



बिहार सरकार

# DISTRICT DISASTER MANAGEMENT PLAN-2022

BY  
DDMA GAYA (BIHAR)

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## Executive Summary

On 23 December 2005, the Government of India took a defining step by piloting the enactment of the Disaster Management Act 2005, which envisaged creating:

1. National Disaster Management Authority (NDMA), headed by the **Prime Minister of India**;
2. State Disaster Management Authorities (SDMAs) headed by the **Chief Ministers**;
3. District Disaster Management Authorities (DDMAs) headed by the **District Collector/Deputy Commissioners** and co-chaired by the elected representatives of local authorities; to spearhead and implement a holistic and integrated approach to Disaster Management.

The Disaster Management Act, 2005 provided the requisite institutional mechanisms for formulating and monitoring the implementation of Disaster Management Plans. This was done to ensure measures by various wings of the Government for preventing and mitigating the effects of disasters and for undertaking a holistic, coordinated and prompt response to any disaster situation.

There has been a paradigm shift in dealing with disasters in the country. Recently, the approach of the Government for dealing with disasters has changed from Relief Oriented Approach to planning, preparedness and mitigation. The focus on capacity building of all the stakeholders is given due emphasis by the State Government for better Disaster Management.

**In the last decade, the government of Bihar has become more sensitised and proactive to address Disaster Risk Reduction across the state. Many guidelines and standard operating procedures are developed. In 2015, Department of Disaster Management Bihar launched its State Disaster Risk Reduction Roadmap focusing on all three measures of Preparedness, Prevention and Mitigation. The Bihar DRR Roadmap, 2015 covers state level to village level DRR activities, focusing on five main components i.e. Resilient Villages, Resilient Livelihoods, Resilient Critical infrastructure, Resilient Basic Services, and Resilient Cities.**

The impact of these disasters like earthquake, flood, drought, lightening incidents, drowning incidents, etc. hinders the overall development effort of the District/ State. Government and the community need to be aware of the risks and take concrete actions to prepare for and mitigate against the natural disasters affecting their place of living. Greater attention by government, community and other stakeholders like Non-Governmental Organizations, Community Based Organizations, and Corporate Sectors should be paid on identifying and reducing disaster risks within local communities.

Gaya district spreading over an area of 4976 sq.km lies between North latitudes 24°30': 25° 06' 00'' and East longitudes 84° 24' 00'' : 85° 30' 00'' with its headquarter at Gaya The district is divided into 4 sub-divisions - **Tekari ,Gaya sadar, Neem Chak Bathani, Sherghati** and 24 administrative blocks namely i) Konch ii) Tikari iii) Belaganj iv) Khizarsarai v) Neem ChakBathani vi) Mohra vii) Atri viii) Manpur ix) Gaya x) Paraiya xi) Guraru xii) Gurua xiii) Amas xiv) Banke bazaar xv) Imamganj xvi) Dumaria xvii) Sherghati xviii) Dobhi xix) Bodh Gaya xx) Tan Kuppa xxi) Wazirganj

xxii) Fatehpur xxiii) Mohanpur xxiv) Barachatti. The district is bounded in the north by Arwal, Jahanabad and Nalanda districts, in the east by Nawada and west by Aurangabad district. The southern part is bounded by Jharkhand state. The total population of Gaya district as per the 2011 census is 4379383 persons with urban population of 575495 persons and the rural population of 3803888 persons.

The district falls under Punpun sub-basin of the Ganga basin. The drainage network in the district is represented by four parallel streams, the Morhar, the Phalgu, the Paimar and the Dhadhar all emanating from the southern plateau and flowing north and northeasterly. The river Phalgu flows from south to north through the area. It is formed by the union of two streams namely Lilajan and Mohana. Lilajan and Mohana are two large hilly streams originating in Hazaribagh Plateau. The width of the Phalgu at the junction of these two streams is about 274 m. These two united streams named as river Phalgu flows northwardly and pass by the town of Gaya where its width is nearly 825 m. The streams, Lilajan and Mohana bring in high floodwater during the peak rainy season. Otherwise they flow as tiny rivulets meandering through wide sandy beds.

The area experiences a continental monsoon type of climate owing to its great distance from the sea. The climate is extreme and comprises three broad seasons-the summer, the monsoon and the winter. The summer months from the middle of March to May are characterized by hot blasts of westerly winds commonly known as '*loo*'. The peak of summer is in May when mercury shoots to 46<sup>0</sup>C. The cold spell starts from December and continues till end of February. During this period the mercury drops down to as low as 2<sup>0</sup>C.

