other Line departments for proper co – ordination of relief operations • Formulate and submission of proposals for compensation of losses and temporary restoration as per norms of calamity relief fund (CRF) • Monitor distribution of compensation to the affected fishermen as per norms

3.	Director of Fisheries / FDO at District Level	• The FDO is the member of District level cyclone and flood relief committee and officer for Fisheries activities. • Consolidates the information on vulnerable areas and cyclone / flood maps and information • Consolidates the requirement of field level teams and NGOs and required assets • Arrange for training of staff / NGOs /Fishermen elders • Activate the district monitoring cell and supervise the divisions and villages • Deployment of expert swimmers relief boats and rescue teams in the areas identified by the divisions • Supervise the Flood / cyclone related activities • Consolidates the requirement of funds and procure from the District Collector for emergency relief work • Submission of proposals to Commisionerate for compensation of losses and temporary restoration as per norms of calamity relief fund (CRF) through the Collector. • Takes steps for distribution of compensation to the affected fishermen as per norms. • Submission of audited utilization certificates to the commissioner, Disaster management through District Collector and HOD.

10. RURAL WATER SUPPLY

PRE DISASTER PHASE:

1. AEE/ AE will identity the non – functioning schemes or Hand Pumps, repairs to platforms and Tap fountains including its surroundings in coordination with the GP level teams and action is to Abe taken to get them repaired.

2. The Gram panchayat shall be suitably instructed the DPO/ CEO to utilize the funds for restoration of Water Supply sources on top priority

3. The AEE/AE will identify the vulnerable water sources which are to be chlorinated before and after the Disaster with the help of Gram Panchayat teams.

4. The Hand pumps existing in the low lying area shall be raised to the expected maximum flood water level by raising the casing pipes and plat forms to avoid possible contamination.

5. Keeping ready stock of Liquid Chlorine / Bleaching power with the Gram Panchayat and to observe proper chlorination being done regularly

6. Ensure that identify the Safe sources in the Gram Pancayat area and adjacent areas where safe water can be brought in case of submergence of the area.

7. The unsafe sources if any shall be suitable marked and shown to concern team members.

8. The safe source including private sources are to be identified with proper testing for portability using the field testing kits available.

DURING DISASTER PHASE:

1. Keep ready stock of all relevant with the department

2. The team has to observe the required stock of H2S vials availability with GPs to check bacteriological contamination. Chronoscopes are to be kept available with the all vulnerable areas in order to verify the residual chlorine in the drinking water.

3. Ensure that the list of tankers are to be ready by the AEE/AE/ MPDO along with capacity of tankers , their address, contact members and distance from a vulnerable areas.

4. Availability of generators and their owners along with contact address and distance to the vulnerable area are too ascertained by the assigned team members.

5. During the disaster awareness is to be created by the team members among people to construct and use ISLs in order to avoid open defecation during Cyclone/ Floods. The vulnerable villages are to be brought up to Nirmal Gram Purskar status.

6. Ensure that in the time of relief should be provide good water.

POST DISASTER PHASE:

1. The list of damages occurred during cyclone/ floods are to be identified by the AEE/ AE in consolidation with the Team along with required budget for temporary / permanent restoration.

2. Ensure that permanent restoration may also be taken with local funds if the amounts required are small.

3. Monitoring of water quality should be restored or initiated immediately. Post disasters daily determination of the chlorine residual in public water supplies is sufficient.

4. Ensure that Chlorine and chlorine – liberating compounds are the most common disinfectants. Chlorine compounds for water disinfection are usually available in ihitt forms.

5. Chlorinate lime or bleaching power, which has 25% by weight of available chlorine when fresh, its strength should always be checked before use.

6. If the damage for water is urgent, or the repaired main cannot be isolated, the concentration of the disinfecting solution may be increased to 100 mg/ litre and the contact period reduced to 1 hour.

Roles and Responsibilities:

Sr. No	Designation	Roles and Responsibilty
1.	Superintending Engineer	• Consolidate the information on vulnerable areas and location of hand pumps and schemes safe / unsafe low lying areas and maps. • Indent for required pump sets, hand pump spares, minimum stock for material required for PWS/ CPWS schemes with proper sanctions at district level • Arrange for training of RWS & S Staff and awareness through DEE/ AEE to Sarpanchs / Secretaries on maintenance of Schemes / Hand pumps, Chlorination etc., • Active the Monitoring cell at District level, Division level, Sub - Division level, Mandal level and GP level. • Deployment of DEEs/AEEs /AEs of not affected areas to the affected areas. • Monitoring the Cyclone / Flood related activities. • Consolidate the requirement for funds and take sanction from

		district collector for emergency relief works. • Consolidate requirement of funds for permanent measures and submission to the head of the department for sanction. • Liaison with other line department for proper coordination of relief operations. • Submission of audited utilization certificates to the commissioner, Disaster Management through District Collector and HOD
2.	Executive Engineer	• Consolidate the information on vulnerable areas and location of hand pumps and schemes safe/ unsafe low lying areas and maps. • Submission of requirement of pump sets , hand pump spares, minimum stock of all materials required for PWS / CPWS schemes to the SE • Arrange for training of RWS staff and awareness through DEE/ AEE to Sarpanches/ Secretaries on maintenance of Schemes / Head pumps, chlorination etc., • Activate the monitoring cell at Division level, Mandal level, and GP level. • Deployment of DEE/AEE / AEs from unaffected areas to the affected areas. • Monitoring the Cyclone/ Flood related activities. • Consolidate the requirement of funds for permanent measures and submission to the superintending Engineer for sanction. • Liaison with other line department for proper coordination of relief operations. • Submission of audited utilization certificates to the Commissioner, Disaster Management through SE.
3.	Deputy Executive Engineer	• Consolidate the information on vulnerable areas and location of hand pumps and schemes safe / unsafe low lying areas and maps • Submission of requirement of pump sets, hand pump spares, minimum stock of materials required of PWS/ CPWS schemes to the EE. • Arrange for training of RWS staff and awareness through AEE to Sarpances / Secretaries on maintenance of Schemes / Hand Pumps, Chlorination etc. • Activate the monitoring cell at Sub – Division level, Mandal level, and GP level. • Monitoring the Cyclone/ Flood related activities • Consolidate the requirement of funds and submit to EE for emergency relief works. • Consolidate requirement of funds for permanent measures and submission to the Executive Engineer for sanction • Liaison with other line department for proper coordination or relief operations.
4.	Assistant Executive Engineer / Assistant Engineer	• Consolidate the information on vulnerable areas and location of hand pumps and schemes safe / unsafe low lying areas and maps • Submission of requirement of pump sets, hand pump spares, minimum stock of materials required of PWS/ CPWS schemes to the DEE.

		• Conducting training awareness to Sarpanchs / Secretaries on maintenance of schemes/ Head pumps, Chlorination etc. • Activate the monitoring cell at Mandal level, and GP level. • Monitoring the Cyclone/ Flood related activities. • Consolidate the requirement of funds and submit to DEE for emergency relief works. • Consolidate requirement of funds for permanent measures and submission to the Dy.Executive Engineer for sanction. • Liaison with other line department for proper coordination of relief operation.

11. TRANSCO DEPARTMENT

Normal time activity

Establish at each sub-station a disaster management tool kit comprising cable cutters, pulley blocks, jungle knives, axes, crowbars, ropes, hacksaws and spinners.
Tents for work crews should also be in storage.
Action Plan Objective in a Disaster Situation should be to restore the power supply and ensure uninterrupted power to all vital installation/facilities at sites.

Activities on Receipt of Warning or Activation of DDMP

Within the affected district/mandal, all available personnel will be made available to the District Collector. If more personnel are required, the cut of station officers or those on leave may be recalled.
All personnel required for Disaster Management should work under the overall supervision and guidance of District Collector.
Establish radio communications1 with district control room and departmental offices within the district.
All district level officials of the department would be asked to report to the collector.
Appoint one officer as "NODAL OFFICER - Power Supply" at district level.
Review and update precautionary measures and procedures and review with staff the precautions that have been taken to protect equipment and the post disaster procedures to be followed.
Assist the district authorities to make arrangements for standby generators in the following public service offices from the time of receipt of alert warning

- Hospitals
- Water department
- Collectorate
- Police stations
- Telecommunications buildings
- Meteorological stations.
- Fill department vehicles with fuel and park them in a protected area
- Check emergency tool kits, assembling any additional equipment needed.
- Immediately undertake inspection from the time of receipt of alert warning of
- High tension lines

- Towers
- Substations
- Transformers
- Insulators
- Poles

On the recommendations of the collector/district control room/" Officer-in- Charge - Power Supply" of the department in the district will Instruct district staff to disconnect the main electricity supply for the affected area

Dispatch emergency repair gangs equipped with food, bedding, tents, and tools.

On the recommendations of the collector/district control room/" Officer-in- charge.

Relief and Rehabilitation
Field office priorities

1. Hire casual labourers on an emergency basis for clearing of damaged poles and salvage of conductors and insulators.
2. Begin repair/reconstruction.
3. Assist hospitals in establishing an emergency supply by assembling generators and other emergency equipments, if necessary.
4. Establish temporary electricity supplies for other key public facilities, public water systems, etc.
5. Establish temporary electricity supplies for transit camps, feeding centres, relief camps, district control room and on access roads to the same.
6. Compile an itemized assessment of damage, from reports made by various city supplie electrical receiving centres and sub-centres.
7. Report all activities to the head office.
8. Establish temporary Plan for emergency accommodations for staff from outside the area.

12. TELECOM DEPARTMENT

SOPs for Department of Telecom (DOT), Bharat Sanchar Nigam Ltd. (BSNL).
Activities on Receipt of Warning or Activation of DDMP

Establish radio communications with state control room, district control room and departmental offices within the district. All personnel required for Disaster Management should work under the overall supervision and guidance of District Collector.

Appoint one officer as "NODAL OFFICER- Communication" at the district level.

Review and update precautionary measures and procedures, and review with staff the precautions that have been taken to protect equipments and the post-disaster procedures to be followed.

Fill department vehicles with fuel and park them in a protected area.

- Inspect and repair all
- Radio masts
- Anchorages
- Foundations and cables
- Poles

- Overhead circuits.

Upgrade outside equipment to withstand wind speeds and other adverse weather conditions.

Designate at each exchange a member of staff (such as an inspector) as a disaster officer.

He must live in the area, be instructed in the likely effects of a disaster, and should be knowledgeable about necessary precautions and post-disaster procedures.

House all electrical and switching equipment in damage-proof buildings.

All storage batteries should be charged fully during alert for long use in the post disaster period, when the electricity supply is not likely to be available.

Establish an emergency tool kit at each exchange, including:

- Cable cutlers
- Cutting pliers
- Spanners
- Ropes
- Ratchet tension
- Crosscut saws
- Pulley blocks with rope
- Hand gloves

Check emergency tool kits and assemble any additional equipment needed.

Provide at least two tarpaulins in every building with radio equipment,

Teleprinter equipment, and manual and auto-exchanges.

Install standby generators in all exchange buildings for the recharging of batteries.

Secure all outside equipment to the extent possible.

Arrange for the transport of additional vehicles for inspectors.

Assemble equipment and emergency stocks of materials likely to be necessary for restoration of services.

Arrange emergency standby cable for dispatch to the affected area immediately after the disaster.

Remove fuses from the lines and disconnect the power supplies to equipment in disaster areas, if necessary.

Relief and Rehabilitation Field priorities

Give priority and concentrate on repairs and normalization of communication in disaster areas.

Identify the public services within the affected community for which communication links are most vital, and establish a temporary service, if feasible.

Establish a temporary communication facility for use by the public.

- Identify requirements, including;
- Manpower needed
- Vehicles needed

- Materials and equipments needed.

Begin restoration by removing and salvaging wires and poles from the roadways through recruited casual labourers.

Establish a secure storage area for incoming equipments and salvaged materials.

Carry out temporary building repairs for new equipments.

Report all activities to head office.

13. ROLE OF NGO's

The Non-governmental organizations play an important role in disaster management and provide valuable resources and expert manpower. Their capacity to reach out to community groups and their sensitivity to local traditions of the community give them added advantage during the disaster situation. The specific areas where the NGO can be involved are.

- Emergency First Aid
- Management of Relief Camps
- Trauma Care
- Services to Vulnerable Groups
- Rehabilitation, etc.,

Checklist

12.1. Checklist for DC.

Sr. No	During Normal Times / During Bi-annual review meeting	Yes / No	Remarks
1	Has DDMP updation person been nominated?		
2	Has the following items been updated in DDMP? • Communication equipment numbers & functioning • list of contact numbers of key members of each department • list of NGO's and their contact details • list of resources required for DM • HRVC - vulnerable villages / areas identified and updated • list of possible emergency shelters (schools, hospitals, churches, temples, other public buildings)		
3	List of trained persons responsible at district, mandal and village level is available and updated		
4	Police dept training has been conducted with latest techniques and equipments for effective disaster management and maintenance of law and order?		
5	Maps detailing the vulnerable villages / localities are updated and available for use in time of disaster?		
6	Has the medical dept made/updated plans for hospital level disaster management?		
7	Has mock drills been conducted at key departments: police, medical, search and rescue etc		
8	Has mock drills or community awareness programmes been conducted and plans for coming period have been made?		
9	Has the resource list (required for disaster management) been updated by concerned?		
10	Training programmes for general public have been conducted by concerned departments (example - animal rearing and fisherman communities given training on measures to protect against cyclone,		

	farmers being taught agricultural vulnerability reduction measures by agricultural dept etc)		
11	Has each department updated / reviewed their departmental DM plan?		
12	are latest technologies being monitored and being checked for feasibility by various departments as preparedness, mitigation measures?		
13	Check status of various long term action plans for preparedness and mitigation and gauge its progress; so that corrective actions can be taken where necessary		
14	Monitor whether the long term mitigation plans are being incorporated in the normal development plans for most effective results?		
15	Monitor whether public infrastructure development has been incorporated with the long term mitigation strategies?		
16	Are the physical infrastructure being checked for vulnerability improvement and repairs being made where necessary (ex- for roads, bridges, electricity lines etc)		

Sr. No	Pre Disaster Phase	Yes / No	Remarks
1	Has medical dept circulating awareness on do and donts		
2	Are the medical dept preparations are underway (vehicles, ambulances, food facilities, stockpile of medicines, blood banks etc)		
3	Are all departments in working to mitigate disaster impacts? (relocation of equipments, people and cattle; information to departmental designates for DM etc)		
4	For droughts, are sufficient quantities of seeds and food available and stored? Is the condition of godowns acceptable or immediate repairs are needed?		
5	Enquire about the quantities and availability of various resources as listed in IDRN resource network		
6	Sufficient quantities of chlorine / bleaching powder available for use in water / drinking water		
7	Check the daily list of incoming and outgoing messages		
	During Disaster Phase		
1	Meeting with DM team to brief them on the warning / disaster situation and also to issue instructions		
2	Are the emergency shelters usable and are known to everyone?		
3	Availibility of drinking water, food, clothing and sanitation at the emergency shelters?		
4	Is police dept having sufficient resources to enable search and rescue ?		
5	Medical dept is sufficiently informed of severity of disaster to plan to improve / expand medical services		
6	sufficient number of temporary medical camps are available		
7	Ensure replenishment of emergency resources by co-ordinating / requisitioning from nearby unaffected areas		
8	Timely information being provided to all department designates and monitor whether departments are making optimum use of the information		
	During Post Disaster Phase		
1	Have sufficient rehabilitation materials (ex- seeds to farmers) been provided for the affected or relocated persons?		

2	Rehabilitation work is underway and progress is reasonable?		
3	Restoration of essential facilities (road, rail, electricity, telephone, gas, house construction) are underway and progress is reasonable?		
4	Adequate steps are taken to prevent epidemic outbreaks at the emerency centers		
5	Have the Various depts made and submitted loss reports to decide compensation and also for record?		
6	Various depts have submitted a written record on the disaster and lists of resources consumed, losses incurred and problems faced?		
7	Is support measure in place for people who can move from relief camps to their places whenever normalcy returns?		
8	Ensure quick and sooth process for distribution of relief funds to effected		
9	Is the information related to disasters is continually given at community shelters (ex-flood warning situation, cyclone warning etc)		
10	Are steps being taken for rejuvenation of crops at village level?		

12.2. Checklist for Department heads.

12.2.1 Preparedness Checklist for the Police Department

- The department is familiar with the disaster response plan and disaster response
- procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the
- staff.
- Reviewed and updated the precautionary measures and procedures, the
- precautions to be taken to protect equipment, the post-disaster procedures to be followed
- Adequate warning mechanisms established for evacuation.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.2. Preparedness Checklist for the Health Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- A hospital plan for the facilities, equipment and staff of that particular hospital based on "The Guide to Health Management in Disasters" has been developed.
- Hospital staff is aware of which hospital rooms / buildings are damage-proof.
- All the staff of the hospital has been informed about the possible disasters in the district, likely damages and effects, and information about ways to protect life, equipment and property.
- An area of hospital identified for receiving large number for casualties.
- Emergency admission procedures with adequate record keeping developed.
- Field staff oriented about DDMP, standards of services, and procedures for tagging.

- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.3 Preparedness Checklist for Energy Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.4 Preparedness Checklist for Water Supply Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- Adequate warning mechanisms for informing people to store an emergency supply of water have been developed.
- Procedures established for the emergency distribution of water if existing supply is disrupted.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.5 Preparedness Checklist for Irrigation Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- Flood monitoring mechanisms can be activated in all flood prone areas from 1st of June.
- All staff is well aware of the precautions to be taken to protect their lives and personal property.
- Each technical assistant has instructions and knows operating procedures for disaster conditions.
- Methods of monitoring and impounding the levels in the tanks evolved.
- Methods of alerting officers on other dam sites and the district control room, established.
- Mechanisms evolved for forewarning settlements in the downstream, evacuation, coordination with other dam authorities.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.6 Preparedness Checklist for Telephone Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.7 Preparedness Checklist for PWD

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- All officers are familiar with pre-disaster precautions and post-disaster procedures for road clearing and for defining safe evacuation routes where necessary.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

12.2.8 Preparedness Checklist for Agriculture Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- Information provided to all concerned officers about the disasters, likely damages to crops and plantations, and information about ways to protect the same.
- The NGOs and the other relief organizations are informed about the resources of the department.
- An Officer has been designated as Nodal Officer for Disaster Management
- Sources of materials required for response operations have been identified.

12.2.9 Preparedness Checklist for Animal Husbandry Department

- The department is familiar with the disaster response plan and disaster response procedures are clearly defined.
- Orientation and training for disaster response plan and procedures undertaken.
- Special skills required during emergency operations imparted to the officials and the staff.
- Reviewed and updated the precautionary measures and procedures, the precautions to be taken to protect equipment, the post-disaster procedures to be followed.
- Hospital staff is aware of which hospital rooms / buildings are damage-proof.
- All the staff of the veterinary hospitals and centre'shas been informed about the possible disasters, likely damages and effects, and information about the ways to protect life, equipment and property.
- An area of the hospital identified for receiving large number of livestock.
- Emergency admission procedures with adequate record keeping developed.
- An Officer has been designated as Nodal Officer for Disaster Management.
- Sources of materials required for response operations have been identified.

Chapter 13
Climate Change Adaptation

CONCEPTS AND ISSUES OF CLIMATE CHANGE, DISASTER RISK REDUCTION AND DEVELOPMENT

13.1.1 Introduction

This chapter focuses on the conceptual understanding and inter-relation between disaster, development and climate change. Over the decades, with the increasing physical and financial losses due to increasing frequency of disasters, have shifted focus of planners and policy makers towards inclusion of disaster management in development practices. In fact certain studies have proved that climate change have also enhanced frequency of disasters and its losses.

13. 1.2. Concepts & Terminologies

It includes several terminologies and concepts which are essential to create an understanding towards disaster management and risk reduction which are very often used are introduced below.

13.1.2.1 Hazard

The potential occurrence of a natural or human-induced physical event that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, and environment (ISDR, 2007). More simply, any condition, material, process or event having the potential to cause harmful effect is understood as a hazard.

13.1.2.2 Vulnerability

Vulnerability means the characteristics of a person, group of persons (community) or their resources (property, infrastructure, environment or ecosystems) and the concerned situation that influences their capacity to anticipate, cope with, resist and recover from the impact of a natural or anthropogenic hazard. It involves a combination of factors that determine the degree to which someone's life, livelihood, property, ecosystems and other assets are put at risk by a discrete and identifiable event in nature and in society. Social vulnerability enumerates upon the fact that in our society some groups are more prone to damage and losses in context to different hazards. Key variables explaining variation of impact include class, occupation, caste, ethnicity, gender, disability and health status, age and immigration state and social networks[4].

Vulnerability could be divided into four types, viz.

I. Physical vulnerability,
II. Environmental vulnerability,
III. Socio-economic vulnerability, and
IV. Systemic vulnerability.

I. Physical vulnerability includes the risk to the tangible things having physical structure or configuration, viz. infrastructure, amenities, houses, buildings, bridges, and other assets which can be directly hit by a hazard event.

II. Environmental vulnerability primarily represents the risk to land and landscape, land-use, existing ecological settings including natural resources and ecosystem services, and thereby, also referred to as underlying causes of socio-economic vulnerability. Natural resources include a range of aspects like agro-ecosystems, bio productivity biodiversity, forests and wetlands, hills and slopes, grasslands, watersheds, river systems and ground waters, coasts, etc. which form basic resource system for social well being and economic activities as well.

III. Social vulnerability means threat to life, caste, ethnicity, children, gender, disable persons, health status, etc. Economic vulnerability includes probable financial losses held to occupation, income, funds, gross domestic product of a country etc.

IV. Systemic vulnerability represents the state of intactness in the Governance and administration against the risk of disaster incidences. This includes management and inter-relationship between different level of Governments, and within and among organizations, agencies and, thus, represents the effectiveness of coordination even during a disaster situation.