The monsoon sets in the end of June.(Source : CGWB) The months of July and August receive the maximum rainfall when average maximum rainfall of 338.4 and 231.3 mm is recorded. The annual normal rainfall of the district (1901-1970) is 1086 mm. As per available rainfall data, the district of Gaya received annual rainfall between 557.80 mm and 1230.29 mm over a period of 2011 to 2021.

Geo morphologically, the district can be classified into four distinct geomorphic units namely a) rocky upland b) plateau and the Pedi plain c) high level marginal alluvial terrace (Dobhi-Gaya terrace) and d) Sone-Ganga plain. While the upland, plateau and the Pedi plain constitute the erosional landscape, the depositional landscape is portrayed by Dobhi-Gaya stretch of the terrace and the Sone-Ganga plain.

Rocky upland: the southern hill tracts along the border of the district, the extension of the Rajgir hills on the northeast and the hills around Gaya constitute this unit. These hills are outcrops of Chotanagpur Plateau and stand as inliers. The Gaya town is surrounded by Ramshila hill (218 m height) on northern side, Katari hill (having 130 m height) towards west, and Brahma-yoni hill on the southern side (266 m height). Towards North-West of township at a distance of about 24 Km, there stands the Prêt-shila hill (266 m height). Plateau and the Pedi plain: the southern plateau represent the oldest table land having mature, dissected and rolling topography. The Pedi plain is covered by residual soil and slope and sheet wash deposits from bordering hills and inliers.

High level marginal alluvial terrace (Dobhi-Gaya terrace): this is the highest and oldest alluvial plain and always lies above the flood level of the present day river because it is the highest and the oldest alluvial plain, made up of the sediments brought from the erosion of the hills. The contact of the terrace and the pediplain is always transitional as the colluvial deposit often overlaps or interfinger with the alluvial sediments.

Sone-Ganga plain: this unit, primarily high level flood plain of the Ganga and the Sone rivers constitutes the intermediate alluvial plain between the terrace and the present day course of the two rivers. This presents flat, depositional topography consisting of un-oxidised Quaternary alluvial deposit. This geomorphic unit, lying 80-100 m above msl lies to the north and northwest of Paraiya-Khizersarai belt.

Sandy soil, red and yellow soil and younger alluvial soil are the important soil types of the area. The Sandy soil, red and yellow soil are restricted to the southern and northeastern parts of the area occupied by the plateau, the pediplain and the high level marginal alluvial plain (terrace). These soils are locally called *balwat*, *balmat* or *balsundri*, which are extremely deficient in nitrogen and organic matter and hence infertile. younger alluvial soil is restricted to the Sone-Ganga plain. The soil consists chiefly of loam with a small proportion of sand and clay (*kewal*). The soils of this tract are rich in nitrogen and calcium and thus are fertile.

The Gaya district is prone to multiple hazards like drought and earthquake (zone III). The district has also history of occurrences of disasters like Lightning, drowning, fire, road accidents, drought heat wave, earthquake, biological diseases, etc. A hazard risk assessment matrix was prepared based on the probability and frequency of occurrence of hazard in the district and accordingly priority ranking was done.

**Clearly, all these points call up for a plan for effective response of any emergencies and as mandated by the National Disaster Management Act, 2005. With this mandate, the DDMA has the responsibility for preparation of the District Disaster Management Plan by involving all stakeholders.**

This document comprises of Ten chapters namely-Introduction; District Profile; Hazard, Vulnerability, Capacity & Risk Assessment; Institutional Arrangements; Prevention, Mitigation and Preparedness measures; Capacity Building and Training Measure; Response & Relief Measures; Reconstruction, Rehabilitation & Recovery Measures, Budget and financial resources; Monitoring, evaluation and update of DDMP. This document is expected to meet the requirements for dealing with disasters, however, since the community is the first respondent to any disaster, it needs to be empowered for coping up with disasters as well as mobilize their capabilities and capacities for effective Disaster Management.

## **District Disaster Management Plan**

**District Disaster Management Plan of Gaya district has been divided into 10 chapters. Following chapter wise content has been covered in the DDMP;**

### **CHAPTER - 1: INTRODUCTION**

This introductory chapter contents includes importance of DDMP in Gaya, Disaster Management mainstreaming into sustainable development, reference of 2005 DM Act relevant sections and Bihar DRR Roadmap 2015-2030, Objectives, Scope, Methodology, Implementation, yearly review and updation of DDMP and Main Stakeholders with their responsibilities

### **CHAPTER - 2: DISTRICT PROFILE**

The contents in this chapter includes Geographical features Climate Weather profile including respective Maps/ graphs etc., Cultural and Historical Perspective Demographic profile, Administrative structure, Natural resources, Main occupation etc.

### **CHAPTER - 3: HAZARD, RISK, VULNERABILITY AND CAPACITY ANALYSIS**

The contents include the districts Hazard Profile, Vulnerability-risk analysis, Capacity analysis.

### **CHAPTER - 4: INSTITUTIONAL ARRANGEMENT**

The contents includes institutional and functional capacities, the roles and responsibilities for different government departments and for different stakeholders such as DDMA, PRIs, CBOs, District EOC and their Coordination mechanism during different disasters including **early warning system and further response for district level different disasters.**

### **CHAPTER - 5: PREVENTION, MITIGATION AND PREPAREDNESS MEASURES**

The content includes key powers & functions of all departments/ agencies in the event of any threatening disaster situation or disaster area. Also explains the how the preparedness measures at the district have to be operational checked up by the DDMA.

### **CHAPTER - 6: CAPACITY BUILDING AND TRAINING**

The contents includes approaches of awareness generation and institutional capacity building of officials, policy makers, engineers, architects, masons, doctors, nurses, teachers, police, fire personnel, drivers, NGOs and volunteers (NYK, NCC, NSS), schools and colleges and other stakeholders like CBOs, Communities and PRIs/ULBs, Professionals including training institutes and other facilities.

### **CHAPTER - 7: RESPONSE PLANNING**

The contents describe in details how effectively the disaster response planning can provides rapid and disciplined incident assessment to ensure a quickly scalable, adaptable and flexible response. It also

defines the roles and responsibilities for incident response across all levels of the government and private sectors.

### **CHAPTER - 8: RECONSTRUCTION, REHABILITATION AND RECOVERY**

The contents include the process, strategies and technical details for the DDMA and for all line departments on Reconstruction, Rehabilitation & Recovery measures to build back better than before the activities in the post-disaster phase.

### **CHAPTER 9: BUDGET AND FINANCIAL RESOURCES**

The contents includes how funds to be created at various level and would be used by the DDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines.

### **CHAPTER 10: MONITORING, EVALUATION and UPDATION OF DDMP**

The content includes essential guidelines for monitoring and evaluation of the DDMP. It also involves a combination of training events, exercises etc. to determine whether the goals, objectives, decisions, actions and timing outlined in the plan will result in an effective response.  
chapters mentioned in the DDMP

### **DEFINITIONS**

The contents include the technical words and terminology used in the DDMP as per DM Act 2005, UNISDR terminology- 2009 and 2016.

### **ABBREVIATIONS AND ACRONYMS**

The contents include various short forms of the words used in the DDMP.

### **REFERENCES**

The contents include the various details used in the DDMP as per BSDMA, NDMA and central and state government sources.

Approval and Review Mechanism of DDMP is as per Section 30 and Section 31 (4) of DM Act 2005. As per Section 31 (4), DDMA acts as the district planning; coordinating and implementing body for disaster management and take all measures for the purpose of DM in the district in accordance with the guidelines laid down by the National Authority and the State Authority. Accordingly, the District Plan is prepared by the DDMA, after consultation with the local authorities and having regard to the NDMP and the SDMP. The District Plan shall be reviewed and updated annually as per Section 31 (4) of the DM Act 2005.



## CHAPTER 1: INTRODUCTION

The district of Gaya is one of the multi-hazard prone districts of Bihar. So it was important to develop a plan that improves district's response to disasters, by improving its ability to mitigate the disaster risks and increasing community's resilience by implementing the preparedness plan.

It was important to put a plan in place for dealing with disasters in an organized way with all the stakeholders well aware of their role in responding to or preparing for disasters, as the district management is in charge for responding to disasters through its Incident Response Team in the disaster site. The State and the Central governments are also in-charge for providing extended support, guidance, external resources or additional help as required in case of any major disasters and upon the request of support from the district. **Under the DM Act 2005, it is mandatory as a role of District Disaster Management Authority (DDMA) to adopt the continuous and integrated process of planning, organizing, coordinating and implementing measures, which are necessary and expedient for prevention as well as mitigation of disasters.** These processes are to be incorporated in the developmental plans of the different departments to ensure the risk-informed development planning. . The actions described in the Bihar Disaster Risk Reduction Road map were also discussed with the District Disaster Management Authority of Gaya and incorporated in this disaster management plan.

The vision of District Disaster Management Plan is to enable disaster resilient and risk-informed development in Gaya district and provide services that are essential for the life and dignity of citizens during disaster and non-disaster situations. In the light of the Sendai Framework for Action (SFA), **Bihar Disaster Risk Reduction Roadmap 2015-2030** that ensures

- Meet all the challenges of natural and manmade calamities
- Reduce economic losses caused by disasters by 50 percent, and the loss of lives by 75 percent.
- Ensures all buildings of public gather such as schools, hospitals, offices and government buildings should be built to be earthquake-resistant, and older buildings should be reinforced to be stable in the event of a disaster.
- Ensures that all the safety norms stipulated therein are adhered to by people as well as the government machinery.