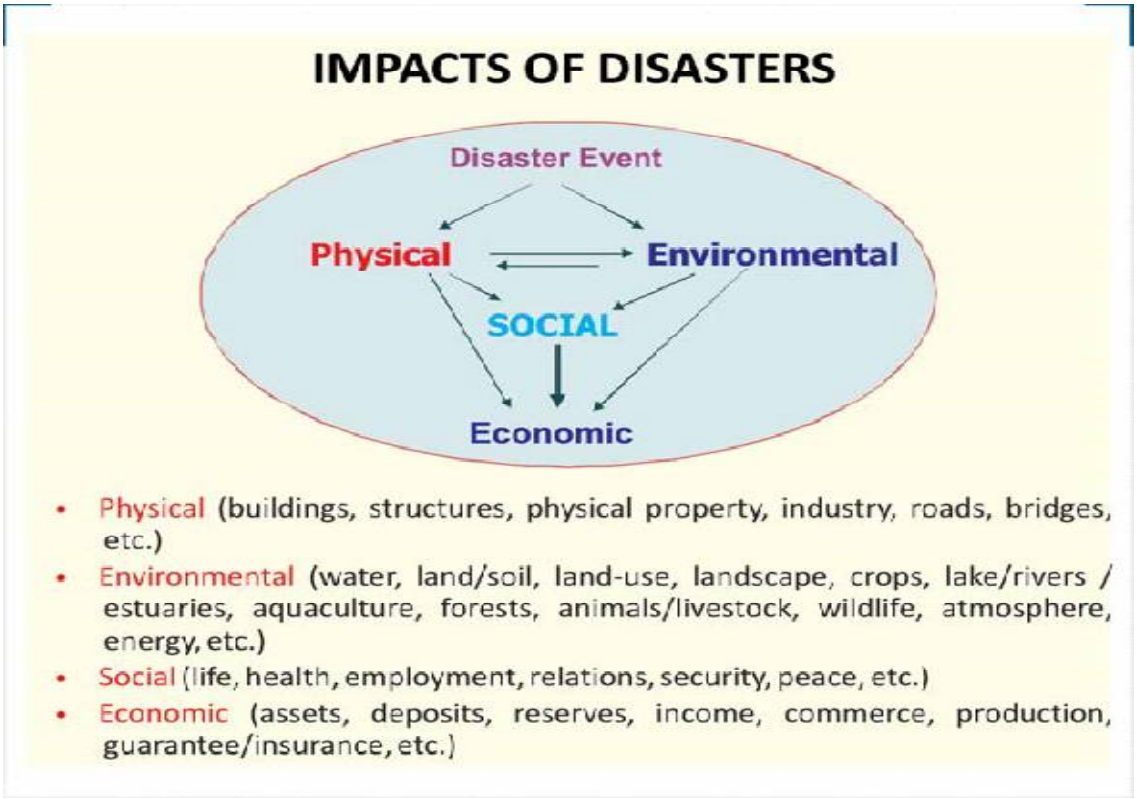
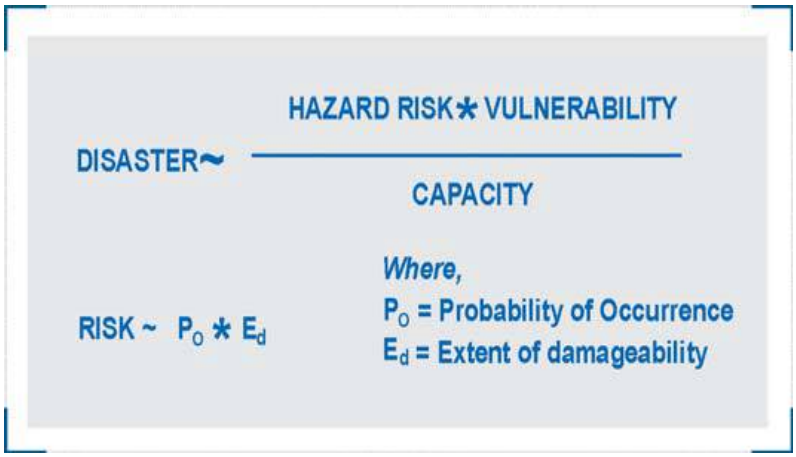


Figure 1.1 Set of vulnerable components which face the impact of disasters.

13.1.2.3 Disaster

Disaster is an unfortunate incident caused due to some natural or human-induced hazard, which disturbs normal functioning of a society or particular community resulting in enormous loss of lives, property and livelihood. Sometimes level of disaster is too high for the affected society to cope up with and requires external aid to come out of the situation.



The United Nations defines disaster as "the occurrence of sudden or major misfortune which disrupts the basic fabric and normal functioning of the society or community". As per the Disaster Management Act, 2005[5], disaster is defined as 'a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or

damage to, and destruction of, property or damage to, or degradation of environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected areas'.

13.1.2.4 Disaster Risk

Risk is indicative function of the probability of occurrence of a hazardous event and extent of its damageability in terms of lives lost, persons injured, damage to property, environment, infrastructure and disruption of economic activity. Disaster risk is an expression if likelihood that a particular hazard or hazard event can become a disaster (by causing damage and losses) and may be expressed mathematically as a function of hazard, vulnerability, amount and capacity. The amount refers to the quantification of the elements at risk (in another term – is expression of degree of exposure). For example, a flood hazard can exist in an uninhabited region but a flood disaster risk can occur only in an area where people or their possessions (property, ecosystems, infrastructure or resources) exist.

Disaster Risk conglomerates around the dimensions of hazard (frequency and intensity) and components of vulnerability (viz. location, exposure and sensitivity).

I. Hazards (any physical effects generated in the naturally occurring process or event or by an agent – material or living being);

II. Vulnerability (conditions that allow human being, assets, resources and ecosystems to be harmfully affected by a hazard), its subsets are like:

a) Location (physical and geographical positioning of the element (person or community, properties, ecosystems and other resources) known to be at risk,

b) Exposure (time factor and duration determining the probability of meeting/interaction with the hazard and extent of its prevalence);

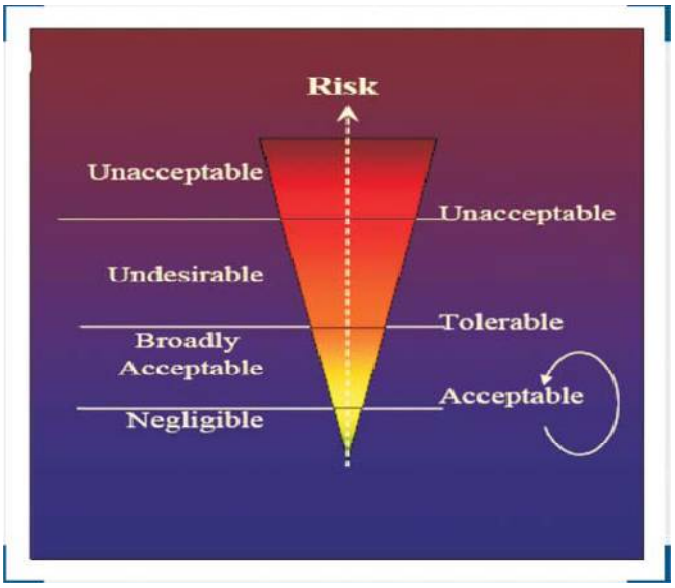
c) Sensitivity (characteristics that determine weaknesses, lack of resistance or capacity to withstand or flexibility for resilience after the stress) of physical and natural infrastructure, community components or person(s) (like based on gender, age, economic status, caste/ community/religion/ethnicity), resources, and economic systems, etc.

An example of identifying hazards, vulnerabilities, risk and probable losses in Gorakhpur district has been illustrated in Table 1.1.

Table1.1 Identification of Local Hazards, Risk, Vulnerabilities & Suspected Losses in the Sahibganj District

Local Hazards	Factors of Risk	Vulnerabilities	Anticipated Losses
Frequent Floods (years: 1998, 2010, 2013 Earthquakes (falls in seis mic Zone IV)	River basins of Ganga river. □ Erratic Rainfall □ Proximity to Bank of Ganga region dominates natural and physical characteristics of the district. □ Changing Land use due to Katawa.	Population located in the bank of Ganga River. viz. Sahibganj, Borio, Mandro, Taljhari, Udhwa, Rajmahal Blocks. □ Social infrastructure □ Physical Infrastructure- Bridges and roads □ Economy - Agriculture and Industries □ Animals-cattle □ Flora-Fauna	Deaths, injuries and casualties □ Collapse of social infrastructure □ Collapse/destruction of roads, bridges, communication including transportation, power and telephone/mobile systems, houses, schools, offices, industries, shops and hospitals etc. □ Loss of crops □ Dead or missing livestock and cattle □ Devastation of flora and fauna.

13.1.2.5 Risk Assessment



Risk assessment is a process to determine nature and extent of risk by analyzing potential hazards (frequency and intensity) and evaluating existing conditions of vulnerability that could allow a potential threat or harm to people and their property, environment and livelihoods. It serves as the first step towards adopting Disaster Risk Reduction (DRR) measures.

Following are the essential steps required to conduct risk assessment:

a. Identification of the nature, location, intensity and probability of threat (Hazard Risk Assessment).
b. Determining the existence and degree of vulnerability and exposure to the threat (Vulnerability Assessment).
c. Assessing the likelihood of impacts given the occurrence of a hazard event in the backdrop of current and future vulnerability (Risk Characterization).
d. Identifying the capacities and resources available and accessible (Capacity Assessment).
e. Determining acceptable levels at risk.

A new approach called as Mitigation Analysis also has been suggested (Gupta et al., 1999) that determines the extent and range of activities with their direct and indirect benefits in terms of hazard risk mitigation or vulnerability reduction implemented on ground. This helps evaluate direct measures to address disaster risk due to natural/anthropogenic hazard, and other developmental programmes/ schemes and actions/ policies of Government, communities and other entrepreneurs for their DRR benefits (Gupta and Nair, 2013).

Capacity assessment is a term for the process by which the capacity of a group is reviewed against desired goals, and the capacity gaps are identified for further action (ISDR, 2009). Capacity may include infrastructure and physical means, institutions, societal coping abilities, as well as human knowledge, skills and collective attributes such as social relationships, leadership and management. Capacity also may be described as capability. It is the combination of all the strengths, attributes, and resources available to an individual, community, society, or organization, which can be used to achieve established goals.

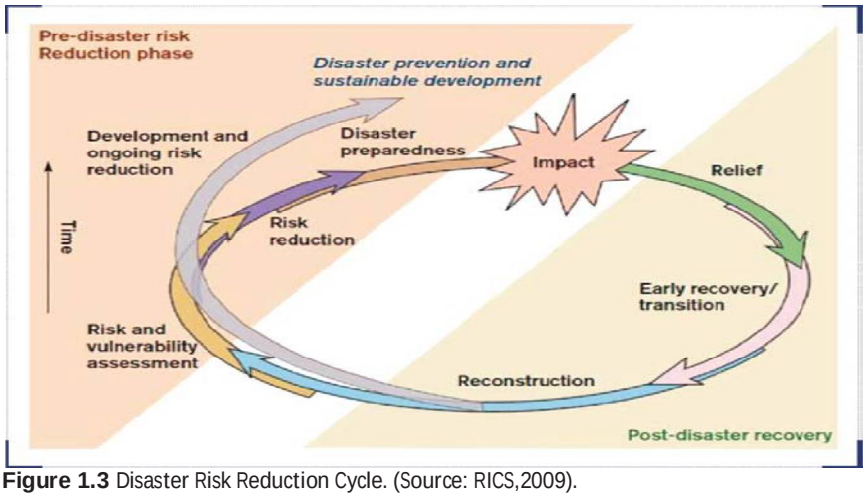


Figure 1.3 Disaster Risk Reduction Cycle. (Source: RICS,2009).

13.1.2.6 Disaster Management

As per Disaster Management Act, 2005, "disaster management" means a continuous and integrated process of planning, organising, coordinating and implementing measures which are necessary or expedient for:

a. Prevention of danger or threat of any disaster;
b. Mitigation or reduction of risk of any disaster or its severity or consequences;
c. Capacity-building;
d. Preparedness to deal with any disaster;
e. Prompt response to any threatening disaster situation or disaster;
f. Assessing the severity or magnitude of effects of any disaster; evacuation, rescue and relief;
g. Rehabilitation and reconstruction;

13.1.2 .7 Disaster Preparedness

Preparedness means state of readiness to deal with a threatening disaster situation or disaster and the immediate effects thereof. It includes pre-decided administrative, individual and community actions to minimise loss of life and damage and facilitate effective rescue, relief and rehabilitation. It includes:

a. Forecasting and disseminating warnings of potentially damaging phenomena or event.
b. Developing and testing response (and emergency coordination) plans for both disaster warning and impact of such events.
c. Assuring the rapid availability of appropriate material resources, transport, equipments and funds when and where needed.

13.1.2.8 Disaster Mitigation

Mitigation refers to a sum of human interventions taken for reducing the risk (by preventing or containing the hazard, avoiding or reducing exposure, enhancing tolerance and reducing sensitivity, and inducing resilience and capacity), minimizing impact or effects of a hazard or threatening disaster situation, towards achieving objective of 'sustainable development'. Mitigation is generally categorized into two main types of activities, i.e., Structural and Non- Structural mitigation.

Structural mitigation refers to engineering measures or any physical construction to reduce or avoid possible impacts of hazards, through construction or modification activity for hazard resistant structures and infrastructure. ***Non-structural mitigation*** refers to policies, awareness generation, knowledge development, public commitment, legal interventions, methods and operating practices, including participatory mechanisms and the provision of information etc., which can reduce risk with related impacts. However, recently mitigation measures have been identified into categories, viz. ***physical, environmental, social and economic measures of mitigation,*** addressing the underlying causes of vulnerability, from DRR point of view, with perspective of more pro-active and holistic approach towards sustainability. Besides, the interventions can also be categorized as ***'short-term*** or ***immediate', 'medium-term'*** and ***'long-term'*** on implementation time scales.

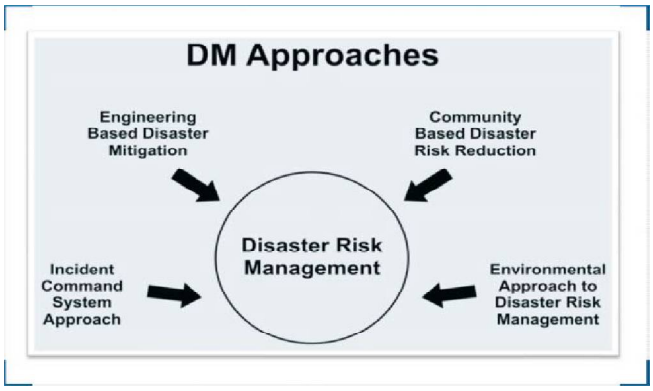


Figure 1.4 Integration of different approach to DM into holistic disaster risk management. This allows better avenues for CCA-DRR integration.

Broadly, there have been four principal approached to dealing with disaster risk and its management, viz.

a. Engineering centric structural mitigation,
b. Community centric preparedness based approach,
c. Centralized coordination based Incident Command System (for emergency response), and
d. Environmental approach to disaster management

(figure1.4) The recent development of Ecosystem Approach to Disaster Risk Reduction (eco DRR) (Gupta and Nair, eds, 2012) and ecosystem based adaptation (eBA) have significant overlap in their objectives and approaches, the integrated DRM envisages range of opportunity for integrating CCA with DRR and the other way round.

13.1.2.9 Capacity Building

As per the Disaster Management Act, 2005, "Capacity-Building" includes:

(i) Identification of existing resources and resources to be acquired or created;

Figure 1.5 Guiding principles for DRR capacity development

(ii) Acquiring or creating resources;
(iii) Organisation and training of personnel and coordination of such training for effective management of disasters;

Thus, capacity building incorporates a broad range of concerns starting from creating enabling environment, resources (acquiring, creating, and facilitating access when needed), and more importantly human resource development – through education (higher and professional), training and extension/awareness on all aspects and spheres of disaster risk management. Strategic approach to capacity building towards holistic DM, aims at enabling the shift from the prevailing scenario through (as per National Human Resource Plan on DM):

- Reactive and Compensatory to 'Preventive & Proactive Culture'

- Improving Isolated and Compartmentalized to 'Integrated & Holistic' approach
- From State and Engineering Centric to broad 'People & Environment Centric" approach
- Changing "Externally Assistance Centric" to 'Local/Regional & Self Reliance' approach
- Enhancing training and Command to Interdisciplinary 'Education & Management' oriented
- Integrating 'Disaster Management' into Academic system, R&D, Extension and Governance.

'Resources' include – equipment, materials, infrastructure, information, tools and methods (manuals, handbook, guidelines, etc.), law and policies (regulatory framework and instructions), institutions, and an effective system of interdisciplinary coordination equipped with relevant expertise and proficiency at all appropriate levels.

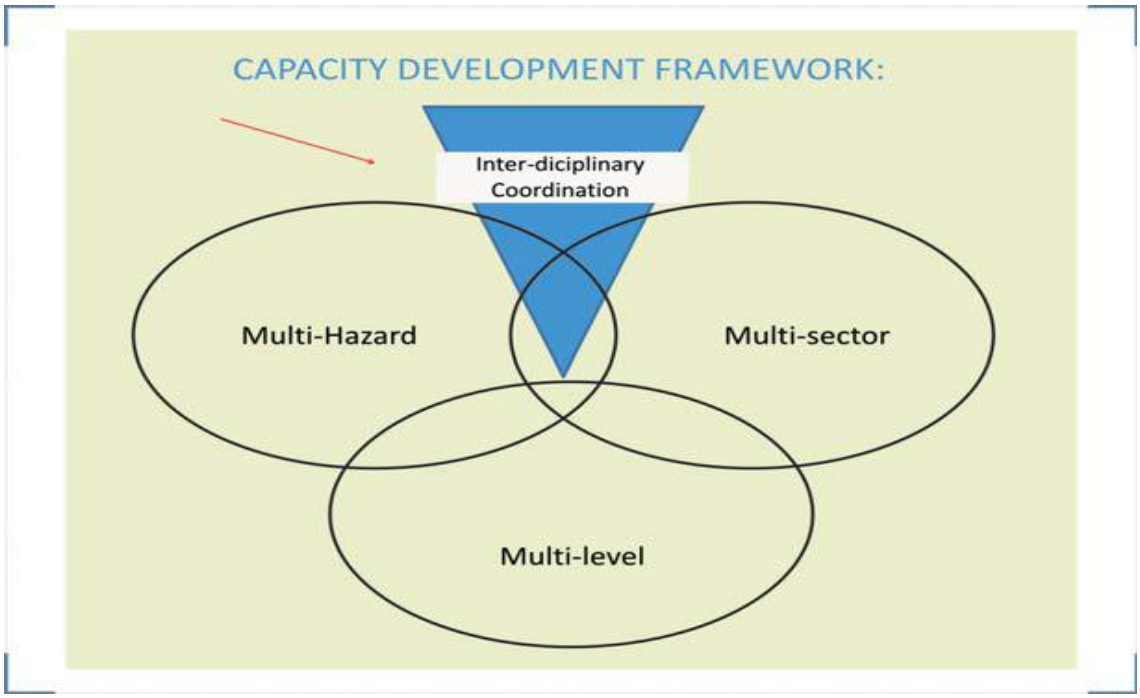


Figure 1.6 Integrated approach of capacity building to holistic disaster management

13.1.2.10 Disaster Risk Reduction (DRR)

DRR denotes both a policy goal or objective, and the strategic and instrumental measures employed for anticipating future disaster risk; reducing existing exposure, hazard, or vulnerability; and improving resilience (Lavell et al., 2012).

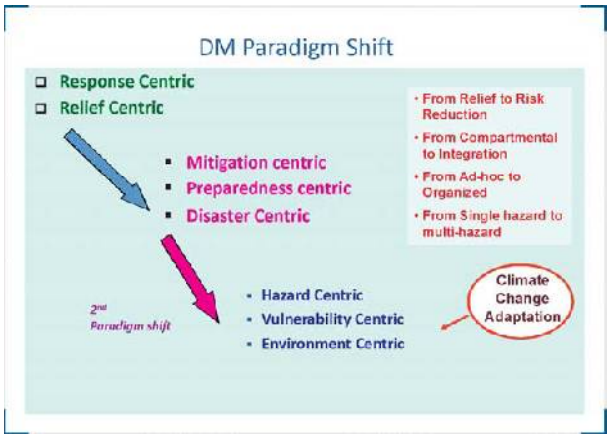


Figure 1.7 Integration of CCA and DRR leading to a 2nd Paradigm shift in disaster management (modified after, Gupta and Nair, 2010)

DRR concepts and practices relate to the paradigm shift in approach from 'response and relief centric' to 'prevention and preparedness (mitigation) centric' approach. However, now the focus is taking a new shift away from concentrating on 'disaster event' and 'minimizing effect of disasters' towards more on 'addressing hazards, reducing vulnerability and ensuring sustainability along environment centric approach' This change is offering better opportunities for CCA and DRR convergence, and is now referred to as 2nd paradigm shift in disaster management.

13.1.2.11 Climate Change

Global Warming Vs. Climate Change

Impacts of Climate Change: IPCC - IV Assessment (2007)

Results of IPCC work on observed and ongoing / projected impacts on climate-change on natural and human environment has been given in its IV assessment report released in 2007 December. The observed impacts have been termed as the high confidence impacts, whereas the evidence of likeliness are emerging are called as medium confidence impacts. These observations, depicting the global challenges, are summarized below:

With regard to snow, ice and frozen ground:

- enlargement & increased numbers of glacial lakes
- increasing ground instability in permafrost regions, & rock avalanches in mountain regions
- changes in some Arctic and Antarctic ecosystems, including those in sea-ice biomes, and also
- predators high in the food chain

Effects on hydrological systems

- increased run-off & earlier spring peak discharge in many glacier- & snow-fed rivers
- warming of lakes & rivers in many regions, effects on thermal structure & water quality

Effects on terrestrial biological systems

- earlier timing of spring events, such as leaf-unfolding, bird migration & egg-laying
- pole ward & upward shifts in ranges in plant and animal species

Changes in Marine & Freshwater systems

(associated with rising water temperatures, as well as related changes in ice cover, salinity, oxygen levels and circulation)

- shifts in ranges & changes in algal, plankton and fish abundance in high-latitude oceans
- increases in algal & zooplankton abundance in high-latitude and high-altitude lakes
- range changes & earlier migrations of fish in rivers
- The uptake of anthropogenic carbon since 1750 has led to the ocean becoming more acidic with an average decrease in pH of 0.1 units.
- effects of observed ocean acidification on the marine biosphere are as yet undocumented

Medium confidence observations (Effects of temperature increases)

- effects on agricultural and forestry management at Northern Hemisphere higher latitudes, such as earlier spring planting of crops, and alterations in disturbance regimes of forests due to fires and pests
- some aspects of human health, such as heat-related mortality in Europe, infectious disease vectors in some areas, and allergenic pollen in Northern Hemisphere high & mid-latitudes
- some human activities in the Arctic (e.g., hunting and travel over snow and ice) & in lower elevation alpine areas (such as mountain sports)

A change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing, or persistent anthropogenic change in the composition of the atmosphere or in land use (Solomon et al., 2007).