This Disaster Management Plan incorporates both DM Act 2005 and Bihar DRR Road Map 2015-2030 arrangements within the Gaya District to provide whole-of government planning and coordination capability to support local governments in disaster management.

### 1.1: Objectives

Objectives of this DDMP comply with the Disaster Management Act, 2005, which are as below:

- Assess all risks and vulnerabilities associated with various disasters in the district.
- Prevention and minimization of loss of human lives and property by gearing up preparedness, prevention and mitigation of disasters.

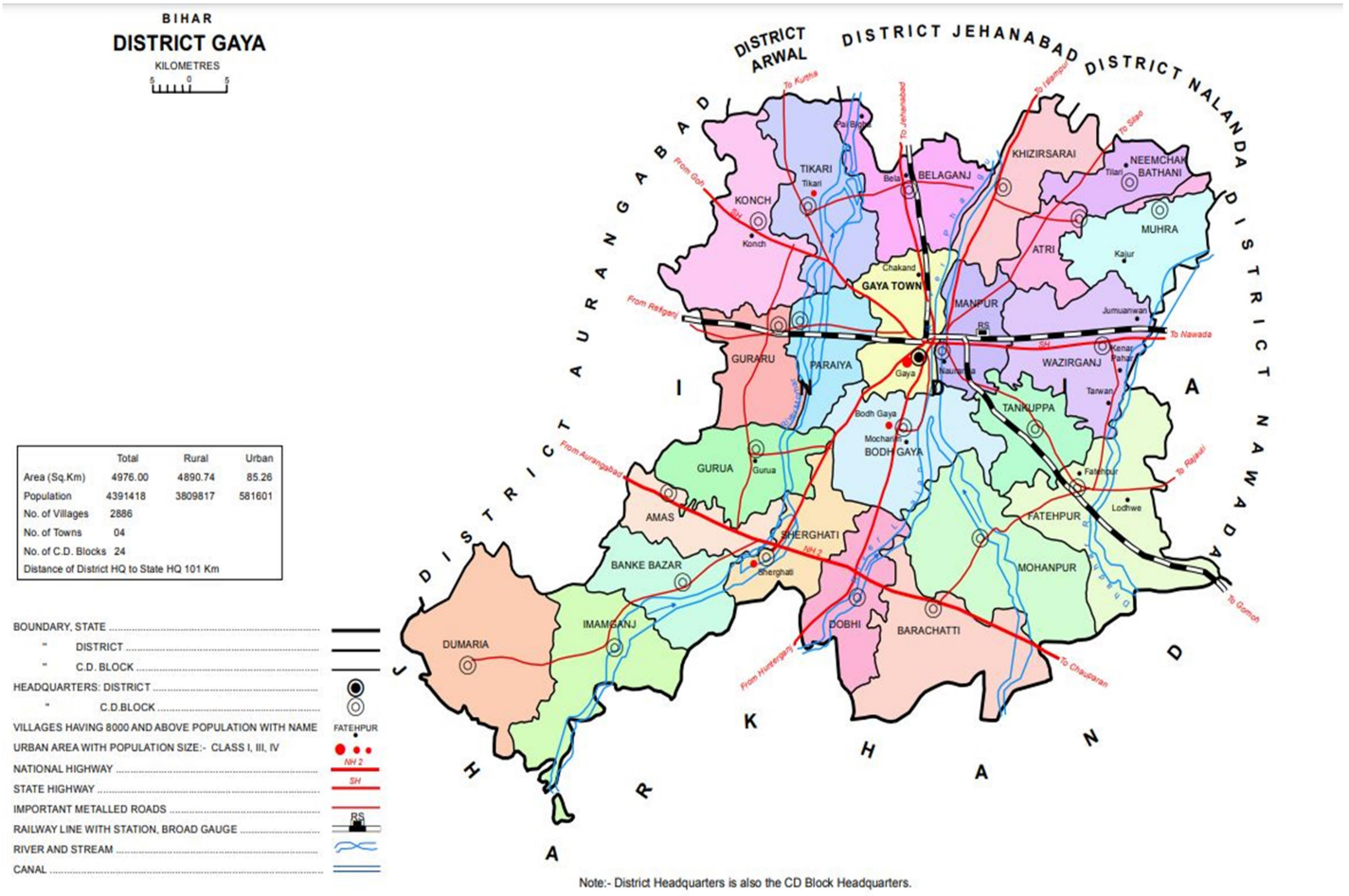
- To provide clarity on roles and responsibilities for all stakeholders concerned with disaster management to manage disaster more effectively.
- Assisting the line departments, Block administration, urban bodies and communities in developing coping skills for disaster management & ensuring that community is the most key stakeholder in the Disaster Management process.
- To strengthen the capacities of the community and establish and maintain effective systems for responding to disasters.
- Developing convergence of action in addressing, preventing and mitigating disasters and to equip with maximum possible relief measures and to resort to pre-disaster, during and post-disaster steps.
- Mainstreaming disaster management concerns into the developmental planning process as well as into climate change adaptation.
- To address gender issues in disaster management with special thrust on empowerment of women towards long term disaster mitigation.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology support.
- Encourage training and create awareness, mock drills, dissemination of knowledge, and information on disaster management among all the citizens living in the district.
- Ensuring relief and assistance to the affected.
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitat, promote sustainable recovery framework.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage.