13.1.2.12 Coping Capacity

It is the ability of people, organizations, and systems using available skills, resources, and opportunities, to address, manage, withstand and overcome adverse conditions or shocks. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during crisis or adverse conditions. Coping capacities contribute centrally to the reduction of disaster risks (ISDR, 2007[6]).

Source: **Climate change 1996.** UNEP & WMO, Cambridge University Press.

13.1.2.13 Adaptation

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. The broader concept of adaptation also applies to non-climatic factors such as soil erosion or surface subsidence. Adaptation can occur in autonomous fashion, for example through market changes, or as a result of intentional adaptation policies and plans. Many disaster risk reduction measures can directly contribute to better adaptation. (ISDR, 2009.

The word 'adaptation' has been widely and variedly defined and used primarily in ecology, physiology/ medical science and now a broader perspective in the sense of 'adaptation to climate change' as an explanation of ecological adaptation by humankind. Following are few definitions or concepts of 'adaptation'.

The components of adaptation, therefore, refer to following:			
(a) Reducing the risk of occurrence of a hazard event by:	(i) hazard prevention	(ii) mitigation or	(iii) control
(b) Reducing exposure to hazardous event:	(i) avoidance/migration	(ii) resilience	(iii) impact control
(c) Capacity to contain:	(i) prevent damages	(ii) prevent losses	(iii) early normalcy

Thus, the term "adaptation" refers to the ability of different species with different genetic make-ups to cope with a specific range of circumstances such as climate, food supply, habitat, defence and movement. Adaptation to climate is the process through which people reduce the adverse effects of climate on their health and well-being, and take advantage of the opportunities that their climatic environment provides (Olmos, 2001). Adaptive capacity is known as the potential or capability of a system to adapt to (to alter to better suit) climatic stimuli whereas the 'Adaptability' is understood as the ability, competency or capacity of a system to adapt to (to alter to better suit) climatic stimuli.

1.2.14 Community Based Disaster Risk Management

The process in which local actors (citizens, communities, government, non-profit organizations, institutions, and businesses) engage in and have ownership of the identification, analysis, evaluation, monitoring, and

treatment of disaster risk and disasters, through measures that reduce or anticipate hazard, exposure, or vulnerability; transfer risk; improve disaster response and recovery; and promote an overall increase in capacities.

1.2.15 Development

Development is a complex issue, basically equates development with economic growth. The United Nations Development Programme (UNDP) defines development as 'to lead long and healthy lives, to be knowledgeable, to have access to the resources need for a decent standard of living and to be able to participate in the life of the community.

1.2.16 Sustainable Development

Sustainable development recognizes the need to consider economic growth and development within a sustainable strategy that meets the needs of the present without compromising the ability of future generation to meet their own needs. It includes sustainable development of humans (quality of life and well-being over time), environment and natural resources (water, land, agriculture, ecosystems, etc.).

1.2.17 Resilience

The ability of a system and its component parts to anticipate absorbs, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions (ISDR, 2007).

1.3 Issues of Climate Change in Disaster Risk Reduction and Development

It is evident that the excessive use of fossil fuels, deforestation and changes in land-use pattern has led to an increase in greenhouse gases (e.g. carbon, methane, water vapour) in the atmosphere, causing the Earth's temperature to rise. This has already and will continue to result in changing rainfall patterns, increase in the frequency & magnitude of extreme weather events such as storms, floods and droughts; changes in temperature; and rising sea levels.

The studies indicate that since 1850, temperature rise of + 0.74°C and sea level rise in 20th century to 17 cm which is going to have significance on the impacts of cyclones and coastal flooding. Historic data clearly shows that there is a steady rise in temperature since 1900. Carbon dioxide levels are highest in last 6,50,000 years. Global average sea level has risen since 1961 at an average rate of 1.8mm/yr and since 1993 at 3.1mm/yr. There are observed changes in the sea level temperature as well (Gupta et al. 2010). As per a report of World Water Council, there were 26 major flood disasters worldwide in the 1990s, compared to 18 in the 1980s, 8 in the 1970s, 7 in the 1960s and 6 in the 1950s.

Climate change Impacts
Climate change impacts can be roughly divided into two groups:
Environmental impacts
□ physiological effects on crops, pasture, forests and livestock (quantity, quality); □ changes in land, soil and water resources (quantity, quality); □ increased weed and pest challenges; □ shifts in spatial and temporal distribution of impacts; □ sea level rise, changes to ocean salinity; □ sea temperature rise causing fish to inhabit different ranges.
Socio-economic impact

- decline in yields and production;
- reduced marginal GDP from agriculture;
- fluctuations in world market prices;
- changes in geographical distribution of trade regimes;
- increased number of people at risk of hunger and food insecurity;
- Migration and civil unrest.

(Gupta and Nair, 2012)

These events, and associated impacts such as decreasing water availability, changes in agriculture and fisheries, inundation of coastal areas, spread of respiratory, vector and waterborne diseases, and population displacement, will dramatically alter ecosystems and the lives and livelihoods of women, men and children. However, from years of DRR work, we have learned that climate hazards happen, but climate disasters are created by human behaviour. India is one region where the heavy rainfall event has increased in certain states like floods in Mumbai, Uttar Pradesh, Bihar and Odisha.

For example, over the decades, the state of Uttar Pradesh has become sensitive to floods due to change in pattern of rainfall and climate, resulting vulnerabilities to agro climatic conditions causing land degradation and deforestation (Wajih, 2008), which resulted in increased frequency of flash floods, dry spells during floods, longer or delayed flood timings and increased duration and area of water-logging.
As per recent studies by US scientists, worldwide, the proportion of hurricanes reaching categories 4 or 5 has risen from 20% in the 1970s to 35% in the 1990s, more impact observed in Atlantic and Pacific region. During last 50 years, cold days, cold nights and frost have become less frequent, while hot days, hot nights, and heat waves have become more frequent.

Hydro-meteorological Disasters: Risks and Management

Among all observed natural and anthropogenic adversities, hydro-meteorological disasters are undoubtedly the most recurrent, and pose major impediments to achieving human security and sustainable socio-economic development, as recently witnessed with disasters such as the Indian Ocean tsunami in 2004, Hurricane Katrina in 2005, Cyclone Sidr in 2007, Cyclone Nargis in 2008 and many others. During the period 2000 to 2006, 2,163 water-related disasters were reported globally in the EM-DAT database, killing more than 290,000 people, afflicting more than 1.5 billion people and inflicting more than US$422 billion in damages. The factors that have led to increased water related disasters are thought to include natural pressures, such as climate variability; management pressures, such as the lack of appropriate organizational systems and inappropriate land management; and social pressures, such as an escalation of population and settlements in high-risk areas (particularly for poor people). The United Nations University Institute for Environment and Human Security (UNU-EHS) warns that unless preventative efforts are stepped up, the number of people vulnerable to flood disasters worldwide is expected to mushroom to two billion by 2050 as a result of climate change, deforestation, rising sea levels and population growth in flood-prone lands (Bogardi, 2004). In general, all water-related disasters events increased between 1980 and the end of the twentieth century. Floods and windstorm events increased drastically from 1997 to 2006, but other types of disaster did not increase significantly in this period. Floods doubled during the period 1997 to 2006 and windstorms increased more than 1.5 times. Drought was severe at the beginning of the 1980s and gained momentum again during the late 1990s and afterwards. The numbers of landslides and water-borne epidemics were at their highest during the period 1998-2000 and then decreased. Waves and surges increased between 1980 and 2006.
(Gupta and Nair, 2012)

While most land areas have witnessed increase in frequency of heavy precipitation events, regions like Sahel and Mediterranean have recorded long term decreasing trend in the total precipitation (Gupta etal. 2010). Numbers of windstorms have increased for 150-350 per year during the last three decades. Climate change is affecting storm tracks, winds and temperature patterns. The Global frequency of most destructive Tropical Storms, during 1980– 2006, shows that there is an increase since the 1970s.

The integrated intensity of tropical cyclones has increased. Certain example in India may be seen in increased frequency of cyclonic conditions at costal area of Andhra Pradesh and Odisha. Droughts, globally (1980 – 2006), had shown a notable increase in terms of the frequency and severity. 1975 onwards drought events were increased drastically. The most important spatial pattern of the monthly Palmer Drought Severity Index (PDSI), for 1900 to 2002, shows that droughts are also increasing due to decrease rain in tropical and sub-tropical region and increased atmospheric warming. Increase in drought conditions and global warming has

resulted increase in heat waves. For example in Europe due to heat waves in 2003, insured losses were increased to several times and 90% of the insured losses were due to wind storms.

Trend in occurrence of extreme temperature events over India in 100 years shows that until 1990 there were up and downs in temperature. Since 1990 the temperature was always above normal. There is an increase of about 0.50C as compare to global increase of 0.70 C. Reasons of this is monsoons rainfall has increased and North-western part the temperature has decreased and hence compensated increase in other part.

The monsoon rainfall at All India level does not show any trend but there are some regional patterns of change. Areas of increasing trend in monsoon rainfall are found along the west coast, north Andhra Pradesh and north-west India, and those of decreasing trend over east Madhya Pradesh and adjoining areas, north-east India and parts of Gujarat and Kerala (-6 to -8% of normal over 100 years). Surface air temperature for the period 1901-2000 indicates a significant warming of 0.40 Celsius for 100 years. The spatial distribution of temperature changes indicated a significant warming trend which has been observed along the west coast, central India, and interior Peninsula and over northeast India. However, cooling trend has been observed in northwest and some parts in southern India. Glacier melting in the Himalayas Rock Avalanches shows that Glacier Lake Outburst Flows are increasing and less water downstream in the dry season, more flooding downstream in the wet season and long-term overall reduction of water supply. Retreat of the Gangotri Glacier terminus between 1780 and 2001 shows that the glacier is receding of 7.3 m per year between 1842 and 1935; compared to 23 m per year between 1985 and 2001. Instrumental records over the past 130 years do not show any significant long-term trend in the frequencies of large-scale droughts or floods in the summer monsoon season. The total frequency of cyclonic storms that form over Bay of Bengal has remained almost constant over the period 1887-1997. Vulnerability mapping of areas with present and projected scenarios of climate change in relation to extreme events and developing capacities to adapt climate change in highly vulnerable regions is under way. It is also important to increase the capability to detect and predict extreme events with greater accuracy and longer lead time. Improved communication of climate changes and options to adapt to them is the need of the time.

As per a study from the World Bank, impact of Climate Change on disaster risk and development in India, may be as seen below:

Table 1.1 Impacts of Climate Change on Disaster Risk & Development in India and Mitigation & Preventive measures.

Sl. No.	Events	Projected Impacts	Mitigation & Preventive Measures
1	Extreme Heat	Under 4°C warming, the west coast and southern India are projected to shift to new, high-temperature climatic regimes with significant impacts on agriculture	Built-up urban areas rapidly becoming "heat-islands", urban planners will need to adopt measures to counteract this effect.
2	Changing Rainfall Patterns	Trend of Monsoon has already observed change since 1950. A 2°C rise in the world's average temperatures will make India's summer monsoon highly unpredictable. At 4°C warming, an extremely wet monsoon that currently has a chance of occurring only once in 100 years is projected to occur every 10 years by the end of the century. An abrupt change in the monsoon could precipitate a major crisis, triggering more frequent droughts as well as greater flooding in large parts of India. India's northwest coast to the south eastern coastal region could see higher than average rainfall. Dry years are expected to be drier and	Improvements in hydro meteorological systems for weather forecasting and the installation of flood warning systems can help people move out of harm's way before a weather-related disaster strikes. Building codes will need to be enforced to ensure that homes and infrastructure are not at risk.

		wet years wetter.	
3	Increased Droughts	Drought conditions have increased since 1970's led huge fall in crop production. Impact is severe in north-western region of India. The state of Jharkhand, Odisha and Chhastisgarh may expect fall in crop yield because of extreme events by 2040's	Investments in Research and Development for the development of drought resistant crops can help reduce some of the negative impact.
4	Over-exploitation of Ground Water	In India, more than 60 percent of the agriculture is rain fed, makes it highly dependent of ground water. Erratic rainfall pattern may lead to more dependency on ground water resulting in over-exploitation of ground water resource and, falling of water table,	The efficient use of ground water resources will need to be incentivized.
5	Melting of glaciers	The Himalayan glaciers, which provides substantial amount of water content to south-west monsoon have been retreating since last 100 years. The snow cover of the Himalayan is expected to threaten the stability and reliability of glacier –fed rivers such as Brahmaputra and Indus. Flow of water in the glacier fed rivers may be changed. They may have more flow of water in spring season than during summers. This can lead to significant impact on irrigation pattern of agriculture based land affecting livelihood of millions of Indians.	Major investments in water storage capacity would be needed to benefit from increased river flows in spring and compensate for lower flows later on.
6	Rise of Sea Level	India, being close to Equator can observe major changes in sea levels. Already Mumbai had world's largest flooding. Rapid urbanization increases negative impact of the risk of flooding and water intrusion. Intrusion of salt water into agriculture land can result to destruction of crops and increase in saline land.	Building codes will need to be strictly enforced and urban planning will need to prepare for climate-related disasters. Coastal embankments will need to be built where necessary and Coastal
7	Agriculture & Food Security	Seasonal water scarcity, rising temperatures, and intrusion of sea water would threaten crop yields, jeopardizing the country's food security. The current trend may result to substantial yield reductions in both rice and wheat can be expected in the near and medium term. Under 2°C warming by the 2050s, the country may need to import more than twice the amount of food-grain than would be required without climate change.	Crop diversification, more efficient water use, an improved soil management practices, together with the development of drought resistant crops can help reduce some of the negative impacts. Increase food production to deliver to the hunger of people
8	Energy Security	Hydropower and Power generation plants both function on the sufficient availability of water. Increasing vulnerability and long term decreasing flow of water in rivers can result to reduction in hydropower and thermal power generation.	Projects will need to be planned taking into account climatic risks.
9	Water Security	Increase in variability of monsoon season	Improvements in irrigation

		can lead to decrease of water availability in some areas. Another reasons, which could impact the water security are increasing population and urbanization.	systems, water harvesting techniques, and more efficient agricultural water management can offset some of these risks.
10	Health	Climate change is expected to result in major impacts on chronic diseases such as malaria, diarrheal and other vector borne diseases.	Health systems need to strengthen to respond to such events.
11	Migration & Conflict	Climate change can result to major refugees from north-eastern region due to reduction in agriculture. Already Bramhaputra river basin is a region of conflict between neighbouring countries due to water scarcity.	Regional cooperation of water issues is needed.

There is clear evidence that the observed change in surface temperature, rainfall, evaporation and extreme events and climate change is a significant environmental challenge and disaster. The main impact of global climate change will be felt due to changes in climate variability and weather extremes.

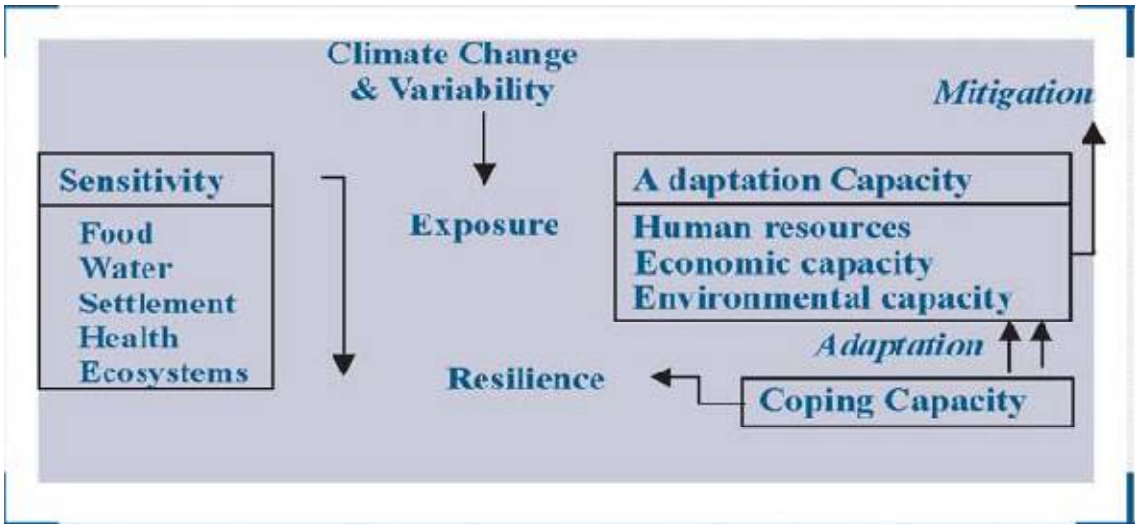


Figure 1.8 Sensitivity-adaptation framework to climate-change

Observations during the last decade and projections indicate that extreme events i.e. heat waves, cold waves, more floods, more droughts, more intense cyclones and flash floods will increase. Extreme rainfall has substantially increased over large areas, particularly over the west coast and west central India. There is thus an urgent need for a paradigm shift in Disaster Management, especially under changing climate.

13.1.4 Climate Change and its inter-relation with Disaster Risk and Development

Change in climate and weather patterns have predicted increased exposure and vulnerability due to extreme events such as high intensity floods, frequent droughts and increase air temperature etc. As per IPCC 2013 report, increased exposure and vulnerability are generally the outcome of skewed development processes such as those associated with environmental degradation, rapid and unplanned urbanization in hazardous areas, failures of governance, and the scarcity of livelihood options for the poor. Increasing global interconnectivity and the mutual interdependence of economic and ecological systems can have sometimes contrasting effects, reducing or amplifying vulnerability and disaster risk. Countries more effectively manage

disaster risk if they include considerations of disaster risk in national development and sector plans and if they adopt climate change adaptation strategies, translating these plans and strategies into actions targeting vulnerable areas and groups. Hence, closer integration of CCA and DRR measures, along with the incorporation of both into local, sub-national, national, and international development policies and practices, could provide benefits at all scales.

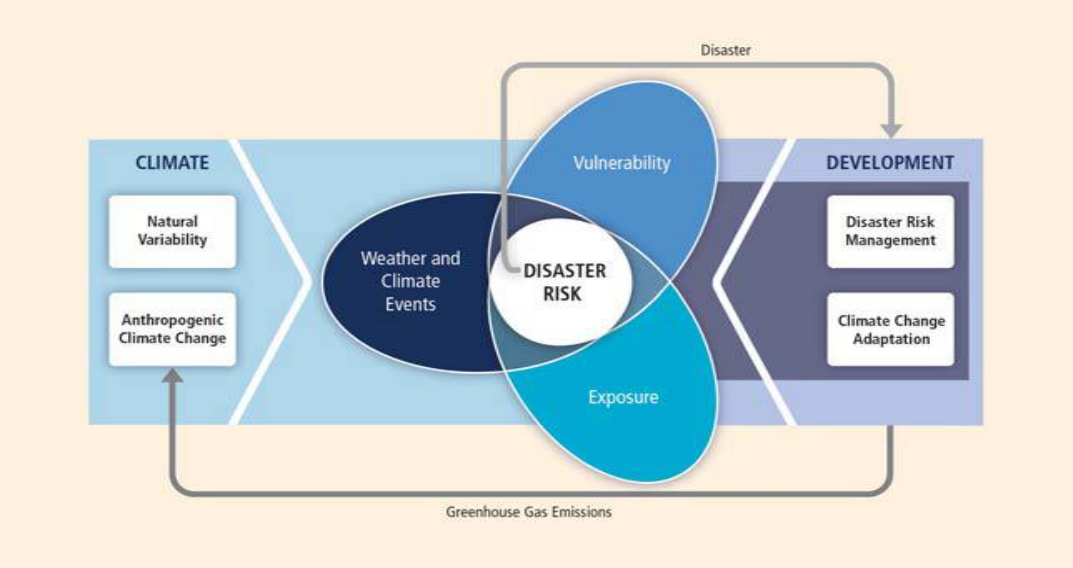


Figure 1.9 Climate Change and its impact on Disaster Risk and Development

The figure 1.9 indicates that how exposure and vulnerability to weather and climate events determine impacts and the likelihood of disasters (disaster risk). It evaluates the influence of natural climate variability and anthropogenic climate change on climate extremes and other weather and climate events that can contribute to disasters, as well as the exposure and vulnerability of human society and natural ecosystems. It also considers the role of development in trends in exposure and vulnerability, implications for disaster risk, interactions between disasters and development. Source: Managing the Risk of Extreme Events and Disasters to Advance climate Change Adaption - Special Report of Intergovernmental Panel of Climate Change, Cambridge University Press, USA, 2012

The issues related to climate change and DRR have indicated negative impact of development pattern in the country like India, where development is under transition stage and the parameters related to socio-economic development such as social welfare, quality of life, infrastructure development, livelihood etc. are on stake due to increasing nos. of disastrous events with increased intensities.

The social, economic, and environmental sustainability can be enhanced by disaster risk management and adaptation approaches. A prerequisite for sustainability in the context of climate change is addressing the underlying causes of vulnerability, including the structural inequalities that create and sustain poverty and constrain access to resources. There is need to take proactive measures for sustaining the efforts made for development gain by incorporating a multi hazard approach into planning and action for disasters in the short term, adaptation to climate extremes in the long terms, as recognised under IPCC report. There is a need to improvise CCA & DRR measures into developmental policies so that integrated effort for development could take place. For an effective approach for mainstreaming CCA & DRR, the approaches need to be combined for considering the broader challenge of sustainable development. Measures such as early warning systems, risk communication, risk transfer, community participation, land use planning, eco-system management, water & sanitation management, climate & disaster resilient infrastructure development, adoption of diversified agriculture methods, enforcement of building codes and better awareness & training etc. should be adopted for promoting sustainable development. In addition, strengthening of institutional structure by integrating techno-legal framework and good governance etc. may help in promoting better disaster resilience and development.