### **1.2: Scope of the Plan:**

The scope of district disaster management plan of Gaya district is very wide, and it is applicable in all the stages of disasters (before, during, after & non-disaster time). The plan is prepared by considering both natural and man-made disasters and the most vulnerable population in the Gaya district. The plan also covers roles and responsibilities of all key stakeholders in different stages of disaster, covering Line departments, CBOs, Media, Community, PRIs, /Municipality etc. The DDMP can help officials in taking important decisions and provide guidance to direct subordinates in emergency. It is important for the District Disaster Management Authority members to look after the district and sub-district level institutional activities pertaining to the disaster management, including the periodic review of DDMP and allied functions. DDMP is an operational module for district administration (owned by the DDMA) and it helps to mitigate the different types of disasters with locally available persons and resources effectively. It also ensures a checklist for all the stakeholders for an action-oriented response structure and to study their preparedness level.

## CHAPTER 2: DISTRICT PROFILE

Gaya is the second-largest city in Bihar which was officially established on 3 October 1865. Gaya District comprises four sub-divisions: Gaya Sadar, Neemchak Bathani, Sherghati, Tekari. Gaya was passed on to Britishers after the battle of Buxar in 1764. Gaya, along with other parts of the country, won freedom in the year 1947. Gaya formed a part of the district of Behar and Ramgarh till 1864. It was given the status of independent district in 1865. Aurangabad and Nawada Districts were carved out of original Gaya in the year 1976. (Source: <https://gaya.nic.in/history/>) Gaya district is located at 111 meter above the mean sea level having the large forest areas and long hilly terrain bordering the district from all the sides become obstacles for the administration in maintaining the law and order as it offers favourable terrain for the Naxalites to operate and build their bases.



### 2.1. Geographical features

Gaya district is located in the southern part of Bihar state. The district of Gaya is spread in an area of 4976 Sq. Km. and lies between North latitudes  $24^{\circ}30' : 25^{\circ}06'00''$  and East longitudes  $84^{\circ}24'00'' : 85^{\circ}30'00''$  Degree towards East longitude and 24.5 to 25.10 Degree towards North latitude. Gaya is

bordering Arwal, Jehanabad and Nalanda district in North, Palamu, Chatra and Hazaribagh district of Jharkhand in South, Nawada district in East and Aurangabad district in the West.

## 2.2. Climate Weather profile

Gaya lies in the Northern Plain, Hot Subhumid (Dry) Eco-Region (9.2) of Agro Ecological Sub Region by ICAR and Middle Gangetic Plain Region (IV) of Agro Climatic Zone defined by Planning Commission while in South Bihar Alluvial Plain Zone (BI-3) of Agro Climatic Zone by NARP.

Gaya being surrounded by hills from three sides and one side by a river makes the region experience seasonal temperature. In summer which begins in May and continues till July temperature ranges from 20.5°C to 44.5°C while during the winters, the temperatures range from 4°C to 28°C. The maximum temperature recorded in the district is 49° C while the minimum temperature reduces to 2° C.