Figure 1.10 Adaptation and Disaster Risk Management Approaches for Changing Climate

Source: Managing the Risk of Extreme Events and Disasters to Advance Climate Change Adaptation -Special Report of Intergovernmental Panel on Climate Change, Cambridge University Press, USA, 2012

Resistance and Resilience
Resistance and Resilience 'Disaster Resistance' as a part of climate-change adaptation agenda, and similarly on the other hand 'climate-change adaptation' as a core facilitator of 'disaster risk reduction' paradigm is the set of focused activities comprising of exposure or impact reduction due to likely hazard event, thus by avoiding, controlling or responding in a prepared and organized ways. 'Adaptation' entails to a series of naturally occurring or designed adjustments with the prevailing and upcoming environmental characteristics including resources (agriculture, forestry, soil, animals, industry, health, etc.) lifestyles, practices, socio-economic patterns and overall development. Search for alternatives, whether for example, alternative livelihood options, or alternative crops or alternative cropping patterns, alternative production systems – be it nature or industry, are the indicative features of adaptation regime. Thus, adaptation is aimed towards adjustment for sustainability – environmental, social and also economic. It opens up many new and innovative opportunities for growth and productivity, for example search of the suitable economic species that may be grown in usar (waste or dry) lands, suitable agro forestry model, or land-water integrated management for year-round water availability and also flood control in the rainy season, alternative foodstuffs with nutritional values, local medicinal knowledge, disaster preparedness, etc. Diversification of livelihood and production systems reduces the risk of damages and losses to a greater extent providing disaster resilience in the communities. Hazard prevention or control actually implies of developing sound awareness and understanding that what (may be due to climate-change impact or) local-regional environmental alternations may result in a hazardous condition that may, in case of occurrence, may result in a disaster, for example, flood, drought, landslide, etc. Thus, reducing the chance of a flood occurring to a certain level of heavy rainfall by improving catchment conditions, channel features, storages, etc. are actually considered as disaster reduction. The following options are containing the disaster event from affecting land-uses and resources. And ultimately, in case of an occurrence of breach of disaster management, reducing the impact by putting in place the coping capacity and response mechanism are the actions to be envisaged within the framework of adaptive capacity.

13.1.5 Climate Resilience Framework

The Climate Resilience Framework (CRF) is an analytical approach to building resilience to climate change in urban areas. The goal of using this structured framework is to help you build your city's resilience and ability to address multiple climate change hazards—emerging, indirect, rapid or slow-onset—as well as current hazards, within the economic, political, and population dynamics that characterize a city. The CRF process begins with having a vision of a resilient city and to define principles that will guide the city's vision and process into the future. The city will be built resilient through identifying existing factors that contribute to your overall city vulnerability & risk and developing strategies that shift existing development & policy processes to address those vulnerabilities and meet future challenges. Core to this approach is an assessment of vulnerability and risk that takes into account not just currently vulnerable groups or systems but the reasons for those vulnerabilities, including exposure to climate hazards, low capacity for handling climate shocks, fragile supporting systems, and the governance, social conventions and cultural behavioural norms that act to reduce or exacerbate vulnerabilities and capacity.

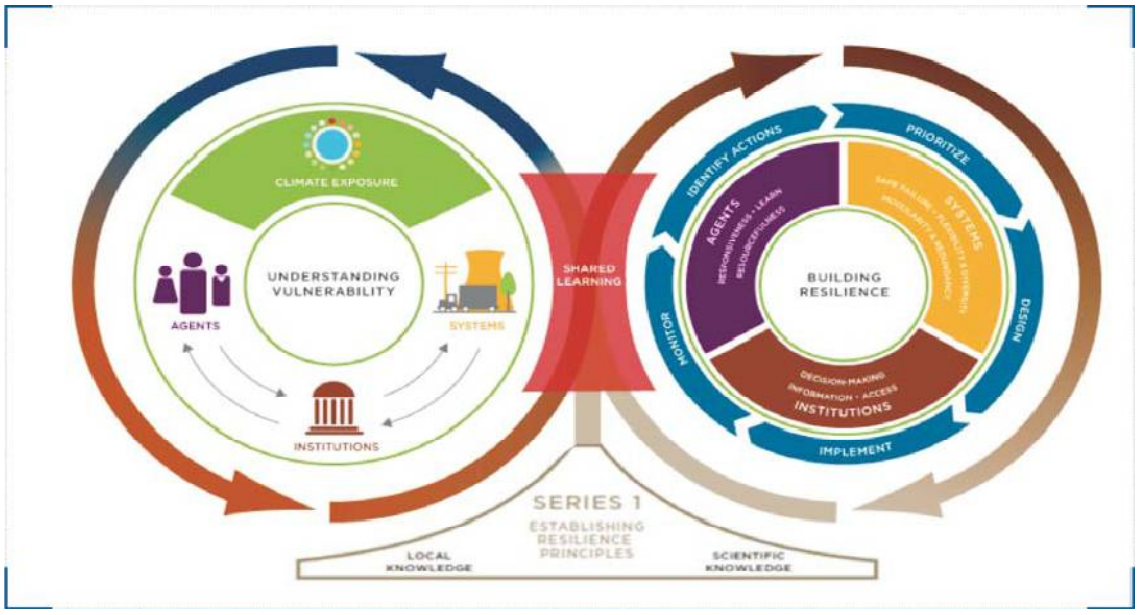


Figure 1.11 Climate Resilience Framework

The Climate Resilience Framework (CRF) is an analytical, systems-based approach to building resilience to climate change. The goal of this structured framework is to build networked resilience that is capable of addressing emerging, indirect and slow-onset climate impacts and hazards.

13.1.5.1 Key Elements of the Framework

The key elements of the CRF are urban systems, social agents, and institutions, and, for each, the degree to which it is exposed to climate change hazards. Within the framework, building resilience means:

- Identifying the exposure of city systems and agents to climate hazards;
- Identifying and strengthening fragile systems by strengthening the characteristics that reduce their vulnerability to climate hazards;
- Strengthening the capacities of agents to both access city systems and develop adaptive responses;
- Addressing the institutions that constrain effective responses to system fragility or undermine the ability to build agent capacity.

13.1.5.2 Characteristics of Resilience

The CRF considers the way that agents, systems, and institutions interact under the threat of climate hazards, and the characteristics of each that contribute to resilience and adaptive capacity in urban areas. Characteristics for systems, agents, and institutions are listed below (Tyler and Moench, 2012), but can also

be seen in the right hand loop of the CRF diagram in Figure 1.11. For more information on the Characteristics of Resilience, please see Annexure 5.

Systems:

Flexibility and diversity: Flexibility and diversity refer to the ability to perform essential tasks under a wide range of conditions, and to convert assets or modify structures to introduce new ways of achieving essential goals. A resilient system has key assets and functions physically distributed so that they are not all affected by a given event at any one time (spatial diversity) and has multiple ways of meeting a given need (functional diversity).

Redundancy, modularity: A redundant and modular system is one that has spare capacity for contingency situations in order to accommodate extreme or surge pressures or demand. It also has multiple pathways and a variety of options for service delivery; or interacting components composed of similar parts that can replace each other if one, or even many, fail. Redundancy is also supported by the presence of buffer stocks with in systems that can compensate if flows are disrupted (e.g., local water or food supplies to buffer imports)

Safe failure: Safe failure refers to the ability to absorb sudden shocks (including those that exceed design thresholds) or the cumulative effects of slow-onset stress in ways that avoid catastrophic failure. Safe failure also refers to the interdependence of various systems that support each other; failures in one structure or linkage are thus unlikely to result in cascading impacts across other systems.

Agents:

Responsiveness: Ability to organize, reorganize, and act; ability to establish function, structure, and basic order in a timely manner, both in advance of and immediately following a disruptive event or organizational failure.
Resourcefulness: Capacity to identify and anticipate problems, establishes priorities, and mobilizes resources for action. This includes the ability to access financial and other resources, including those of other agents and systems.
Capacity to Learn: Ability to internalize past experiences, avoid repeated failures and innovate to improve

Institutions

Decision Making: Decision-making processes related to key urban systems are transparent, representative, and accountable. Diverse stakeholders have a way to provide input to decisions. Dispute resolution processes are accessible and fair.

Information: Agents have access to relevant information in order to determine effective actions and to make strategic choices for adaptation.

Access: Institutions encourage inquiry, application of evidence, critical assessment, and application of new knowledge. Structures of rights and entitlements do not systematically exclude specific groups from access to critical systems or capacities. They enable groups to form and act, and foster access to basic resources.

13.2. PATHWAYS AND APPROACHES OF INTERGRATION

13.2.1 Introduction

There are several ways and methods through which DRR and climate change adaptation (CCA) measures have been integrated to reduce the risk of natural disasters. In this Learning Unit of the Module, an effort has been made to consolidate various approaches adopted at national, regional and local level for reduction of risk. The LU revolves around to capture national level techno-legal framework, inclusion of CCA & DRR through development planning and by promoting local adaptation practices used by the local communities.

13.2.2 Methods and Approaches for including DRR into Development Planning

Disaster Risk Management covers all aspects from prevention, mitigation, preparedness to rehabilitation, reconstruction and recovery. It provides for:

- Establishing techno-legal and institutional framework for effective planning, implementation and finance.
- Inclusion of multi-sectoral DM concerns into the developmental process and mitigation measures through schemes and projects.
- Integration of disaster risk reduction planning and policies in a holistic, participatory, inclusive and sustainable manner.

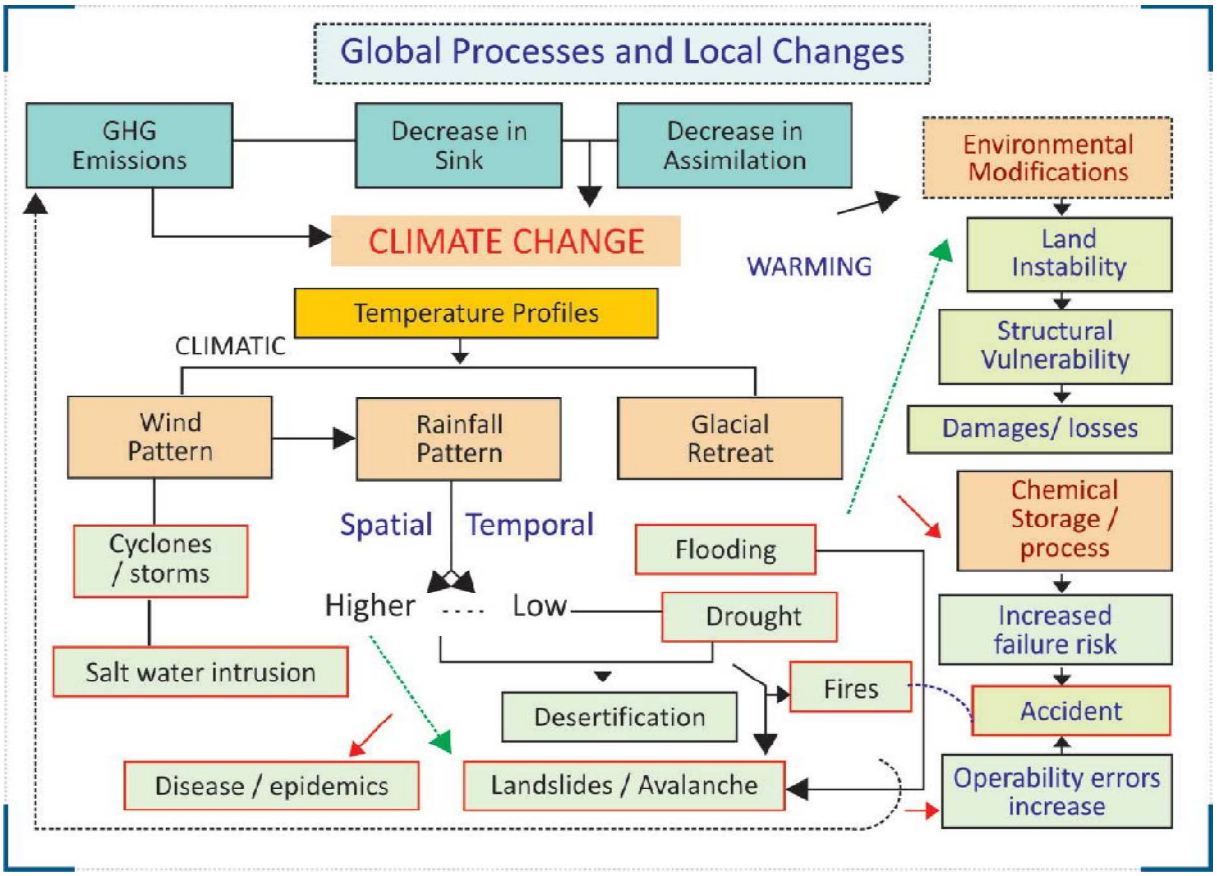


Figure 2.1 Relationship of environment, climate and disasters

13.2.2.1 Legal Policy Framework for Disaster Management

The institutional structure for Disaster Management (DM) is in a state of transition. The salient features of institutional mechanism at national level are as follows:

A. At national level, the Ministry of Home Affairs is the nodal Ministry to deal with all matters concerning with the disaster management. The Central Relief Commission is constituted in Ministry of Home Affairs for coordinating with the relief operations.

B. The National Institute of Disaster Management (NIDM) is responsible for human resource development through planning and research development, capacity building and documentation & policy advocacy. The institute works in tandem with the MHA, NDMA and Central, State and local governments as well as various other stakeholders to build their capacities towards promoting a culture of prevention and preparedness at all levels.

Box 2.1 Provisions of Mainstreaming DRR Measures into Development Process (as per DM Act, 2005)

I. Chapter 4, Section 32 provides for DM Plans by different district disaster management authorities and their implementation by setting out the following, namely:- (a) provisions for prevention & mitigation measures assigned to the department or agency concerned;(b)provisions for taking measures relating to capacity-building and preparedness as laid down in the District Plan;(c)the response plans and procedures, in the event of, any threatening disaster situation or disaster; (d) coordinate the preparation and the implementation of its plan with those of the other organizations at the district level including local authority, communities and other stakeholders.

II. Chapter 2- Section 11 indicates that the National Plan shall be prepared by the National Executive Committee having regard to the National Policy and in consultation with the State Governments and expert bodies or organisations in the field of DM shall include preventive and mitigation measures, integration of mitigation measures in the development plans, measures for capacity building and roles & responsibilities of different ministries and departments of Government of India.

III. Chapter 5, Section 36 and Section 37 provides for the responsibilities of Ministries or Departments of Government of India to take measures for prevention, mitigation, preparedness and capacity building, to integrate into its development plans and projects, the measures for prevention or mitigation of disasters, to review the polices, acts, rules with a view of incorporation of provisions for prevention, mitigation and preparedness and to allocate necessary funds for such activities.

IV. Chapter 6, Section - 41. Local authority shall ensure trained staff in DM, resources related to DM are readily available and maintained to tackle the event of disaster, to ensure all construction based projects under its jurisdiction conform to the standards and specification laid down for prevention and mitigation by national, state and district level authority.

C. Disaster Management Act enacted in 2005 provides for institutional framework for disaster management. As provided under the Act, National Disaster Management Authority (NDMA) has been constituted for laying down policy and guidelines for Disaster Management in India. The NDMA has issued several guidelines on various aspects of disaster management. Similarly, Disaster Management Authorities at state and district level are being constituted for laying down guidelines for state\district level. Some of the important provisions for mainstreaming DM into development process are indicated in Box. 2.1.

D. The National DM Policy announced in 2009 for building a safe and disaster resilient India. It elaborates importance of disaster management into development process, creation of mitigation reserve, risk assessment & vulnerability mapping and other mitigation measures etc. The policy has been circulated to the State Governments to take actions for its implementation.

E. The National Disaster Response Force (NDRF) has been constituted under section 44 of DM Act, 2005 for strengthening response system of the country. The battalions of NDRF comprising

specialized teams trained in various types of natural, man-made and non-natural disasters have been set up in the states for handling disasters.

F. Initially, a High Powered Committee was setup under the chairmanship of Mr. J.C. Pant for formulating a systematic, comprehensive and holistic approach to all the disasters. The committee prepared model plans for Disaster Management at national, state and district levels. Of late Section 23 of the DM Act, 2005 provide for preparation of disaster management plans for the states and districts by the State and District level DM Authorities. It also provides for annual review and updating of the DM plans, and enjoins upon the state governments to make provisions for financing the activities to be carried out under the DM plans. It provides for the departments of the state governments to draw up their own plans in accordance with the state/district plan.

G. **Other National Laws:** There are several Acts framed by several ministries on protection on environment and natural resources, urban sanitation, agriculture, forests, land-use, water resources, bio-diversity, and industrial protection, etc. which covers various aspects of DM by protecting and safe guarding environment and ecosystems such as human rights, ecological security (Livelihood, Food Security), control of pollution, deforestation, ensuring safety measures and health, clearing of cases, assurance of compensation, risk transfer, long term sustainability issues etc. Some of such legislative frameworks are given in the Box.

Provisions for Disaster Management under Other National Laws
The National Rural Employment Guarantee Act (NREGA) is an Indian law that aims to guarantee the 'right to work' and ensure livelihood security in rural areas by providing at least 100 days of guaranteed wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work. In accordance with the Article 23 of the Universal Declaration of Human Rights that defines the right to work as a basic human right and further conforming to the Article 21 of the Constitution of India that guarantees the right to life with dignity to every citizen of India, this act imparts dignity to the rural people through an assurance of livelihood security, proper environment free of danger and diseases. The Government is liable to pay allowance in case it is unable to provide work opportunity. Article 51-A(g) fundamental duty of every citizens and States to protect and improve environment including forests, lakes rivers and wildlife and to have compassion for living creatures. Article 48(A) 42nd Amendment Act 1976 added a new directive principle. States shall endeavour to protect and improve the environment and safeguard the forests and wild life of the country.

13.2.2.2 Environment & Natural Resource Laws in DRR: Integrating CCA-DRR

Regulatory provisions related to environment and its constituents, natural resources - water, land, agriculture, forests, wildlife, habitats, ecosystems; procedures and planning - Environmental clearance, EIA, audit, risk analysis, land-use and zoning, emergency preparedness; and environmental services – drinking water, sanitation, waste management, preventive health, including climate mitigation and adaptation etc. although primarily aiming at environmental quality and resource management, the provisions play significance role in addressing hazards, reducing underlying causes of vulnerability and enhancing capacity, and thereby, relate to Disaster Risk Reduction. A detailed training module on role of environmental legislation in DRR has been developed by NIDM jointly with GIZ Germany (Gupta et al., 2012b). An assessment of environment and natural resource laws in context of their potential role in climate related disaster risk reduction is given in Table 2.1 to 2.7.

Table 2.1 Land resource laws and policies (wetlands, soil, agro-ecosystems, landscape, wastelands, watershed, catchment, river-basin, land-use)

Addressing hazards	**Reducing vulnerability**	**Coping Capacity**	**Emergency Response**
Desertification control and reducing drought, flood and fire, storm attenuation, preventing disease and conflicts	Alternative cropping, livelihoods and employment, ecosystem services, food, water, health resources	Alternative options; Safer sites/landscapes, Migration, Rapid recovery capacities	Neighbouring resources for response supplies.

Table 2.2 Water related (resources and quality, flood &drought mitigation, disease prevention livelihood options, ecosystem services, recreation, health, waste disposal etc).

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Flood control, drought reduction, disease prevention	Livelihood options, agriculture, ecosystem -health and services, recreation, health, transport	Water reserves for meeting drought; levees for flood-water relief, water/waste treatment	Water and sanitation, waste disposal, disease control

Table 2.3 Forests protection and conservation laws (related to protected and reserved areas, village forests and common property resources, forest produce, species diversity, regeneration, ecology, rights of forest dwellers)

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Reducing catchment degradation and erosion, climate- change effects, flooding, drought, Climate fire, invasion; increasing water recharge, land stability	Increasing livelihoods, food, recreation, health free sources, watershed services, clean air and water; reduces migration to cities	Alternative resources, Shelter-belt, Green- belt, Wind-breakers, Mitigation/protection, Climate resilience	Timber, fuel-woods/ other produces, for shelter, food, lighting, medicinal resources

Table 2.4 Biodiversity Laws (Habitat, bio-resources, gene pool, eco-balance)

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Reducing drought/ water scarcity, flooding, pest and diseases, fire, wilt, rodents	Alternative crop, food, diversifying livelihoods, health, eco-aesthetics and cooperation	Resistance (avoidance, tolerance, resilience), alternative/sustain- able resources	Local resources and emergency support - medicinal, timber, food, fodder, shelter, water, etc.

Table 2.5 Wildlife conservation and laws. (animal-plant-soil relations, habitat conservation and regeneration, ecotourism)

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Protecting habitats, preventing man -animal conflict	Ecotourism, forest produce, handicrafts, ecosystem services Eco-education	Alternative employment, Coastal, mountain / watershed protection	Medicinal resources, food, fuel-wood, etc.

Table 2.6 agricultural laws. (diversification, agro-forestry livestock, waste reuse, bio fuels, alternative cropping, land-use, soil & water)

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Reducing drought/ water scarcity, flood -ing, pest and diseases, fire, wilt, rodents	Alternative crop, food, diversifying livelihoods, health, eco-aesthetics and cooperation	Resistance (avoidance, tolerance, resilience), alternative/sustain- able resources	Local resources and emergency support - medicinal, timber, food, fodder, shelter, water, etc.

Table 2.7 Coastal area management laws (land-use, natural resources, ecosystems, conservation, disaster risk reduction)

Addressing hazards	Reducing vulnerability	Coping Capacity	Emergency Response
Reducing storm surge, sea ingression, salt-water intrusion, erosion.	Reducing exposure, losses; enhancing livelihoods - fisheries, ecotourism.	Critical infrastructure, cyclone shelter, warning systems,	Food, medicinal resources, shelter, material transport, etc.

Environmental law in India has developed tremendously in the last couple of decades in parallel and complimentary to the development of International Environmental Law. The table below summarizes status of India vis-à-vis International Environmental Conventions. Table 2.8 enlists India's participation in international environmental conventions and treaties providing significant climate-change impacts and related natural (hydro-meteorological) disasters.