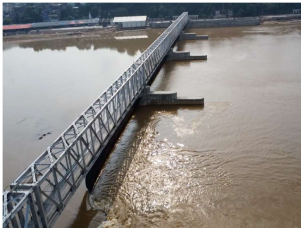
Month	Max. Temp (°C)					Min.Temp. (°C)				
	2018	2019	2020	2021	Average Max. Temp.	2018	2019	2020	2021	Average Min Temp.
January	27.5	29.9	26.4	29.4	28.3	2.8	3.2	4.6	3.0	3.4
February	33.1	31.2	29.7	34.3	32.075	9	6.7	5.2	3.4	6.075
March	40.5	40	36.1	41.4	39.5	29.8	25.1	18.7	11.4	21.25
April	42.7	44.3	40.2	42.0	42.3	18	15.8	16	13.6	15.85
May	44.6	44.9	45.8	41.3	44.15	21.8	21.4	17.2	19.8	20.05
June	43.5	45.6	39.7	39.6	42.1	22.4	24.7	23.6	22.4	23.275
July	39.7	38.3	36.4	36.9	37.825	24.2	23.2	24.1	24.0	23.875
August	35.7	36.4	35.3	35.2	35.65	23.6	23.6	23.7	23.5	23.6
September	34.2	35	35.8	26.2	32.8	21.6	22	23.8	23.0	22.6
October	34.7	32.6	34.5	24.8	31.65	14	17.4	13.4	15.0	14.95
November	32.9	30.4	31.9	19.5	28.675	9.6	12	6.5	9.8	9.475
December	27.8	27.9	29.1	16.2	25.25	2.7	2.4	3.6	4.1	3.2
Average->	36.4083	36.375	35.075	32.2333		16.625	16.5	15		



(Source- IMD, Patna)

## 2.3 Cultural and Historical Perspective

Gaya has been occupying an important place in the history of culture of the region. Generally spoken language in Gaya is Magahi, and people understand, speak and write Hindi and Urdu also. The staple food of the people in Gaya are Rice, Dal, Chapaties, Vegetables, Non-Vegetarian items, Items of Gram Flour; Litti, and Chura-Dahi (Curd). Important festivals of Hindus are Holi, Diwali, Dusehera, Chhath, Jitiya, Bhaiya-Duj, etc. are celebrated in the district. Important festivals of Muslim communities are Id-Ul-Fitr, Baqrid, Muharram, and specific festivals of the tribes are Karma, Manda, Sarhul, Jain Shikhar etc. are celebrated in the district. Kalachakra is famous Bodh festival celebrated every year in Gaya which lasts for ten days. The main motive of this festival is to bring peace in the world. Gaya is one of the holiest spots for the Hindus and Buddhists. “Vishnupad temple” is well

known for performing “Pind-Daan” during “Pitripaksh” helps in attaining Moksha to the souls of the ancestors. There is regular flow of pilgrims in the town to offer pindas in the Gaya kshetra or dham. The flow of pilgrims peaks up during Pitrupaksha, the first fortnight of the Hindi month of Ashwin, corresponding to September-October. Bodhgaya is the same place where Lord Buddha stayed for and attained enlightenment at Bodh Gaya, where Lord Buddha achieved Nirvan or enlightenment is situated about 11 Km. south of Gaya town, is also the holiest place for the Buddhists. Buddhists from different countries visit the spot almost daily. There is an ancient temple of Buddha believed to have been raised by the Emperor Ashoka called “Mahabodhi temple” dedicated to Lord Buddha.

S N o	Places/Centres/ Spots	Description	Hazard Risk
1	<p><b>Mahabodhi Temple, Bodhgaya</b></p> 	<p>The Mahabodhi Temple Complex is one of the four holy sites related to the life of the Lord Buddha, and particularly to the attainment of Enlightenment. The first temple was built by Emperor Ashoka in the 3rd century B.C., and the present temple dates from the 5th or 6th centuries. It is one of the earliest Buddhist temples built entirely in brick, still standing in India, from the late Gupta period.</p>	<p><b>Stampede and Fire during festival celebration, Terror attacks.</b></p> <p>The Kalachakra festival is organized in Bodhgaya, the place where Lord Buddha attained enlightenment and lasts for ten days wherein a large number of people come together to create inner peace. The Kalachakra festival includes a number of meditation, prayers, chants, vows and dances. This ancient ritual is performed with a single aim of bringing in world peace. Kalachakra Festival is celebrated on a large scale where the Dalai Lama gives a session of his teachings to a huge public audience.</p>
2	<p><b>Gaya Ji Dam, Falgu River</b></p> 	<p>Built in Gaya, a famous pilgrimage site of Hindus and Buddhism, this rubber dam will keep water in the Falgu river throughout the year. This will facilitate people in bathing, pind daan and tarpan.. Its rubber tube has an automatic system for filling and removing air. Balloon air can be removed when the water is high. This will prevent and release water as per the need. The Austrian company and the Hyderabad-based agency have prepared it together. The rubber dam</p>	<p><b>Drowning, prior to formation of this dam Falgu river was known for water in very less amount but after formation of this dam water in this river has increased in a good level. As this dam is situated near holy places like Vishnupad Temple, Deoghat, Gayatri Ghat, Sitakund, etc. Devotees perform their holy rituals in river so the chance of drowning increases. On the</b></p>

		is made of 17 mm thick rubber. It is bulletproof. At the same time, it is being claimed that it will not deteriorate for one hundred years.	<b>occasion of Pitripaksh it attracts a very large number of devotees and tourists.</b>
3	<b>Vishnupad Temple, Gaya</b> 	<p>The Vishnupada Mandir is the ancient temple in Gaya, India. It is a Hindu temple, dedicated to Lord Vishnu. This temple is located along the Falgu River, marked by a footprint of Lord Vishnu known as Dharmasila, incised into a block of basalt. The construction date of the temple is unknown and it is believed that Lord Rama along with Sita had visited this place. The present day structure was rebuilt by Devi Ahilya Bai Holkar, the ruler of Indore, in 1787, on the banks of the Falgu river. A flight of 1000 stone steps leads to the top of the Brahmajuni hill, 1-km southwest of the Vishnupad mandir.</p>	<p><b>Stampede and Fire during festival celebration, Terror attacks.</b></p> <p>This temple is situated at the bank of Falgu River and is famous for PitraPaksh Rituals. This 16-day period is known as PitruPaksha, or shradh in the Chaturmas period. It is believed that the soul wanders in various worlds after a person dies. To ensure it finds peace and tranquility and blesses those who are alive, people perform shradh rituals and repay their debts to the dead ancestors.</p>
4	<b>Dashrath Manjhi Hill.</b> 	<p>The Gehlour hills are a low-but-treacherous spine of mountainous terrain that once divided the settlements and services on either side. In fact many villagers from Manijhi's town had to trek for miles around the hills just to reach their fields and schools. However this all changed with the tragic death of Manjhi's wife, Faguni Devi. Devi was traversing the narrow path across the tall hills to bring her husband some water when she was seriously injured. The nearest medical facility was over 40 miles away and Devi perished shortly after her accident.</p>	<p><b>Earthquake, debris, fall, stampede, road accidents etc.</b></p> <p>It is a tourist place and situated in the centre of hills. Perished shortly shortly after her accident.</p>


5	<p><b>Koteshwar Nath Dham</b></p> 	<p>Baba Koteshwarnath Temple is situated in Village Main, Block Belaganj, District Gaya. The temple is situated on the confluence of the river Morhar &amp; Dargha in Gaya, is famous for highly sacred Lord Shiva Temple. Located 90km south of Patna, Koteshwarnath temple is believed to have been build around 8th century AD. Koteshwarnath temple's sanctum is carved in a single piece of red stone and within it is installed a large sized Shivalinga with around 1,008 miniature Shivlingas around 1200 years back.</p>	<p><b>Stampede and Fire during festival celebration, Terror attacks.</b></p>
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Table 1 Showing list of prominent heritage sites with its risk

### Demography

Description	Number
<b>Actual Population</b>	<b>43,91,418</b>
<b>Male</b>	<b>2,266,566</b>
<b>Female</b>	<b>2,124,852</b>
<b>Population Growth</b>	<b>26.43%</b>
<b>Area Sq. Km</b>	<b>4976.00</b>
<b>Density/km<sup>2</sup></b>	<b>883</b>
<b>Proportion to Bihar Population</b>	<b>4.22%</b>
<b>Sex Ratio (Per 1000)</b>	<b>937</b>
<b>Child Sex Ratio (0-6 Age)</b>	<b>960</b>
<b>Average Literacy</b>	<b>63.67</b>
<b>Male Literacy</b>	<b>73.31</b>
<b>Female Literacy</b>	<b>53.34</b>
<b>Total Child Population (0-6 Age)</b>	<b>783,059</b>
<b>Male Population (0-6 Age)</b>	<b>399,426</b>
<b>Female Population (0-6 Age)</b>	<b>383,633</b>
<b>Literates</b>	<b>2,297,613</b>
<b>Male Literates</b>	<b>1,368,803</b>
<b>Female Literates</b>	<b>928,810</b>
<b>Child Proportion (0-6 Age)</b>	<b>17.83%</b>
<b>Boys Proportion (0-6 Age)</b>	<b>17.62%</b>
<b>Girls Proportion (0-6 Age)</b>	<b>18.05%</b>
<b>Scheduled Castes</b>	<b>Persons</b>
	<b>1,334,351</b>
	<b>Males</b>
	<b>683,943</b>