Table 2.8 Status of India Vis-à-vis International Environmental Conventions

International Law Relevant to Climate-change and Natural Disaster Risk Reduction	Year Signed and Enforced
International Convention for the Prevention of Pollution of the Sea by Oil (1954)	1974
The Antarctic Treaty (Washington, 1959)	1983
Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, 1971)	1 October 1981
Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972)	1977
Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, 1973)	1974
Convention on the Conservation of Migratory Species of Wild Animals (Bonn, 1979)	1979
United Nations Convention on the Law of the Sea (Montego Bay, 1982)	1982
Protocol on Substances That Deplete the Ozone Layer (Montreal, 1987)	19 June 1992 (ac)
Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer (London, 1990)	19 June 1992 (ac)
Protocol on Environmental Protection to the Antarctica Treaty (Madrid, 1991)	1992, 1996
United Nations Framework Convention on Climate Change (Rio de Janeiro,1992)	1 November 1993
Convention on Biological Diversity (Rio de Janeiro, 1992)	5 June 1992
Convention to Combat Desertification in those Countries Experiencing Serious drought and/or Desertification (Paris, 1994)	14 October 1994
International Tropical Timber Agreement (Geneva, 1994)	17 October 1996
Protocol to the United Nations Convention on Climate Change (Kyoto, 1997)	1997
Cartagena Protocol on Bio-safety (Nairobi, 2000)	17 January 2003

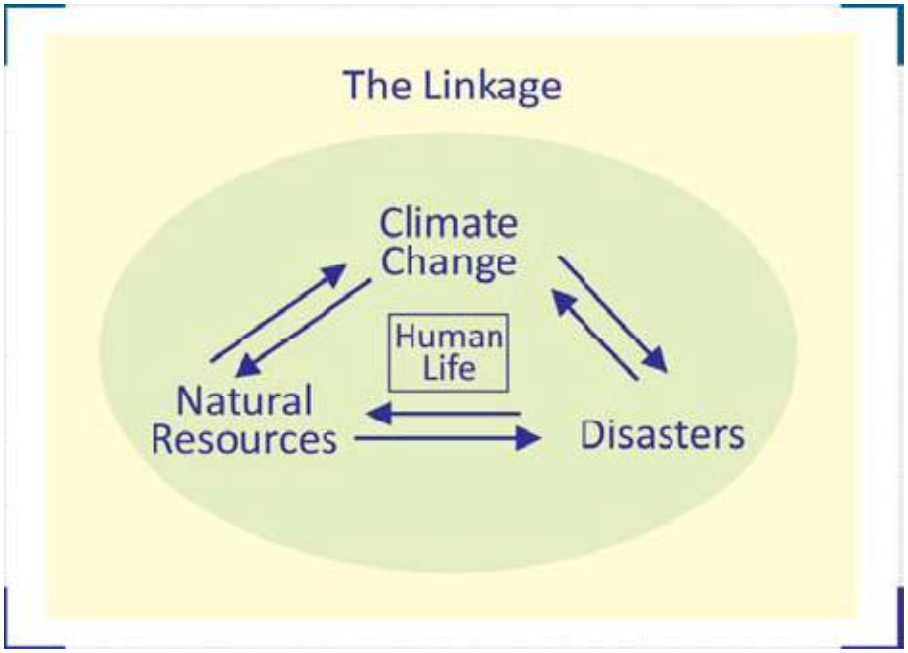


Figure: 2.2 Linkage between climate changes, Natural Resources & Disasters

Indian Statutory laws primarily concerned with environment and its different constitutes also provide in indirect ways to address the issues related to climate change adaptation and related disaster risk reduction integration. Important laws providing concerns to climate related DRR are following:

(A) Environment (Protection) Act, 1986, and rules there under - listed following

a) Wetland (Conservation and Management) Rules, 2010 (under EPA, 1986)
b) Environment (siting for industrial projects) Rules, 1999.
c) The Municipal Solid Waste (Management & Handling) Rules, 2000.
d) Plastic Waste (Management and Handling) (Amendment) Rules, 2011)
e) Dumping and disposal of fly ash discharged from coal of lignite based thermal power plants on land, Rules, 1999.
f) Manufacture, Use, Import, Export and Storage of Hazardous Micro-organisms, Genetically Engineered Organisms or Cells, 1989.
g) Bio-Medical Waste (Management and Handling) Rules, 1998.

Examples of Notifications issued under EPA, 1986
• Doon Valley Notification (1989), • Coastal Regulation Zone Notification (1991, 2011) • Dhanu Taluka Notification (1991) • Revdanda Creek Notification (1989), • The Environmental Impact Assessment of Development Projects Notification, (1994 and as amended in 1997, revised in 2006). • Ash Content Notification (1997) • Taj Trapezium Notification (1998), • Disposal of Fly Ash, Notification (1999)

(B) Example of Laws on Natural Resource Management

Water	1. The Shore Nuisance (Bombay and Kolaba) Act, 1853. 2. Obstruction in Fairways Act, 1881. 3. The Indian Fisheries Act, 1897. 4. The River Boards Act, 1956.

	5. The Merchant Shipping Act, 1958. 6. Water (Prevention and Control of Pollution) Act, 1974. 7. Water (Prevention and Control of Pollution) Cess Act, 1977.
Air	1. Air (Prevention and Control of Pollution) Act, 1981. 2. The Air (Prevention and Control of Pollution) Rules, 1982.
Forests & wildlife	1. Indian Forest Act, 1865; 1927. 2. The Wildlife (Protection) Act, 1972. 3. The Forest (Conservation) Act, 1980.
Other Laws	1. Biological Diversity Act, 2002. 2. Forest Right Act, 2006. 3. The National Environment Appellate Authority Act, 1997. 4. National Green Tribunal Act, 2010.

13.2.2.3 Inclusion of DRR into Development Schemes and Projects

For mitigating climatic hazards and minimizing the impacts of hydro-meteorological natural disasters and for improving livelihoods and overall well being of the people, central and state Governments have implemented a number of schemes, whose activities are facilitated further by the involvement of PRIs, NGOS and other non-profit organizations. Some of the important national level programmes are listed herein:

(i) Jawaharlal Nehru National Urban RenewalMission (JNNURM):

The JNNURM is a massive city-modernization scheme launched by the Government of India under Ministry of Urban Development. It envisages a total investment of over $20 billion over seven years. Named after Jawaharlal Nehru, the first Prime Minister of India, the scheme was officially inaugurated on 3 December 2005 as a programme meant to improve the quality of life and infrastructure in the cities. One of the important steps of the scheme was to improve existing levels of basic services of urban poor. The scheme was launched in 2005 for a seven-year period (up to March 2012) to encourage cities to initiate steps for bringing phased improvements in their civic service levels. The government has extended the tenure of the mission for two years, i.e., from April 2012 to March 31, 2014.

Panchayats (Extension to the Scheduled areas) Act, 1996: An Act to provide for the extension of the provisions of Part IX of the Constitution relating to the Panchayats to the Scheduled Areas and which devolved natural resource management with the Panchayats. The Panchayats are empowered to legislate on matters specified in the Eleventh Schedule. The items that relate to biodiversity include land improvement, soil conservation, watershed development, social forestry, farm forestry, minor forest produce, fuel fodder etc. The Panchayat Act regulates the right to minor forest produce, management of water bodies etc.

(ii) Rajiv Awas Yojana (RAY): The scheme has been implemented by the Ministry of Housing and Urban Poverty Alleviation, envisages for slum free India with inclusive and equitable cities in which every citizen has access to basic civic infrastructure and social amenities and decent shelter by focusing on
(i) Bringing all existing slums, notified or non-notified (including recognised and identified) within the formal system and enabling them to avail the basic amenities that is available for the rest of the city/urban area; and
(ii) Redressing the failures of the formal system that lie behind the creation of slums by planning for affordable housing stock for the urban poor and initiating crucial policy changes required for facilitating the same. RAY is to be implemented in a mission mode and will provide financial support to States/UTs/Urban Local Bodies (ULBs)/ Central Government Agencies, hereafter called implementing agencies, for providing housing and improvement of basic civic infrastructure and social amenities in each selected slums.

(iii) National Rural Health Mission (NRHM): The NRHM was launched by Ministry of Health and Family Welfare in 2005 with an objective to provide support to the health care systems of rural areas of 18 states through provision of physical infrastructure, human resources, equipment, emergent transport, drugs, diagnostics and other support. It provides managing, funding and institutional support to all the selected states to all the facilities starting from sub centre, public health centres, community health centres, sub-district and district hospitals.

(iv) Sarva Shiksha Abhiyan (SSA): The SSA is Government of India's flagship programme for achievement of Universalisation of Elementary Education (UEE) in a time bound manner, as mandated by 86th amendment to the Constitution of India making free and compulsory Education to the Children of 6-14 years age group, a Fundamental Right. SSA is being implemented in partnership with State Governments to cover the entire country and address the needs of 192 million children in 1.1 million habitations. The programme seeks to open new schools in those habitations which do not have schooling facilities and strengthen existing school infrastructure through provision of additional class rooms, toilets, drinking water, maintenance grant and school improvement grants. Existing schools with inadequate teacher strength are provided with additional teachers, while the capacity of existing teachers is being strengthened by extensive training, grants for developing teaching-learning materials and strengthening of the academic support structure at a cluster, block and district level.

(v) Pradhan Mantri Gram Sadak Yojana (PMGSY): The PMGSY was launched in 2000 as a fully funded Centrally Sponsored Scheme to provide all weather road connectivity in rural areas of the country. The programme envisages connecting all habitations with a population of 500 persons and above in the plain areas and 250 persons and above in hill States, the tribal and the desert areas. As per latest figures, this programme involves construction of about 3.71 lakh kms. Of roads for new connectivity and 3.68 lakh km. under upgradation.[21]

(vi) Indira Awas Yojana (IAY): The IAY was launched in May 1985 as a sub-scheme of Jawahar Rozgar Yojana by Ministry of Rural Development. It is being implemented as an independent scheme since 1 January 1996. The scheme aims at helping rural people below the poverty-line (BPL) belonging to SCs/STs, freed bonded labourers and non-SC/ST categories in construction of dwelling units and upgradation of existing unserviceable kutcha houses by providing assistance in the form of full grant. From 1995-96, the IAY benefits have been extended to widows or next-of kin of defence personnel killed in action, ex-servicemen and retired members of the paramilitary forces. Three per cent of funds are reserved for the disabled persons living below the poverty-line in rural areas. Since 2006-07, IAY funds are also being earmarked for minorities.

(vii) National Rural Livelihood Project (NRLP): The Government of India has availed a credit from the International Development Association (IDA) for implementing the NRLP. The NRLP would be implemented in 13 high poverty states accounting for about 90 percent of the rural poor in the country. Intensive livelihood investments would be made by the NRLP in 107 districts and 422 blocks of 13 states (Assam, Bihar, Chhattisgarh, Jharkhand, Gujarat, Maharashtra, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh, West Bengal, Karnataka and Tamil Nadu). Distribution of project funds among the states would be based on the relative share of rural BPL population in the total states. NRLP will broadly support the following components:

- Institution and human capacity development at the national, state, district and sub-district level such that support institutional structures are created,
- State livelihood support towards establishment of institutional platforms of the rural poor for improved access to financial, livelihood and public services,
- Innovation and partnership to identify and partner innovative ideas which address the livelihood needs of the rural poor and help pilot or scale them,

(viii) Urban Infrastructure Development Scheme for Small & Medium Towns (UIDSSMT):

The UIDSSMT is one of the components of JnNURM scheme launched by GoI in 2005 for promoting planned development of the towns and cities. . The objectives of the scheme are:

- Improve infrastructural facilities and help create durable public assets and quality oriented services in cities & towns,
- Enhance public-private-partnership in infrastructural development and
- Promote planned integrated development of towns and cities.
- All towns/cities as per 2001 census, except 63 mission cities/ Urban Agglomeration are eligible to be covered under the scheme. The components for assistance under the Scheme include all urban infrastructure development projects such as water supply, roads, parking space, drainage, solid waste management, sewerage, urban renewal, preservation of water bodies and prevention of soil erosion.

(ix) Accelerated Rural Water Supply Programme (ARWSP): The ARWSP was introduced in 1972-

73 to assist states with 100 percent grants-in-aid to implement drinking water supply schemes in such villages. The programme was given a mission approach when the technology mission on drinking water management, called the National Drinking Water Mission (NDWM) was introduced as one of the given missions in social sector in 1986. The NDWM was renamed as Rajiv Gandhi Drinking Water Mission in 1991.

(x) Special Package for Drought Mitigation Strategies: Government of India in 2009 approved a special package for implementing drought mitigation strategies in Bundelkhand region at a cost of Rs.7266 crore comprising Rs.3506 crores for Uttar Pradesh and Rs.3760 crores for Madhya Pradesh, to be implemented over a period of 3 years starting 2009-10. It is envisaged to provide an additional central assistance (ACA) to the tune of Rs.3450 crore for implementation of the package. The share of Uttar Pradesh and Madhya Pradesh in ACA is envisaged to be Rs.1596 crore and Rs.1854 crore respectively. The balance cost of the package will be met by converging resources from ongoing central sector and centrally sponsored schemes. Also, keeping demands of the state governments, ACA of Rs.200 crore (Rs.100 crore each for the State Governments of Uttar Pradesh and Madhya Pradesh) a component to provide drinking water in the Bundelkhand region was approved. In continuation of the special Package during the 12th Plan period (2012-2017) a financial outlay of Rs. 4400 crore was approved under the Backward Regions Grant Fund (BRGF). The project objectives are to restore ecological balance by harnessing, conserving and developing natural resource like soil, water and forest and improve the ecosystem by checking soil erosion and deforestation. Forest products like fodder, fuel-wood and small timber would be improved to provide alternative employment. The productivity of agricultural land could be improved by an increase in the soil moisture regime of the water sheds. One of the objectives of the project is to empower the local community to manage natural resources using traditional knowledge.

(xi) Other Projects & Schemes: There are several other schemes and programmes being implemented by the state government with the support of the central ministries on the issues related to water & sanitation, wasteland, droughts, backward region etc. A brief of such schemes are as given below:

Table 2.9 Brief of Other Schemes and Programmes

Sl. No.	Name of the Schemes	Brief
	Swajal	In 1996, when the World Bank supported SWAJAL was started in the Bundelkhand and the hill districts of the then undivided UP, a paradigm shift in both approach and institutional structure was initiated to facilitate integrated service delivery that included drinking water, sanitation and hygiene promotion, effective community participation and long term sustainability of facilities, services and the overall sector in terms of effective policies and institutions. SWAJAL also envisaged setting into motion the decentralised process as envisaged in the 73rd Constitutional Amendment. Under SWAJAL at the community level the Village Water and Sanitation Committees were the key institutions. Initially delinked from the constitutionally mandated Gram Panchayats (GPs), subsequently, they were brought within the scope of GPs through a government order, although still outside the constitutional framework.
	Swajaldhara	Swajaldhara was launched on 25.12.2002 in rural drinking water supply sector. The scheme provides a choice for any village to participate in the reform programme directly and scope for an entire district to participate in the reform programme if more than 50% of the villages in the district are ready to participate in the reform programme. This project was implemented in 356 villages.
	Total Sanitation Campaign (TSC)	TSC also called as Nirmal Bharat Abhiyan is a community-led and demand-driven programme stated in 1999 with a goal to eradicate the practice of open defecation by 2017. As a part of scheme, GoI gives cash incentives to poor rural households for construction of

		toilets and baby-friendly toilets in anganwadis. It also gives a 60% grant for construction of community toilets and toilets in schools; the rest of the money has to come from the state government and village communities.
	National Watershed Development Project for Rainfed Areas(NWDPRA)	The scheme NWDPRA was launched in 1990-91 in 25 States and 2 Union Territories based on twin concepts of integrated watershed management and sustainable farming systems. During IX Plan, the scheme was extended to 3 newly formed States of Uttaranchal, Jharkahand and Chhattisgarh. Under the scheme, Agricultural Department, Ministry of Agriculture, GoI has accorded high priority to the sustainable integrated farming systems of rainfed areas on watershed basis. The project aims at in-situ moisture conservation primarily through vegetative measures to conserve rainwater, control soil erosion and generate the green cover both on arable and non-arable lands. The scheme is implemented at the field level by an interdisciplinary team of members from line departments of state Government and the beneficiaries of the watersheds.
	Integrated Wasteland Development Programme (IWDP)	The IWDP of the GoI was started in 1989-90 and seeks to develop government-owned wastelands and common property resources (CPRs), on the basis of village-level or micro watershed plans.
	Drought Prone Areas Programme (DPAP) (1995-2006)	The basic objective of the DPAP is to minimise the adverse effects of drought on production of crops and livestock and productivity of land, water and human resources ultimately leading to drought proofing of the affected areas. The programme aims to promote overall economic development and improving the socio-economic conditions of the resource poor and disadvantaged sections inhabiting the programme areas. DPAP was in operation in 627 blocks of 96 districts in 13 States.
	Backward Region Grant Fund (BRGF)	The BRGF is designed to redress regional imbalances in development. The fund will provide financial resources for supplementing and converging existing developmental inflows into 250 identified districts, so as to (i) bridge critical gaps in local infrastructure and other development requirements that are not being adequately met through existing inflows (ii) strengthen, to this end Panchayat and Municipality level governance with more appropriate capacity building, to facilitate participatory planning, decision making, implementation and monitoring, to reflect local felt needs, (iii) Provide professional support to local bodies for planning, implementation and monitoring their plans. BRGF, set up in 2006 under the Union Ministry of Panchayati Raj, provides a good opportunity to identify challenges and opportunities in backward districts and make realistic plans with involvement of people and elected representatives up to the district level.
	Rashtriya Krishi Vikas Yojana (RKVY)	RKVY, launched in 2007, provides 'additional central assistance' to Central government and state schemes related to agriculture. Among the projects funded by RKVY is region specific agriculture research and preparation of district agriculture plans, taking into account local needs and conditions.
	Integrated Child Development Services (ICDS)	ICDS seeks to provide supplementary nutrition, health care and pre-school education to children below the age of six. Under a Supreme Court order of December 13, 2006 in the Right to Food case, all settlements that have at least 40 children under the age of six have to set up anganwadis within three months of the rural communities and slum dwellers making such a demand.

	Mid-day Meal Scheme	The Mid-day Meal scheme is the result of a November 28, 2001 order of the Supreme Court in the Right to Food case, directing state governments to provide cooked mid-day meals in all government and government-assisted primary schools.
	Integrated District Approach (IDA)	The IDA was launched in late 2004 and early 2005 in seventeen districts across 14 States in the country, and is the culmination of key strategies outlined by UNICEF India since the mid-eighties. These strategies focused on promoting community action and the integrated delivery of services by establishing horizontal linkages between line agencies on the one hand and establishing an interface between the communities and the line agencies on the other to ensure responsive, relevant and convergent delivery of services. Development of village plans for health, nutrition, education, water and sanitation resulting in the ownership of the process and activities at the community level is central to almost all national programmes.

Table 2.10 Disaster precursors and components of DRR for CCA and development Components

Environmental conditions for disaster risks	Adaptation		Development Goals
	Risk Reduction (pro-active)	Disaster Response	
• Desertification • Drought • Floods • Cyclones • Landslides • Earthquakes effects • Hazards: • Fire (Forests/ Mine/ Residues) • Biological • Diseases/ epidemic/ pandemic	• Soil-water management • erosion • waste land reclamation • Slope protection & remediation • Afforestation • Crop diversification • Alternative crops & cropping patterns • Forestry-produce • Wetlands • Fisheries/aquaculture • Housing designs • Land-use • Alternative employment • Fiscal measures	• Emergency response. • Medical Response, • Relief/ Rehabilitation	• Agriculture production and sustainability • Natural Resources renewal and management • Water resource/supply • Health & nutrition • Poverty eradication and employment • Housing • Urban development • Transport/Roads • Service sectors • Industrial development • Economic/equity

As envisaged in the DM Act, 2005, the ongoing schemes and programmes can be used as access points for mainstreaming Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) measures into development planning. An approach to mainstream CCA & DRR measures into the ongoing developmental programme may be delineated as following:

I. Classification of key programmes/projects at ministerial level along with the area of implementation.
II. Integration of structural and non-structural measures in the programme objectives. Guidelines shall be prepared for identifying structural and non-structural measures in programmes/schemes. For example all the programmes with objectives to construct physical infrastructures such as roads, houses, schools and sanitation & water facilities must confirm to the structural measures to ensure disaster resilient construction. Similarly, the social projects shall have objectives to mainstream non-structural measures viz. Awareness generation, capacity building and preparedness activities as a part of their schemes/projects. An exercise shall be conducted to identify access points within the programmes for inclusion of DRR measures at several administrative levels.

III. The state/national authority shall coordinate at ministerial and state level for promoting CCA & DRR measures through developmental programmes. Infact, the new programmes shall be sanctioned only if they meet the clause for ensuring disaster resilient construction activities.

IV. Certain fund shall be allocated in each of the programmes for implementing CCA & DRR measures within departmental plans.

13.2.2.4 Schemes/Projects on Disaster Management and Climate Change

The Ministry of Home Affairs (MHA) being a nodal ministry for handling DM measures have implemented several schemes/projects as centrally sponsored schemes or externally aided programmes. The thirteenth Finance Commission has allocated funds to the state governments as capacity building grant of Rs. 525 crore for disaster response, grant in aid of Rs. 472 crores to seven states for revamping of fire services. The GoI has also approved state disaster response fund (SDRF) of an amount of Rs. 33580.93 crores for all the 28 states as 75 percent central (90 percent for special category states) and 25 percent as state contribution. A brief on the important schemes on DRR & CCA is as given below:

Table 2.11 Brief on schemes for Disaster Management

Sl.	Schemes	Brief
Plan Schemes		
	Strengthening of Fire& Emergency Services (2009-2012)	The Centrally Sponsored Scheme was implemented at an outlay of Rs. 200 crore, with 75 percent as centrally contribution (90 percent for special category states) and 25 percent as state contribution. The objective of the scheme was to strengthen the fire services by providing equipments for search & rescue up to district level, capacity building programmes for fire service officials, awareness programmes for communities on fire emergencies and strengthening of regional training centres etc.
	Revamping of Civil Defence (2009-2012)	In order to revamp the civil defence organization, the GoI had implemented a centrally sponsored scheme during 2009-2012 with an objective to strengthen and revitalise the Civil Defence setup in the country to play a significant role in disaster management and assist the police in internal security and law and order situations while retaining their primary role.
	School Safety Programme	The School Safety programme was initiated with a vision to promote culture of preparedness in the schools through education, public awareness and training. Also, structural and non-structural mitigation measures are to be incorporated in certain school buildings as demonstrative units in order to promote culture of resilience. The programme is being implemented by NDMA.
	National Earthquake Risk Mitigation Programme	The project is being implemented by NDMA in order to enhance the preparedness of the country to face earthquakes and to reduce the loss to life and property caused by earthquakes. The objectives of the programme are capacity building of construction practitioners, awareness generation, strengthening of techno-legal regime, institutional strengthening and application of research & development activities.
Externally Aided Projects		
	GoI-UNDP Disaster Risk Management Programme (2002-2009)	The UNDP in partnership of Ministry of Home Affairs, GoI had implemented the community based disaster risk management programme between2002-2009. The programme was implemented in 176 multi-hazard district spread over 17 states. The major objectives of the programmes were: • Community based Disaster Risk management planning • Strengthening of techno-legal framework • Capacity building of the stakeholders

		• Awareness generation • Knowledge management and networking
	GoI-UNDP Disaster Risk Reduction Progrmame(2009-2012)	UNDP launched a new programme for DRR in 26 states and 57 cities across the country for implementation of two components viz. Institutional Strengthening & Capacity Building for DRR and Urban Risk Reduction (URR). The focus areas of the scheme was to strengthen the institutional structure to undertake DRR activities at various levels (state, district, city, urban local body) including risks being enhanced due to climate change, and develop preparedness for recovery. The scheme was closed in the year 2012.
	GoI-USAID Disaster Management Support Project (2002-2015)	With the support of USAID, GoI had initiated a programme to reduce vulnerability to disaster and build capacity of key institutions in India. The programme focused on strengthening of forecasting and early warning systems, technical support for computer modeling, designing & demonstration of retrofitting of buildings as models and to provide training to government officials. Of late the programme was extended to support DRR, climate change and training activities.
	National Cyclone Risk Mitigation Programme(2011-2015)	The NCRMP programme is being implemented by the GoI in partnership with the World Bank as Centrally Sponsored Scheme. The programme is to be implemented in cyclone prone coastal States/UTs. The Project is being implemented in three phases as with 75 percent contribution by the Central Government and 25 percent contribution by the State Governments for the component consisting of structural and non-structural measures. In the first phase, the states of Andhra Pradesh and Orissa are being covered at an estimated cost of Rs. 1496.71 crore.

From the above table, it is evident that a concrete scheme focusing on climate change adaptation is yet to be formulated.

13.2.2.5 National Action Plan on Climate Change (NAPCC)

India, recognizing the climate change issue at global level, committed to engage in multilateral negotiations in the UN framework, in a constructive, positive and forward looking manner, with an objective to establish an effective, coordinated and equitable global approach. The NAPCC was developed by Prime Minister's office in 2008, identifies measures that promote out development objectives while also yielding co-benefits for addressing climate change effectively. It outlines a number of steps to simultaneously advance India's development and climate change-related objectives of adaptation and mitigation. The NAPCC clearly indicates that maintaining a high growth rate is essential for increasing living standards of the vast majority of our people and reducing their vulnerability to the impacts of climate change. The path of sustainable development should be guided by the following principles:

i. Protecting the poor and vulnerable sections of society through an inclusive and sustainable development strategy, sensitive to climate change.
ii. Achieving national growth objectives through a qualitative change in direction that enhances ecological sustainability leading to further mitigation of greenhouse gas emissions.

iii. Devising efficient and cost effective strategies for end use demand side management.
iv. Deployment appropriate technologies for both adaptation and mitigation of greenhouse gases emissions extensive as well as at an accelerated pace.
v. Engineering new and innovative forms of market regulatory and voluntary mechanisms to promote sustainable development.
vi. Effecting implementation of programmes through unique linkages, including with civil society and local government institutions and through public-private-partnership.
vii. Welcoming international cooperation of research development, sharing and transfer of technologies enabled by additional funding and a global IPR regime that facilitates technology transfer to developing countries under the UNFCCC.

The plan provides for eight national missions, representing multi-pronged, long-term and integrated strategies for achieving key goals in context of climate change, namely National Solar Mission, National Mission of Sustainable habitat, National Mission for Enhanced Energy Efficiency, National Water Mission, National Mission for Sustaining the Himalyan ecosystem, National Mission for Green India, National Mission for Sustainable Agriculture and National Mission on Strategic Knowledge for Climate Change. These missions will be institutionalised by respective ministries.

13.2.2.6 Integration CCA-DRR within Policy-Planning Instruments

In view of the Hyogo Framework of Action (HFA), the UN-ISDR Global Joint Work programme for 2008-2009 sought to ensure that "national and local authorities are better equipped to protect environmental services in coastal areas, flood and fire-sensitive basins and mountain ecosystems". Disaster management highlights the interdependence of economy, environment and inclusive development (Srivastava, 2011). Instruments useful in the formulation of policy and/or implementation of policy are called 'policy instruments'. Certain important environmental-policy instruments directly useful in developing and implementing CCA and DRR (and their convergence) are discussed in Table 2.12.

Table2.12 Modern Environmental-policy Instruments and their Role in DRR

Instrument	Brief Description/Examples	Role In CCA-DRR Integration
□ Strategic Environmental Assessment (SEA)	EIA of policies, plans and Programmes	Mainstreaming CCA & DRR towards sustainable development with ecosystem approach, climate-risk mitigation and post-conflict recovery context (OECD, 2011).
□ Environmental Impact Assessment (EIA(s)	Regional EIA, Country EIA, Cumulative EIA, Carrying Capacity Based Planning Process	Anticipation of hazards, risk hotspots, vulnerability – spatial contexts; Projected mitigation and capacities; Residual risks for emergency response/plan
□ Life Cycle Assessment (LCA)	Environmental impacts during different stages of life-cycle of a material or a major project	Prediction and forecasting of changing patterns of hazards and risk profiles over time to cause a disaster
□ Ecological footprint	Human demand of natural resources and ecosystem services bearing to regeneration capacity	Anticipation of ecosystem fragility or biotic pressure on land & water resources that lead to hazards and aggravate disaster risks
□ Environmental Legislation	Policy Statements, Acts & Rules, Ordinances, Notifications, Standards and Codes, Treaties	Provides legal support for reducing hazard precursors, vulnerability causes; offers capacity and recovery potentials, health, livelihood and sustainability.
□ Auditing / Environmental Management	Environment audit, Water balance audit, Safety & Health audit, Eco-auditing	Impact of a strategy or activities of an organization/facility, person or business on environment leading to hazards,

System (EMS)		vulnerability or mitigation, and related data/documentation
□ Cess / Levees	Charges for natural resource exploitation, environmental services - water & clean-up, etc.	Reduces pressure on landscape and ecosystems; facilitates conservation – reduces hazard intensities, susceptibi-lity and improves response resources
□ Natural Resource Accounting (NRA)	Transformation of data on environmental features for use in economic decisions	Assessment of prevailing and anticipation of vulnerability; resilience and recovery potentials
□ Eco-labelling / Eco-mark	Public information on eco-friendly production and product	Promoting peoples contribution and concern to reducing hazards in nature and disaster prevention
□ Environmental Taxes	Polluter pays principle; payments to curb the ill effects on environment	Curbing environmental precursors of hazards and vulnerability; financing mitigation and sustainability

13.2.2.6.1 Applying EIAs for CCA and Disaster Risk Reduction

EIAs applied in the disaster prevention and mitigation phase can help integrate issues of climate change adaptation along disaster risk reduction in the planning, for instance by providing guidance on choices of mitigation methods (Gupta and Yunus, 2004), technology investments and site locations for activities. In a post-disaster context, conducting rapid EIAs (REA) helps to ensure that sustainability concerns are factored into relief, reconstruction and recovery planning stages (Gupta et al., 2002a). Blaikie et al. (2005) suggested that effective recovery and reduction of future vulnerability for local people depended on:

- Recognizing that ecosystem services provide the basis for sustainable reconstruction and reduction of future vulnerability;
- Long-term monitoring of both ecological and socioeconomic parameters and a management strategy that encourages adaptation to changing circumstances;

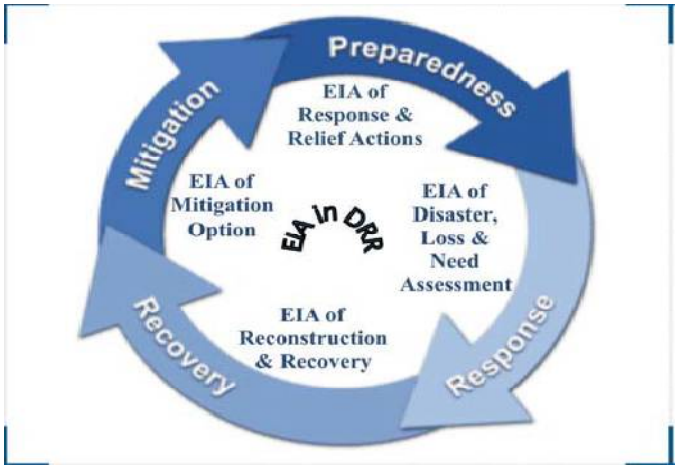


Figure 2.3 EIA applications in DRR phases (Gupta and Nair, 2012).

EIA can provide significant avenues for integrating climate change adaptation and disaster risk reduction into development through effective planning and decisions, by reporting on current and anticipated future

environmental conditions and identifying drivers of change. There are many types and forms of traditional and innovative EIA options, for example:

1. EIA of projects (e.g. development projects like water resources, highway, airport, tourism, housing complex, railway, or an industrial project in manufacturing, mining, food, dairy, etc.);
2. Strategic Environmental Assessments;
3. Regional EIA (also known as Country EIA or Cumulative Impact Assessment);
4. Carrying Capacity Assessment-based developmental planning process (Gupta et al., 2004);
5. Environmental Risk Mapping-Based Developmental Planning (Gupta et al, 2002b);
6. Health Impact Assessment (as part of EIA or Risk Analysis) (Gupta et al., 1999).

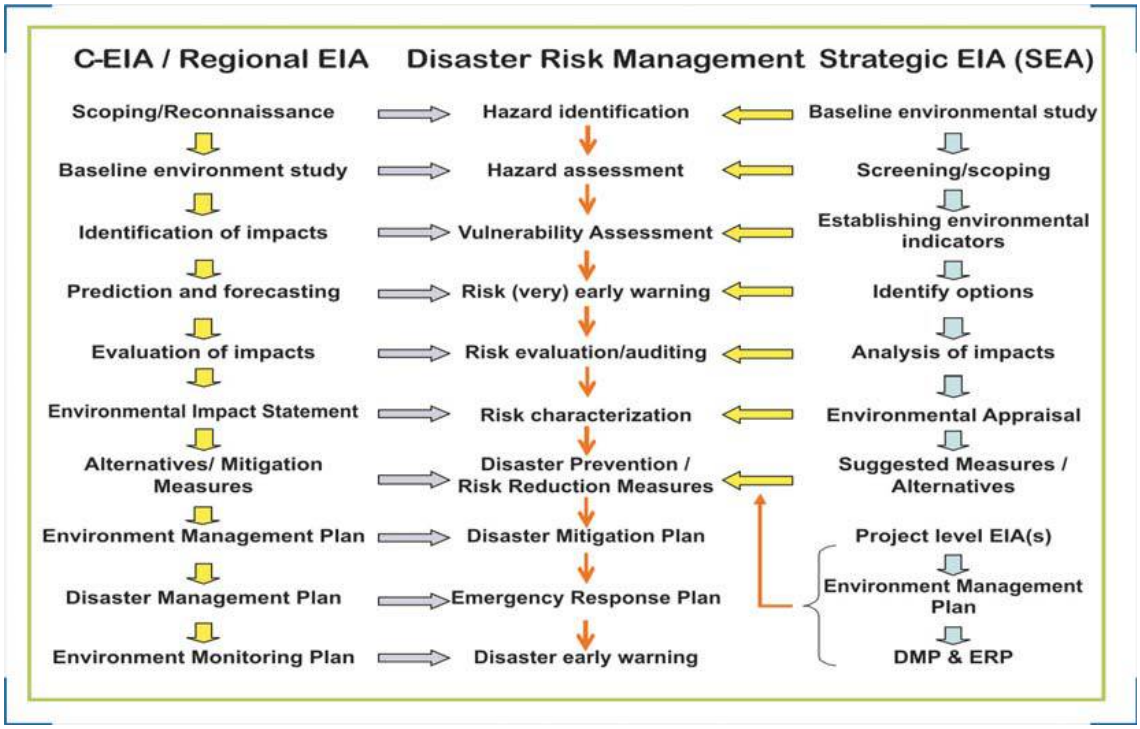


Figure 2.4 Inputs of EIA and SEA to DRR (C-EIA – Cumulative EIA; DMP – Disaster Management Plan)

Early EIAs focused primarily on project impacts on the natural or biophysical environment (such as effects on air and water quality, flora and fauna, noise levels, climate and hydrological systems). Over time, increased consideration has been given to social, health and economic aspects of environmental consequences. This trend has been driven partly by public involvement in the EIA process, and is reflected by the evolving definition of 'environment' in EIA legislation, guidance and practice, which include effects on the following (Bhatt and Khanal, 2009):

- Human health and safety,
- Flora, fauna, ecosystems and biological diversity,
- Soil, water, air, climate and landscape,
- Use of land, natural resources and raw materials,
- Protected areas and designated sites of scientific, historical and cultural significance,
- Heritage, recreation and amenity assets, and
- Livelihood, lifestyle and well-being of those affected by a proposal

The REA[26] is designed for natural, technological or political disasters, and is viewed as a best practice tool for effective disaster assessment and management. In recent years, there have been innovative applications of EIA in the context of recovery and reconstruction. For example, WWF-US and American Red Cross published the Green Recovery and Reconstruction Toolkit (GRRT) which contains a dedicated module on the role of EIA in recovery. (Box 3). Moreover, the Benfield Hazard Research Centre and CARE International have developed

more detailed and comprehensive guidelines on rapid environmental assessment (REA) in the context of disaster response.

The National Environment Policy (NEP) 2006 of India is an inter-sectoral policy that envisages the integration of many national policies and strategies on environment and natural resource related issues, like, National Forest Policy, 1988; National Conservation Strategy and Policy Statement on Environment and Development, 1992; Policy Statement on Abatement of Pollution, 1992; National Agriculture Policy, 2000; National Population Policy, 2000; National Water Policy, 2002, etc. National Urban Sanitation Policy, 2008, and National Disaster Management Policy, 2009, which came afterwards have significantly related to NEP (2006) on many aspects of environmental management for disaster risk reduction and post-disaster response, relief and recovery – for example, land-use, habitat protection, coastal zone, Himalayan ecosystems, climate-change, desertification, wetlands, water & sanitation, chemical risks, waste disposal, etc.

13.2.2.6.2 Environmental Policy and DRR - Strategic Avenue for CCA

All these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition. The National Environment Policy does not displace, but builds on the earlier policies, and intends to mainstream environmental concern in all developmental activities. For example, National Urban Sanitation Policy of India, 2008, provides for city sanitation plans and state urban sanitation plans addressing environmental health, pollution and waste management and prevention and control of epidemic disasters, flooding, water scarcity, etc. and directly offers CCA-DRR integration opportunities. Sustainable human development is the core principle of NEP, as its definition of the "Environment" comprises all entities, natural or manmade, external to oneself, and their interrelationships, which provide value, now or perhaps in the future, to humankind. Environmental concerns relate to their degradation through actions of humans. Other principles of NEP which are relevant for DRR are the 'legal liability' and 'preventive action'. NEP (2006) focuses on the 'environmental resilience' which is the key objective of climate change adaptation and disaster risk reduction.

NEP's other emphasis which is equally important in addressing climate-change and hydro meteorological disasters like floods, drought, cyclone, fire, landslide, tsunami, epidemics, are particularly - The National Environment Policy (NEP) 2006 of India is an inter-sectoral policy that envisages the integration of many national policies and strategies on environment and natural resource related issues, like, National Forest Policy, 1988; National Conservation Strategy and Policy Statement on Environment and Development, 1992; Policy Statement on Abatement of Pollution, 1992; National Agriculture Policy, 2000; National Population Policy, 2000; National Water Policy, 2002, etc.

BOX 3.3 CCA-DRR Integration Opportunities in a National Policy

Government of India released a National Policy on Disaster Management in 2009. Introduction to disaster risks in India (1.2.1) recognized environmental degradation and climate change in increasing people's vulnerability. Paradigm Shift in Disaster Management (1.3.1) emphasizes "…to a proactive prevention, mitigation and preparedness-driven approach ….. to minimize loss of life, livelihood and property". Life forms here shall include all living beings including human, animals and plants including microorganisms, ecosystem services for livelihood and the environmental resources as an attribute of property.

Objective (2.4.1) (ii) Encouraging mitigation measures based on technology, traditional wisdom and environmental sustainability, and (iii) Mainstreaming disaster management into the developmental planning process. Developmental planning process precisely involves environmental instruments, for example, EIA and risk analysis, environmental law, ISO/EMS and other tools of taxation/incentives, environmental audit to ensure feasibility, sustainability and compatibility with environmental capacities, and therefore, recognizes environmental approach to DRR and post-disaster green recovery notions.

Section on 'Environmentally Sustainable Development' (5.1.6) reiterates the need to integrate environmental compatibility in development in general and in particular in Himalayan regions, and coastal areas, with emphasis on islands, rivers, agricultural, urban and industrial environment for ecological balances. Zonal regulations for preservation of natural habitats are recognized as important tools. It provides for Climate Change Adaptation (5.1.7) for focus on glacial reserves, water balance,

agriculture, forestry, coastal ecology, bio-diversity and health in order to reduce disaster risks and vulnerability.

Public environmental services in disaster response and relief's Standard Operating Procedures (SOPs) (7.5.1) incorporates food safety, drinking water, sanitation including waste management and refers to minimum relief with links to SPHERE standards. Livelihood Restoration (9.5.1) has been recognized as key to sustainable recovery.

Institutional Arrangements (12.2.1) enumerates for the close interaction with Ministries and Departments of Agriculture, Earth Sciences, Environment & Forests, Health, Industry, Science & Technology, and Space, and thus provides for cooperation and environmental approach to DRR, with Promotion of Research (12.3.1) emphasis on climate change and global warming.
(Source: National Policy on Disaster Management, India, 2009)

National Urban Sanitation Policy, 2008, and National Disaster Management Policy, 2009, which came afterwards have significantly related to NEP (2006) on many aspects of environmental management for disaster risk reduction and post-disaster response, relief and recovery – for

BOX 2.4 CCA Approaches in National Disaster Management Guidelines

Government of India has developed specific guidelines for management of different disasters. Many approaches based on environmental knowledge and management of natural resources and ecosystems are manifested in their contents. A pilot assessment of the three guidelines*, viz. Flood, Cyclone and Drought, has been undertaken to identify ecosystem and environmental based approaches referred therein:

Reference	Flood Management Guidelines	Cyclone Management Guidelines	Drought Management Guidelines
Environmental rights	Lives and livelihoods, Livelihood systems	Livelihood	Livelihoods, Alternative Livelihood
Climate-change	Snow melt, GLOF, LLOF	Climate-change and sea level rise	Climate-change impact on drought and agriculture
Natural Resource Management	Catchment area treatment, Anti-erosion measures, Coastal protection, Carrying capacity of rivers and drainage, River-bank erosion, Sediment load from river catchments, Drainage congestion, Wetlands, Integrated water resource management, Environmental-health, Encroachment of waterways, Waste management	Coastal afforestation, Aquaculture, Coastal resources, Bio-shields, Mangroves, Shelterbelt plantations, Coastal flood plain management, Coastal erosion, Crop and livestock protection, Environmental-health responses, Shelterbelt plantation monitoring	Agriculture, Land resource management – Soil moisture, Soil amendment, Integrated Nutrient and Pest management Water scarcity and management, Reservoirs and wetlands, Groundwater, Streams, Drought prone area programme, Desert development programme, Alternative cropping, Insitu conservation, Horticulture, Ecosystems, Forest management, Crop phonology, Coastal & marine resources, Pollution control
Land-use / land cover	Afforestation, Watershed management,	Alternative developmental scenario, preferred scenario, Land-use	Afforestation, Alternative land-use, Agroforestry, Biofuel cultivation
Environmental Impacts / Risk	Ecofriendly structural & non-structural	Coastal zone management, EIA,	Environmental impacts of drought – environmental

Analysis, Environmental Statistics	mitigation, Environmental database for forecasting & damage assessment, Dam safety	Assimilative capacity estimation, Regional Environmental Management Plans	health risks, livelihood impacts, Environmental indicators for risk and impact assessments including databases, Environmental planning,
Environmental Regulations	River regulation zone, Flood-plain zoning	National environmental policy, Coastal zone management, EIA	Environmental law
Date of release	January 2008	April 2008	September 2010

example, land-use, habitat protection, coastal zone, Himalayan ecosystems, climate-change, desertification, wetlands, water & sanitation, chemical risks, waste disposal, etc. 5.2.5 Freshwater Resources: (i) River Systems (ii) Groundwater (water use needs for drinking water, irrigation and agricultural use, hydropower, ecological services, industrial, navigation, and tourism), 5.2.7 Coastal Resources, 5.2.10 Climate Change, 5.3 Environmental Standards and Indicators, etc. (Environmental standards also need to relate to other measures for risk mitigation in the country, so that a given societal commitment of resources for achieving overall risk reduction yields the maximum aggregate reduction in risk), (26. Environmental quality is not the only source of societal risk; virtually every activity of humans is fraught with risk. Other sources of risk, which may be regulated, include safety standards for vehicles, aircraft, water, food and pharma, contagious diseases (quarantine and immunizations), etc. Risk mitigation in each case involves societal costs; these must be weighed against the potential benefits), 5.3.2 Environmental Management Systems, Ecolabeling and Certification (….. may significantly ease the public burden of monitoring and enforcement. Global harmonization of EMS however relates to achievement of national, not externally imposed emission standards).

13.2.2.7 Reducing Risk through Local Adaptation Practices

Climate change phenomena have largely impacted on season and frequency of floods which normally damages crops, houses, physical infrastructure and property. In order to reduce losses caused by seasonal floods, the local communities have adopted certain methods, which have been evolved by their experience. Some of the predominant methods adapted by the communities or local institutions may be as given below:

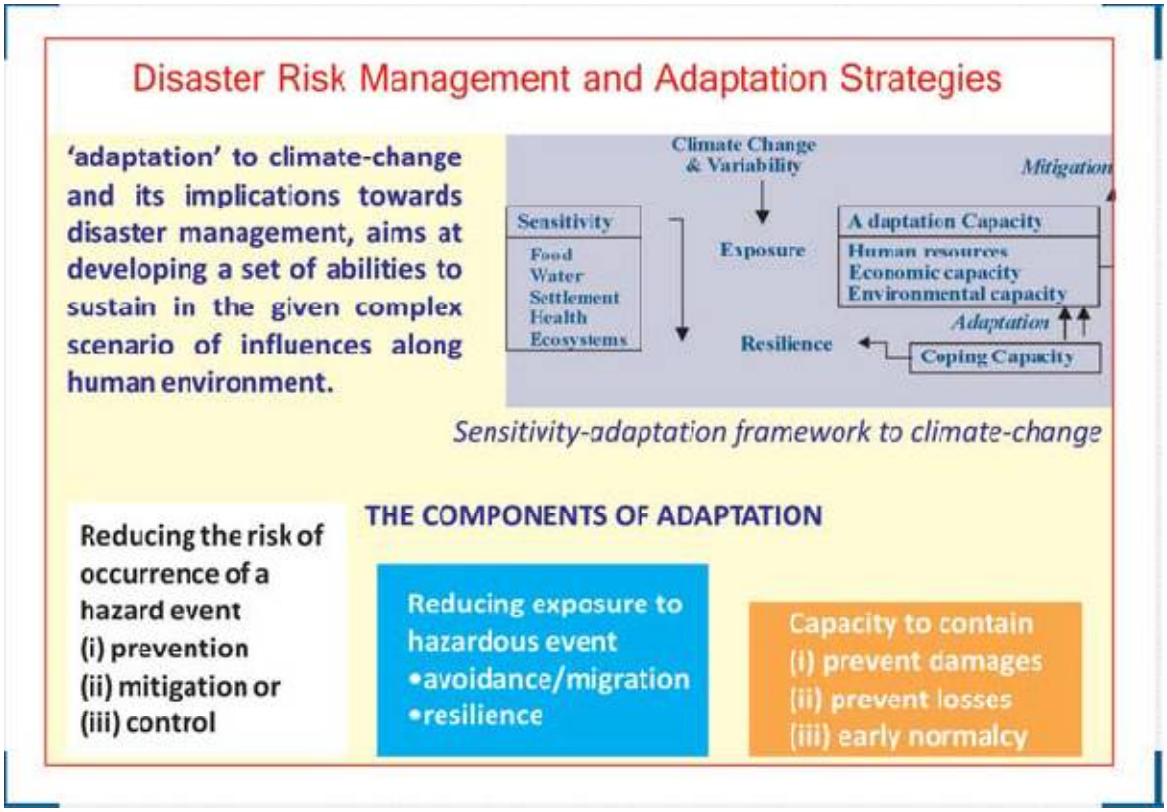


Figure 2.5 Local adaptation concerns and objectives along DRR

(i) For reducing damage of the crops

A) *Growing Paddy in the Flood Prone Areas:* The paddy plant can survive even if the flood flows over the crop for 7 days at a stretch. Only where the current is strong and uproots the plants, real damage can occur. Crop Cycle Management: To cope with the flooding, farmers have adapted the crop cycle so as to reduce crop losses. The main strategies are: pre-flood cultivation (so farmers can harvest before the floods); cropping with floods (crops which grow well even in floods); and post-flood cultivation (planting late varieties or those which withstand water logging) (Wajih, 2008).

b) *Diversification of Farming Skills:* The farmers have adapted to various methods of cultivation by growing more variety of crops, trees, plants, horticulture, mushroom cultivation and other ways of commercial farming. Local women's groups are engaged in processing activities to add value to paddy, milk, sugar cane or vegetables. However, due to lack of resources and information, the initiatives by farmers remain incompletely harnessed as yet.

(ii) For reducing damage of lives and property:

The community adapted to several ways and means to reduce risk of lives, property and economy, belongings

BOX 2.5 CCA Integration through Improving Disaster Response: Minimum Standards of Environmental Services in Emergencies

SPHERE (2004, 2010) is a multi-year project sponsored by NGOs, the International Red Cross and Red Crescent, donor governments, and UN agencies has produced The Humanitarian Charter and Minimum Standards in Disaster Response, with aim to improve the quality of assistance provided to people affected by disasters and to enhance the accountability of the humanitarian system in disaster response. Includes standards for environmental services in disasters and emergencies e.g. water; sanitation; food; shelter and health and concerning other aspects of environment safeguards for human wellbeing, besides process standards (www.sphereproject.org).

and property by construction of houses, elevate d stores, protection of the walls, drinking water and transportation and diverting the streams.

a) Shifting to Raised Places: The communities living in the flood prone areas use elevated structure to store important and valuable materials like food grains, gold, documents, and clothes, locally named as 'chakka' or 'machan' (SAARC, 2008). People also shift themselves to raised places like bamboo or tree houses temporarily.

b) *Construction of brick houses:* People have started constructing brick houses, which are considered better during floods. However, such houses are very less in numbers.

c) *Stocking fodder and preserving food:* The villagers stores food and fodder as much as they can in advance to meet the requirement of rainy season.

d) *Construction of raised platform for bamboo housing or shifting to relative houses:* these are other options which are opted by the community to be safe from the floods.

e) *Alternative Source of Income Generation:* Some people especially male members of the family seeks alternative source of income in other villages to compensate the losses made by the floods. Few gets loan from a bank or some other money lender; opts for fishing, ferrying small boats or pulling rikshaw etc.

f) *Migration for livelihood:* People living in the flood prone areas are gradually shifting to other states such as Delhi, Punjab and Haryana for want of job opportunities. In fact, now people are engaged as wage labourer to generate their monthly income.

iii) Other Coping Mechanisms

a) Provision of Drinking Water Facilities: For combating with drinking water facility during floods, the villagers uplifted their tube well at higher places. People also construct mound with mud so that animal could be kept there during floods.

b) Warning signals: Village community predicts warning signals through animal behaviours such as change in behaviours of reptiles, birds and inspects. Also, constant rain for 15 days or so gives signs of flooding, due to which villagers adopt to alternate ways to save them.

c) Post repair work for housing: The community volunteer to work for repairing and reconstruction after floods until the situation normalizes.

d) Temporary Shelters: the community engage themselves in construction of temporary shelters by using local available materials.

e) Disintegration to Nuclear family: the families are disintegrating into small size as it has become difficult for them to survive into joint family.

Box 2.6 Field Survey Analysis of Indigenous Knowledge Practices in the disaster prone areas

Steps:

i. Identify communities (villages or urban areas), which are affected by any local disaster viz. flood, drought or cyclone regularly.
ii. Divide the class in the groups of 4-5 persons for conducting the field work in different communities.
iii. Design a primary survey schedule for conducting survey in the villages.
iv. Collect the primary data on demographic composition, religion based composition, economic activities, connectivity with the town, types of roads, telecommunication facilities, power and sanitation facilities, nos. of houses, nos. of offices, schools, temples and other important buildings.

v. Each group shall interact with about 25-30 community members through interview process to collect the data on using indigenous knowledge for local disasters management practices.
vi. Analyse collected information in order to identify the local adaptation practices.

Box 2.7 Ecosystem-based Adaptation and ecoDRR

The Millennium Ecosystem Assessment 2005 (ME) refers to natural systems as humanity's "life-support system" providing essential "ecosystem services" for existence and socioeconomic well being. "Ecosystem-based adaptation (EBA) is the management, conservation and restoration of ecosystems to provide services that help people adapt to climate variability and change." EbA integrates the use of biodiversity and ecosystem services into an overall adaptation strategy. Examples include: integrated water resource management; landscape restoration (wetlands, forests, coastal habitats); agro-forestry; protected area systems, etc. Decline of these services can lead to increased exposure to hazards and also decrease the disaster resilience. Decline in the regulating systems also reduce the ability of the human beings to adapt to climate change. Similarly decline in cultural and recreational services can affect the Small Island Groups and the countries where the economy is depended primarily on tourism. It is argued that ecosystems contribute to reducing disaster risk in two important ways. First, ecosystems, such as wetlands, forests and coastal systems, can reduce physical exposure to natural hazards by serving as natural protective barriers or buffers and thus mitigating hazard impacts. Well-managed ecosystems can provide natural protection against common natural hazards, such as landslides, flooding, avalanches, storm surges, wildfires and drought. "Hard" infrastructure can be a risky, costly adaptation option, can compromise the ability of ecosystems and people to adapt, resulting in mal-adaptation. Local solutions are needed. Nature-based approaches that promote human rights and build socio-ecological resilience: ecosystem-based adaptation. Decline in the ecosystem services influence the resources available to the people and hence lead to increasing vulnerability to hazards and also will affect the human well being.
Regulating ecosystems services are crucial for enhancing resilience of the human ecosystems by moderating the extreme weather events like heat wave and cold wave, protecting the coastal areas from tsunami and storm surges and so on. Decline of these services can lead to increased exposure to hazards and also decrease the disaster resilience. Decline in the regulating systems also reduce the ability of the human beings to adapt to climate change. Similarly decline in cultural and recreational services can affect the Small Island Groups and the countries where the economy is depended primarily on tourism. It is argued that ecosystems contribute to reducing disaster risk in two important ways. First, ecosystems, such as wetlands, forests and coastal systems, can reduce physical exposure to natural hazards by serving as natural protective barriers or buffers and thus mitigating hazard impacts. Well-managed ecosystems can provide natural protection against common natural hazards, such as landslides, flooding, avalanches, storm surges, wildfires and drought. "Hard" infrastructure can be a risky, costly adaptation option; can compromise the ability of ecosystems and people to adapt, resulting in mal-adaptation. Local solutions are needed. Nature-based approaches that promote human rights and build socio-ecological resilience: Ecosystem-based adaptation.

From the above, it may be noticed that coping strategies evolved by the communities are very diverse and depends upon the physical, social and cultural organization, technology and economy. Indigenous knowledge can help government to develop people's friendly plan for mitigation by empowering communities through their local systems. Integrating such mitigation measures into disaster management and development planning will enhance credibility of the plans amongst the people and increase participation of local community and their ownership, which will facilitate easy implementation of the plan.

13.2.2.8 Adaptation by Local Institutions

Over the years, with the increased frequency of local disasters such as floods, droughts & cyclones, the departments viz. District Collectorate Office, Water & Irrigation Department, Fire Services, Police Services and other line departments have taken certain initiatives to increase their response time. In fact, with the increasing awareness about disaster management, departments have also prepared their plans for preparedness and mitigation. However, such initiatives remains standalone from the district level collective initiative of DM planning and a cohesive response is missing. Such adaptation practices shall be integrated with the regular disaster management plan. Following exercise will initiate a discussion between various departments for promoting a collaborative thinking towards CCA and DRR and its integration into DM

planning. In fact, the open dialogue will help the departments to develop their capacities towards integrating planning for climate change, disaster management into development planning, which is overall objective of this exercise.

Chapter 14

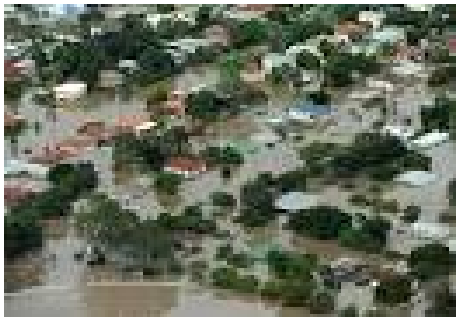
Important Detail & Phone No

14.1. Road map of District

14.2. Dos and Don'ts

MINING DISASTER	DO'S	DON'T
	• adequate ventilation in the mine • face protection • heavy clothing to protect the miners • careful tracking of everyone who enters the mine • use extensive lighting systems for visibility • undergo mine safety training courses	• work alone • go to dangerous area • not allowed to work when under the influence of drugs or alcohol

LIGHTENING	**SEEK**	**AVOID**
	• Immediately head indoors • large, permanent building • fully-enclosed metal vehicle (cars, vans) • Lowest elevation area	• Tall objects like tree, poles • Large, open area • Wet areas • Elevated areas • All metals

FLOOD	DO'S	DON'T
	• Safe route to nearest shelter • Carry emergency kit • Turn-off power • Tune to local radio/tv for warnings and advice • Keep dry food, drinking water and clothes ready	• Enter flood waters • Use electric appliances • Eat food which has been in flood water

An emergency kit includes a:

- A portable radio, torch and spare batteries.

- Stocks of fresh water, dry food (chura, mudi, gur, biscuits), kerosene, candle and matchboxes.
- Waterproof or polythene bags for clothing and valuables, an umbrella and bamboo stick (to protect from snake), salt and sugar.
- A first aid kit, manual and strong ropes for tying things.

ANNEXURE

ANIMAL HUSBANDRY DEPARTMENT

VETERINARY HOSPITALS / INFRASTRUCTURE DATA

Name of District Animal Husbandry Officer - Dr. Baleshwar Choudhary
Mobile No - 9386403009 Landline No- 06436225993
Fax No- Email No- baleshwar.choudhary@gmail.com

1. Veterinary Hospitals (Government / Private) Infrastructure Details

Ser No	Name of Veterinary Hospitals / Centre	Location	Contect No	Name of Doctor - in-charge	Animal admission Capacity (in Number) (Only in OPD Patient No)	No of Vehicles	Specialisation / Facilities
District Veterinary Hospital / Private Hospital							
1	State Veterinary Hospital, Sahibganj	Ghorabari, Sadar Hospital Road, Sahibganj	8757608646	Dr.Manoj Kumar	20	-----	-----
Veterinary Hospital at Block Level							
1	Class-I Vet. Hospital, Barharwa	Block Campus, Barharwa	9334726177	Dr.Upendra Kumar	16	-----	-----
2	Class-I Vet. Hospital, Rajmahal	Block Campus, Rajmahal	9162388888	Dr.Dinesh Kumar Singh	15	-----	-----
3	Class-I Vet. Hospital, Udhwa	Block Campus, Udhwa	8298008496	Dr.Bijay Kumar	15	-----	-----
4	Class-I Vet. Hospital, Borio	Block Campus, Borio	8252467430	Dr.Pratap Kumar Manjhi	11	-----	-----
5	Class-I Vet. Hospital, Barhait	Block Campus, Barhait	8252593594	Dr.Narendra Singh	14	-----	-----
6	Class-I Vet. Hospital, Taljhari	Block Campus, Taljhari	9801194343	Dr.Hari Shankar Jha	12	-----	-----

7	Class-I Vet. Hospital, Ranga	Beside Ranga Thana, Ranga	8252593594	Dr.Narendra Singh	12	-----	-----
8	Class-I Vet. Hospital, Mandro	Beside Block Campus, Mandro	9430021960	Dr.Birendra Kumar	9	-----	-----

Veterinary Hospital at Panchayat or Village Lavel

Ser No	Name of Veterinary Hospitals / Centre	Location	Contect No	Name of Doctor - in- charge	Animal admission Capacity (in Number) (Only in OPD Patient No)	No of Vehicles	Specialisation / Facilities
1	Class-I Vet. Hospital, Sakrigali	Near Jamuni Railway Fatak, Sakrigali	8757608646	Dr.Manoj Kumar	8	-----	-----
2	Class-I Vet. Hospital, Maharajpur	Beside panchayat Bhawan, Maharajpur	9801194343	Dr.Hari Shankar Jha	7	-----	-----
3	Class-I Vet. Hospital, Tinpahar	Beside panchayat Bhawan, Tinpahar	9431398526	Dr.Dhanik Lal Mandal	11	-----	-----
4	Class-I Vet. Hospital, Jonka	Beside panchayat Bhawan, Jonka	9431398526	Dr.Dhanik Lal Mandal	10	-----	-----
5	Class-I Vet. Hospital, Suranga	Beside Community Hall, Suranga	9431347602	Dr.Subhodh Jitan Hansdak	10	-----	-----
6	Class-I Vet. Hospital, Srikund	Near High School, Srikund	9431347602	Dr.Subhodh Jitan Hansdak	12	-----	-----
7	Class-I Vet. Hospital, Kotalpokhar	Beside Medical Hospital, kotalpokhar	9431192152	Dr.Ajay Kumar	14	-----	-----
8	Class-I Vet. Hospital, Banjhi	In Banjhi Bazar	9199259672	Dr.Ikramul Haq	15	-----	-----

9	Class-I Vet. Hospital, Mirzachouki	Beside Mirzachouki Thana	9430021960	Dr.Birendra Kumar	17	-----	-----
10	Class-I Vet. Hospital, Dihari	Beside Village on road side	9430021960	Dr.Birendra Kumar	8	-----	-----
11	Class-I Vet. Hospital, Bari Kodarjanna	In Community Hall, Bari Kodarjanna	9431304932	Dr.Sanjeev Kumar	14	-----	-----

3. Animal Population Data as on 19th Live Stock Census 2012

DIST.	TAHSIL CODE	BLOCK NAME	NO. OF CATTLE	NO. OF BUFFALO	NO. OF SHEEP	NO. OF GOAT	NO. OF PIGRY	NO. OF POULRTRY	TOTAL
SAHIBGANJ	2564	SAHIBGANJ	19111	6503	0	18430	225	5185	49454
	2565	MANDRO	32023	4383	139	24910	5585	39674	106714
	2566	BORIO	41950	7162	30	27930	11004	49043	137119
	2567	BARHAIT	42497	9875	487	34214	16598	60568	164239
	2568	TALJHARI	25290	5117	264	21830	7006	45035	104542
	2569	RAJMAHAL	27045	5603	565	26803	2737	63615	126368
	2570	UDHWA	18020	3580	763	31919	1518	51586	107386
	2571	PATHANA	25712	5211	377	19156	10382	31585	92423
	2572	BARHARWA	21495	4177	1884	25575	3251	40523	96905
	2564	SAHIBGANJ TOWN	4613	1178	0	4326	540	5791	16448
	2569	RAJMAHAL TOWN	2076	274	25	2299	152	2053	6879

Water level measuring Centers

Name of River	Location of the measuring gauge	Name of the Responsible for recording	Phone No.
Ganga	Sahibganj Lunch Ghat	Central Water Commission	
Ganga	Farakka	Sri P.C. Saha, A.E.E.	03485253551

Contact details of CWC/ Stast/Agri Dept. for Flood Early Warning and Preparedness

Sl. No.	Designation	Name	Phone No. (Office)	Mob No.	Email id	Remarks
1	CWC, Middle Ganga Dividion, Patna	Executive Engineer	0612-2558249 0612-2557711/12	9431069299	mgd5cwcpatna@gmail.com	For Ganga Water level from Buxur to Farakka and forecast.
2	SDO, CWC Munger	Mr. Rajender Kumar	06344-227164	9631746149		
3	CWC Berhempur, West Bengal	Mr. Subrata Sarkar	3482251210	9804439057	lgdcwc@gmail.com	
4	CWC, Lower Ganga Division Farakka, West Bengal	Mr. Debasis Roy	3485253551		ldfarakka@gmail.com	
5	Executive Engineer, Farakka Barrage	Mr. P.K. Mondal			mondalprakash99@gmail.com	
6	JE, Farakka Barrage	Mr. Samresh Sarkar		9434533464		
7	Asst. Engineer, Farakka Barrage	Mr. Sourin Choudhury		8170807083		
8	Gaze Reader, Sahibganj	Mr. Ranjeet Mishra		9572476875		
9	Gaze Reader, Rajmahal	Mr. Sanjeev Ku Yadav		8434739758		

10	District Statistics officer	Mr. Binay Ku Mishra (Land Acquisition) in charge	06436-225065		sahibganjdso@gmail.com	**Rainfall status in the district (Block Wise)**
11	Assist Statistics officer	Mr. Thakur Bhandari				
12	Assist Statistics Officer	Mr. Prakash Ch Lal		8409043370, 7481895329		
13	Agiculture, Statistical Assistant	Mr. Bishnudev Mandal		9939886471		

Rivers and their affected areas

. No.	River	Affected Blocks	Affected Panchyat
1.	**Ganga**	**Sahibganj**	1. Rampur, 2. Lalbathani, 3. Kishan Prasad, 4. Mahadev -ganj, 5. Shovanpur Bhatta, 6. Bari Kodarjanna,7. Chhoti Kodarjanna, 8. Hajipur, 9. Sakri
		Mandro	1. Sriramchoki
		Borio	1. Lohanda, 2. Madansahi
		Rajmahal	1. Maharajpur Diyara, 2. Gadai Diyara, 3. Ghat Jamni, 4. Mokimpur, 5. Shadpur, 6. Kaswa, 7. Lalmati, 8. Pranpur, 9. Jamnagar Paschim,10. Jamnagar Purab, 11. Samaspur, 12. Lakhipur, 13. Purbi Narayanpur, 14. Madhia Narayanpur, 15. Paschim Narayanpur, 16. Dhua tola, 17. Rajmahal NAC
		Udhwa	1. Purbi Udhwa Diyara, 2. Paschimi Udhwa, 3. Uttari Palasgachhi, 4. Dachini Palasgachhi, 5. Uttar Piyarpur, 6. Madhia Piyarpur, 7. Dachini Piyarpur, 8. Amanat Diyara 9. Purbi Pranpur, 10. Paschimi Pranpur, 11. Uttari Sarfarajganj, 12. Dachini Sarfarajganj 13. Sridhar Diyara 14. Radhanagar 15.

			Chandshahar 16. Dachini Begamganj 17. Uttari Begamganj 18. Kathalbari
		Taljhari	1. Bari Bhagiamari 2. Moti Jharna 3. Kalyani 4. Maskailya
		Barharwa	1. Rupaspur 2. Mirjapur 3. Barari 4. Ramnagar 5. Kalu
2.	**Gumani**	**Barhait**	1. Khutona 2. Doria 3. Kherwa 4. Gopaldih 5. Panchakatia 6. Barhait
		Pathna	1. Kenduwa 2. Modicola 3. Amdanda Santhali 4. Chhota Ranga 5. Kusum Pokhar 6. Aathgama
		Barharwa	1. Harihara 2. Aahutgram 3. Gwalkhor 4. Agloi

Educational Institutions

Sl. No.	Name of Institutions	Name of the Contact Person	Phone number	Capacity of using as shelter
	SAHIBGANJ			
1	Sahibganj college, Sahibganj	Principal	222056, 222686	1000
2	GirlsHigh School, Sahibganj	Principal		500
3	RajsathanHigh School, Sahibganj	Principal		500
4	PublicHigh School, Sahibganj	H.M.	222168	400
5	YmunaDasGirlsHigh School, Sahibganj	H.M.		400
6	HarijanMiddle School, Rasulpur Dahla	H.M.	222266	100

	UDHWA			
7	Middle School, Jamnagar	H.M.		100
8	Middle School, Joka	H.M.		100
9	Middle School, Sutialpara	H.M.		100
10	Middle School, Fudkipur	H.M.		100
11	High School, Udhwa	H.M.		100
12	Middle School, Begamganj	H.M.		300
13	High School, Radhanagar	H.M.		500
14	Middle School, Atapur	H.M.		200
	RAJMAHAL			
15	J.K.High School, Rajmahal	H.M.		400
16	ProjectGirlsHigh School, Mahajantola, Rajmahal	H.M.		300
17	Middle School, Naya Bazar, Rajmahal	H.M.		200
18	Middle School, Maharajpur	H.M.		200
19	Middle School, Mangalhat	H.M.		100
	TALJHARI			
20	Primary School, Bhagiamari	H.M.		50

21	Primary School, Motijarna	H.M.		50
22	Middle School, Maharajpur	H.M.		100
	PATHNA			
23	Primary School, Amdanda	H.M.		50
24	Primary School, Talbaria	H.M.		50
25	Middle School, Bisanpur	H.M.		50
26	Middle School, Mahagama	H.M.		100
27	Middle School, Kusma Phokhar	H.M.		100
28	Middle School, Doria Santhali	H.M.		100
29	Primary School, Goradih	H.M.		50
30	Middle School, Khutona	H.M.		100
31	Primary School, Kherwa	H.M.		50
33	Middle School, Panchktia	H.M.		50

Available Boats (Block wise)

Sl. No.	Name of Block	Boats with Engine	Big Boats	Middle Boats	Small Boat	Total
1	Sahibganj	41	1	4	93	139
2	Taljhari	3	3	3	5	14
3	Rajmahal	-	21	53	7	81
4	Udhwa	3	-	14	11	28
5	Barwarwa	-	6	3	15	24
	Total -	47	31	77	131	286

Agriculture Department
Farmer Data

Sl. No.	Name of Block	No. of Big Farmers	No. of Marginal Farmers	No. of Small Farmer	Other	Remarks
1	Sahibganj	823	2057	307	3908	
2	Mandro	983	2458	3687	4670	
3	Borio	1292	3230	4846	6138	
4	Barhait	1750	4375	6556	8312	
5	Barharwa	2200	5502	8253	953	
6	Pathna	1084	2510	4066	5150	
7	Rajmahal	1605	4012	6018	7623	
8	Udhwa	1736	4341	6511	8248	
9	Taljhari	1061	2654	3981	1061	

Land Use Pattern Data

Sl. No.	City / Block	Total Area (in hectare)	Cultivated Area (in hectare)	Jungle Area (in hectare)		Marshy Land (if any Area) (in hectare)	Barren & unculturable land (waste land) (in hectare)
				Reserved	Open		
1	Sahebganj	1777.252	445.668	-	-	-	80.7
2	Borio	35880.464	15972.152	1827.09	3419.03	-	1819.6
3	Mandro	23306.288	11938.3	8680.00	1473.04	-	3579.724
4	Barhat	36550.324	21256.164	-	-	-	44.344
5	Rajmahal	12251.924	9797.628	90.08	1229.05	-	1609.708
6	Udhwa	9214.28	7643.256	-	-	-	121.568
7	Taljhari	25972.536	16040.892	-	-	-	315.868
8	Barharwa	18693.028	16031.528	905.00	1587.00	-	1705.876
9	Pathna	17478.636	11341.804	857.09	540.02	-	355.688

Crop Pattern Data

Sl. No.	Month	Type of crop produced	Quantity (in quintal)	Remarks
1	January	Vegetable	Paddy – 50132, Arhar – 485, Wheat – 11847, Mustard – 505, Gram – 1258, Maize – 4927,	
2	February	Sugarcane, Vegetable		
3	March	Sugarcane, Vegetable		
4	April	-		
5	May	Paddy		
6	June	Paddy, Pulse & Oil Seed		
7	July	Paddy, Pulse & Oil Seed		
8	August	-		
9	September	Maize		
10	October	Maize, Pulse & Oil Seed		
11	November	Wheat, Pulse		
12	December	Wheat		

Kisan Seva Kendra Data

Sl. No.	Location of Kisan seva Kendra	Contact Persons name	and Mobile No.	Facilities available
1	df"k foKku dUn] lkgcxat	Mk0 ver dekj >k]	9835512202	rduhdh Kku dh tkudkjh
2	vkRek lkgcxat	Jh lthr dekj	8863859871	rduhdh Kku dh tkudkjh

			Energy Department			
	Electric Supply Division,					
	Name of Electrical Executive Engineer:- Er. Hridyanand Sharma					
	Mobile No:- 9431135857					
	Electric Power Supply Data					
Sl No.	**Municipal Corporation/Block**	**Name of Power Grid Station**		**Location**	**Capacity in MVA**	**Name of Area Electricity be Supplied**
		Name of Grid	**Name of P/S/S**			
1	Sahebganj	Sahebganj	P/S/S Sahebganj	Jirwabari,Sahebganj	20.00	Sahebganj Town,Mahadeoganj etc
2	Mandro	Sahebganj	Mandro	Namnagar	6.30	Mandro Block South side of Rly Line
3	Borio	Sahebganj	Borio	Borio	8.15	Borio Block
4	Taljhari	Sahebganj	Taljhari	Maharajpur	6.30	Taljhari Block,Maharajpur etc
5	Rajmahal	Sahebganj	Mandai	Mandai	6.30	Rajmahal Town & Sahebganj Area
			Tinpahar	Tinpahar	5.00	Tinpahar part of Taljhari Block
6	Udhawa	Sahebganj	Udhawa	Khandang	10.00	Udhawa Block
7	Barharwa	Sahebganj	Barharwa	Barharwa	5.00	Barharwa Town & Surrounding Area
8	Barharwa	Pakur	P/S/S Sahebganj	Patharia	10.00	Patharia Kotalpokhar Pompara Ramnagar etc Gumani
9	Patna	Pakur	Sitapahar	Sitapahar	6.30	Pathna Block & Surrounding Area
10	Barhait	Sahebga	Barhait	Barhait	8.15	Barhait Block etc

		nj				
				Total	**91.50**	

Energy Department

Electricity Divisional Power Supply and Maintenance Data of Sahebganj

Sl No.	Municipal Ward/Rural Block	Name of Division	Name of S.D.O. Electric Supply Sub Division	Mobile No.	Name of Junior Electrical Engineer	Mobile No.	Name of Area Electricity being Supplied
1	Sahebganj Town	Sahibganj	Er. Anup Kumar Bihari	94311 35862	Er. Alka Raj	94319 45918	East part of Sahebganj Town
2	Mandro Block				Er. Murli ManoharPrasad	94709 22344	West part of Sahebganj Town
3	Borio Block				Er. Ashok Priye	99056 95079	Borio, Mandro Block and Outside of sahebganj Town
4	Rajmahal Block		Er. Pramod Kumar Gupta	72509 40800	Er. Narayan Jha	70337 72884	Rajmahal Town, Surrounding Area
5	Taljhari Block						Taljhari,Udhawa Block
6	Udhawa Block						Tinpahar etc under Electric Supply Sub Division Rajmahal
7	Barharwa		Er. P.N.Singh	88091 82911	Er. David Hansda	80025 71726	Barharwa town, Barharwa Rural
8	Patna						Barhait, Block, Patna Block etc.
9	Barhait						

1. Demographic Data

District → SAHIBGANJ.

Ser No	Heads	Urban	Rural	Total
1	Population	1,59,666	990901	1150567 (Census→2011)
2	Male Population	83499	505892	589391
3	Female Population	76167	485009	561176
4	Children below 06 years	24965	196990	221955
5	Old (above 60 years)	–	–	–
6	Handicapped /Physically challenged	–	–	–
7	ST	6413	301930	308343
8	SC	14851	57490	72341
9	OBC			
10	Endangered Tribe (असुरिया)	–	35,717	35717 (About)
11	Density of Population	–	–	719 Persons/Sq.km. (Census→2011)

2. House Hold Data

No of House Holds	No of APL House Holds	No of BPL House Holds		
		SC	ST	Others
227023 (Census→2011)				

3. Literacy Rate

SC		ST		Others	
Male	Female	Male	Female	Male	Female
–	–	–	–	–	–

T→ 483263, M→ 287303, F→ 195960

4. **Average Rainfall Data** : The average rainfall per year is 1136.4 MM .....mm. The month wise distribution of the same as follows:- Normal Rainfall → 1404.9 MM.

Month	Normal Rainfall (in mm)	Actual rainfall (in mm) 2011	2012	2013	2014
January	16.8	0.0	0.0	0.0	0.0
February	16.5	0.0	0.0	0.0	93.2
March	14.2	0.0	0.0	0.0	2.4
April	23.8	105.4	164.4	137.1	0.0
May	80.5	805.0	67.2	635.8	1758.0
June	236.9	2540.8	611.2	1715.0	
July	320.6	1829.3	3702.8	969.7	
August	310.5	3583.1	967.5	2732.6	
September	259.1	1744.9	2577.72	1276.8	
October	107.0	097.4	675.1	2186.7	
November	16.2	0.0	311.8	29.4	
December	02.8	0.0	0.0	0.0	
	Total - 1404.9 MM.	9795.5	9077.72	9882.5	
	Average →	1088.3	1008.6	1075.8	

5. **Geographical Data**

Total Area	Urban + Rural	Forest (Hect)	Cropped (Net shown Area)
	196678.34 Hect	30882.384	70876.090 Hect
Percentage	— —	15.70 %	36 %

Education:

Office	Officer	Address	Tel (o)	Tel (r)	Fax	Mobile	E-mail
District Education Officer	Dr. Aruna Nath	Sahibganj	06436-224180	—	06436-224180	9431389113	deosahibganj@gmail.com
District Superintendent of Education							
D.P.O., SarvaSikhshaAbhyan							
Principal, JawaharNavodayaVidyalaya							
Principal, KendriyaVidhyalaya							

Additional Information:

Sr. No	Department	Type Of School	Number of School
1	Education Department / SarvaSikhshaAbhyan	Govt. Primary School	
		Un Aided Primary School	
		Government Middle School	
		Un-Aided Government Middle School	
		Government Basic School	02
		Navodaya School	01
		KendriyaVidhyalaya	01
		Government High School	22+38=60
		Minority High School	02
		Project High School	03
		Kasturba Gandhi Residential School	09
2	Welfare Department	Adiwasi Residential Middle School	
3	Higher Education	Inter & Degree Colleges	

Name of DFO:- Sushil Soren
Mobile No. – 9431134548
Land Line No. – 06436-222065

Details of forest

SL. No.	Muncipal Ward/Block	Forest area (In lac hectare)	Type of thereat		Ranger's Name and contact No.	Remarks
			Jungle Fire	Elephant Menace		
1	2	3	4	5	6	7
1	Sahibganj, Borio, Banjhi		Yes	Yes	Md. Basarat Hussain, 9308245044	
2	Taljhari, Udhwa Rajmahal		Yes	Yes	Sri Saba Alam Ansari, 7762820162	
3	Barhait, Barharwa		Yes	Yes	Sri Saba Alam Ansari, 7762820162	
4	Mandro		Yes	Yes	Sri Sitaram Bhagat, 9955486175	

Details of Forest Offices, Outposts and Rest House

S. N	City /Block	Name of Forest Offices, Outpostst and Rest House	Location	Name and mobile No. of contact person	Number of persons available	Vehicles availability details
1	2	3	4	5	6	7
1	Sahibganj, Borio, Banjhi	Md. Basarat Hussain, 9308245044	Sahibganj	Md. Basarat Hussain, 9308245044	7	Nil
2	Taljhari, Udhwa Rajmahal	Sri Saba Alam Ansari, 7762820162	Taljhari	Sri Saba Alam Ansari, 7762820162	5	Petrolling Vehicle
3	Barhait, Barharwa	Sri Saba Alam Ansari, 7762820162	Barharwa	Sri Saba Alam Ansari, 7762820162	5	Petrolling Vehicle
4	Mandro	Sri Sitaram Bhagat, 9955486175	Mandro	Sri Sitaram Bhagat, 9955486175	6	Nil

Health and Family welfare Department, Sahibganj District

Name of Civil Surgeon- **Dr. A.K SINGH**
Mobile No. 9931006353 , Landline No. 06436- 224577
Fax No 06436- 224577, Email id. Cs.sahebganj@gmail.com

1. Government/ Private Health Infrastructure Details

Ser No	Name of Hospitals/ Health centres	Location	Contact No	Name of Doctor In-charge	Bed capacity(In Number)	No of Doctors	No of Ambulance	Specialisation/ facilities
1	Sadar Hospital Sahibganj	2 Km.	9431134424/ 9571130899	Dr. Bijay Kumar Bhagat	100	10	2	Blood Bank/ Patho Test/ X-ray/ seasorean
2	Sub Divisinol Hospital Rajmahal	25 Km.	9931204554	Dr. Alimuddin	50	6	2	Patho Test/ X-ray
3	Refral Hospital Barhait	60 Km.	9431090043	Dr. Aravind Kumar	40	6	2	Patho Test/ X-ray
4	CHC Barharwa	55 Km.	7764849486	Dr. K.D. Murmu	30	4	0	Patho Test/ X-ray
5	CHC Pathna	65 Km.	9431369346	Dr. P.	30	3	0	Patho test
6	CHC Borio	35 Km.	9431625083	Dr. K. Uranw	30	3	2	Patho Test/ X-ray
7	CHC Taljhari	25 Km.	9661510489	Dr. A. Kumar	30	4	0	Patho test
Primary Health Centres/ Block Hospital		Location from CHC						
1	PHC Kotalpokhar	20 Km.	9934108712	Dr. B. Mishra	6	1	–	–
2	PHC Gowalkhor	20 Km.	9973854553	Dr. H. Raja	6	1	–	–
3	PHC Phulbhanga	15 Km.	9798749422	Dr. A.K. Singh	6	1	–	–
4	PHC Borbandh	25 Km.	8252243834	Dr. S. Tudu	6	1	–	–
5	PHC Banjhi	7 Km.	9471324892	Dr. R.	6	1	–	–
6	PHC Mandro	25 Km.	9973834534	Dr. N. Singh	6	1	–	–
7	PHC Mirzachouki	30 Km.	9631804154	Dr. S.K. Singh	6	1	–	–
8	PHC Fudkipur	25 Km.	9431517889	Dr. A. Ansari	6	1	–	–
9	PHC udhwa	15 Km.	8083466960	Dr. N. Prasad	6	1	–	–
10	PHC Tinpahar	15 Km.	9431618998	Dr. G. Mallik	6	1	–	–
Sub Health Centres/ Panchayat or Village level Hospital/Relief Centres								

Mobile Medical Units No.		Allocated Block			–	1	–	Pathology/X- ray
1	JH 01 V 4793	Taljhari/Udhwa Block	9434381674	Dr. Nijamuddin Shekh	–	1	–	Pathology/X- ray
2	JH 01 AA 4844	Borio Block	9939703504	Dr. R.P. Choudhary	–	1	–	Pathology/X- ray
3	JH 01 AG 9584	Barharwa/ Rajmahal block	8084516100	Dr. Nikhil Kumar	–	1	–	Pathology/X- ray
4	JH 01 AA 4847	Sahibganj/ Mandro Block	9798102324	Dr. Pradeep Narayan Singh	–	1	–	Pathology/X- ray
Private Hoapital								
1	Shital Hospital Kenduwa	75 Km.	8084516100	Dr. P. Chatarji	50	3	1	Patho Test/ X-ray/ seasorean
2	Prem Jyoti Hospital Chandragora barhait	70 Km.		Dr. Ishakh	10	3	1	Patho Test/ X-ray/ seasorean
3	Surya Nursing Home Sahibganj	1 Km.	06436-222323	Dr. Bijay Kumar	10	2	0	Patho Test/ X-ray/ seasorean

2. **Summary Hospital**

Details	Number of Government Hospital	Number of Private Hospital	Total
Number of Hospital	18	3	21
Bed Capacity	400	70	470
Number of Doctors	53	8	61
Number of Paramedical	298	50	348
Number of Ambulances	9	2	11

3. **Burn/ trauma/ Emergency Centres**

ser No	Name of **Emergency Centres**	Location	Contact No	Patient Handling capacity(Number of Patients that can be handled
1	Sadar Hospital Sahibganj	2 Km.	9431134424/ 9571130899	
2	Sub Divisinol Hospital Rajmahal	25 Km.	9931204554	
3	Refral Hospital Barhait	60 Km.	9431090043	
4	CHC Barharwa	55 Km.	7764849486	
5	CHC Pathna	65 Km.	9431369346	
6	CHC Borio	35 Km.	9431625083	
7	CHC Taljhari	25 Km.	9661510489	

4. **Summary of Doctors**

Ser No	Specialisation	Doctor's Name	Contact No	Address
	Medical Specialist	Dr. Niral Sanga	9571130899	Sadar Hospital sahibganj
	Gynaecologist	Dr. P.P. Pandey	9431674151	Sadar Hospital sahibganj
	Paediatrics	Dr. Mahmood Alam	9431618998	Sadar Hospital sahibganj
	Surgical Specialists	Dr. A.K. Jha	9968161010	Sadar Hospital sahibganj
	Obstetricians			
	M.D.	Dr. Dinesh Murmu	9431771524	Sadar Hospital sahibganj

5. **Summary of Paramedics**

Ser No	Type of Paramedical	Community Health Centres/ District Hospital/ Sadar Hospital	Primary Health Centres/ Block level Hospital	Sub Health Centres/ Panchayat or Village level Hospital	Private Hospital	Total
	Health worker (Female) ANM	30	16	282	20	348
	Health worker (Male)	24	20	141	20	205
	Health Assistant (Female)/LHV	5	0	0	0	5
	Health Assistant (Male)	2	0	0	0	2
	Nursing Staff	12	0	0	0	12
	Radiographer	7	0	0	3	10
	Pharmacist	11	0	0	3	14
	Lab Technicians	13	8	0	3	24

Mining and Geology Department

District Mining Office, Sahibganj

Name Of District Mining Officer :- Sri Ashok Kumar Rajak

Mobile No. 9431156018

1. Mining Lease Data (Major Mineral)

Sl No.	Anchal	Mineral	Number Of lease	Number of Labour
1	2	3	4	5
1	Ranmahal	Chaniaclay	12	366
Total Number :-			12	366

2. Mining Lease Data (Minor Mineral)

Sl No.	Anchal	Mineral	Number Of lease	Number of Labour
1	2	3	4	5
1	Patna	Stone	118	1186
2	Taljhari	Stone	193	1950
3	Mandro	Stone	73	750
4	Borio	Stone	33	325
5	Berhet	Stone	04	42
6	Barharwa	Stone	12	128
7	Udhwa	Stone	04	38
Total Number :-			437	4419

URBAN DEVELOPMENT DEPARTMENT

Sl. No.	Name of Municipal Corpoaration	Location of Urban Development Body's Office	Details of Equipment Head		Contact Person Name and Mobile No.	Remarks
			Name of Equipment	Numbers		
1	Nagar Parishad, Sahibganj.	Sashi Bhusan Roy Road, Near Sadar Aspatal(old) Sahibganj.	Excavators	Nil	Executive Officer	
			JCB	Nil		
			Heavy Duty Crains	Nil		
			Tippers	Nil		
			i. Tractors with trolly	5		
			ii. Fogging machine	1	9431626236	
			iii. Spray (Larva) machine	14		
			iv. Septic Tank Cleaner	1		not in use
			v. Water tanker	8		3 No's not in use
			vi. Computer Set	2		
			vii. Fax machine	1		
			viii. Hand Trolly	30		
			ix. Xerox machine	1		

कार्यालय– जिला शिक्षा पदाधिकारी, साहेबगंज।

आपदा प्रबंधन के अन्तर्गत बाढ़ प्रभावित माध्यमिक विद्यालय / मदरसों की सूची

क्र0	विद्यालय / मदरसा का नाम	प्रखण्ड
1	हरिजन उच्च विद्यालय फुदकीपुर	उधवा
2	उच्च विद्यालय राधानगर	उधवा
3	स्वामी विवेकानन्द उच्च विद्यालय श्रीधर	उधवा
4	जी0एन0 उच्च विद्यालय अमानत पियारपुर	उधवा
5	मदरसा तंजीमूल मुस्लेमिन, काँकजोल	बरहरवा
6	मदरसा इस्लाहुल मुस्लेमिन, मधवापाड़ा	बरहरवा
7	मदरसा अनवारूल उलुम नारायणपुर	बरहरवा
8	मदरसा मजहरूल उलुम हस्तीपाड़ा	बरहरवा
9	मदरसा फैजुल उलुम हरिहरा	बरहरवा
10	मदरसा बसीरूल उलुम अहमदपुर	बरहरवा
11	मदरसा अंजुमन इस्लामिया महेशघाटी	बरहरवा
12	मदरसा ऐनुल उलुम इस्लामपुर	बरहरवा
13	मदरसा रियाजुल उलुम बड़ा चाँदपुर	बरहरवा
14	मदरसा जावेदिया नया जुहीबोना	बरहरवा
15	मदरसा दारूल उलुम छोटा चाँदपुर	बरहरवा
16	मदरसा हुसैनिया जुहीबना	बरहरवा
17	मदरसा जामेया मिल्लतिया पलाशबोना	बरहरवा
18	मदरसा मनवारूल उलुम बालुग्राम	राजमहल
19	मदरसा दारूल उलुम पियारपुर अमानत	राजमहल
20	मदरसा जिनातुल उलुम हिनसिंग टोला, नारायणपुर	राजमहल
21	मदरसा कलीमिया अमीनिया लखीपुर	राजमहल
22	मदरसा सुलेमानिया कोयला बाजार	राजमहल
23	मदरसा हुसैनिया हबीबपुर	साहेबगंज

कार्यालय– जिला शिक्षा पदाधिकारी, साहेबगंज।

आपदा प्रबंधन के अन्तर्गत बाढ़ प्रभावित क्षेत्र के विस्थापितों के लिये अस्थायी त्राण शिविर संचालन हेतु माध्यमिक विद्यालय / मदरसों की सूची

क्र0	विद्यालय / मदरसा का नाम	प्रखण्ड
1	उत्क्र0 +2 जे0 के0 उच्च विद्यालय राजमहल	राजमहल
2	उत्क्र0 + 2 उच्च विद्यालय उधवा	उधवा
3	उत्क्र0 +2 बी0 डी0 उच्च विद्यालय सकरीगली	तालझारी
4	मिल्लत उच्च विद्यालय श्रीकुण्ड	बरहरवा
5	पब्लिक उच्च विद्यालय साहेबगंज	साहेबगंज
6	उच्च विद्यालय कोदरजन्ना	साहेबगंज

********** END OF REPORT **********