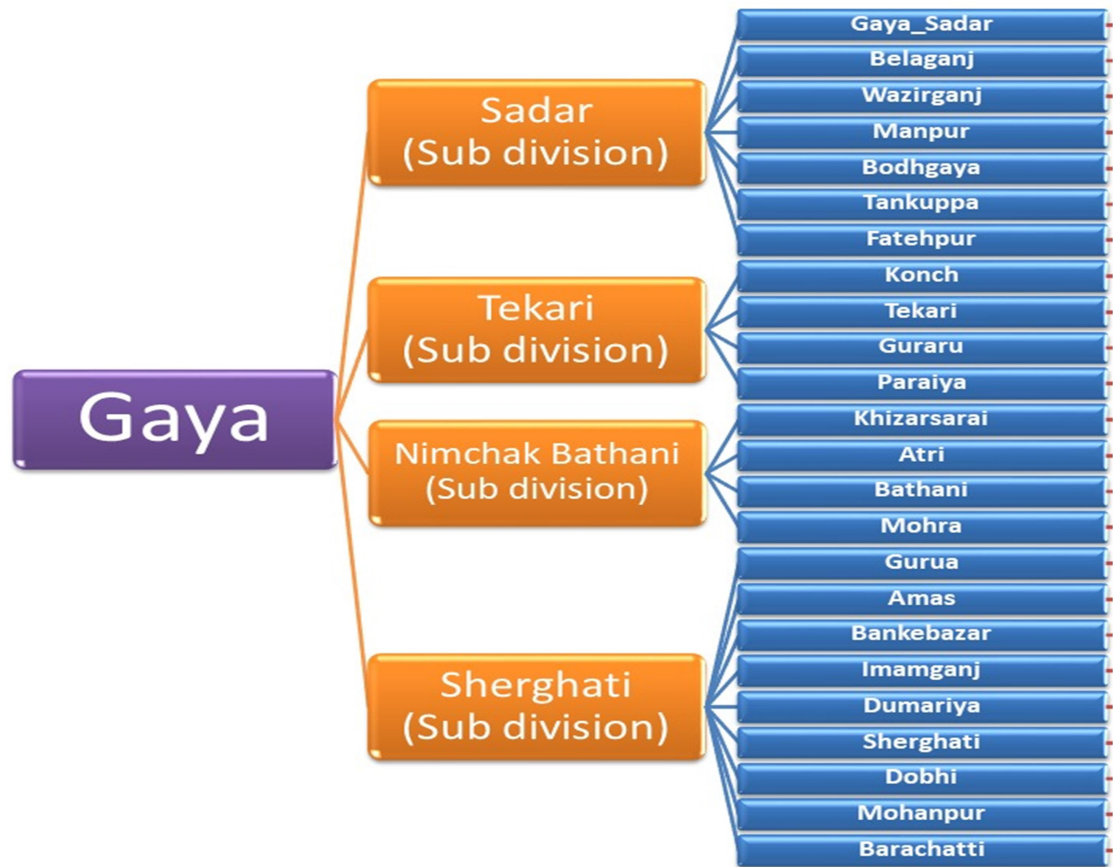
	Females	650,408
<b>Scheduled Tribes</b>	<b>Persons</b>	<b>3,098</b>
	Males	1,635
	Females	1,463
<b>Workers and Non-Workers</b>		
<b>Total Workers (Main and Marginal)</b>	<b>Persons</b>	<b>1,664,062</b>
	Males	1,076,170
	Females	587,892
<b>(i) Main Workers</b>	<b>Persons</b>	<b>1,007,057</b>
	Males	734,465
	Females	272,592
<b>(ii) Marginal Workers</b>	<b>Persons</b>	<b>657,005</b>
	Males	341,705
	Females	315,300
<b>Non-Workers</b>	<b>Persons</b>	<b>2,727,356</b>
	Males	1,190,396
	Females	1,536,960
<b>Category of Workers (Main &amp; Marginal)</b>		
<b>(i) Cultivators</b>	<b>Persons</b>	<b>370,759</b>
	Males	256,469
	Females	114,290
<b>(ii) Agricultural Labourers</b>	<b>Persons</b>	<b>783,505</b>
	Males	471,402
	Females	312,103
<b>(iii) Workers in household Industry</b>	<b>Persons</b>	<b>87,178</b>
	Males	46,783
	Females	40,395
<b>(iv) Other Workers</b>	<b>Persons</b>	<b>422,620</b>
	Males	301,516
	<b>Females</b>	<b>121,104</b>

Table 2 List of Demography of the district

Reference: District Census Handbook, Gaya

<https://www.census2011.co.in/census/district/88-gaya.html>





Particular	Unit	Statistics
Sub divisions	Nos	04
Block	Nos.	24
Nagar nigam	Nos.	1
Nagar Parishad	Nos.	03
Nagar Palika/Panchayat	Nos.	05
Gram Panchayats	Nos.	320
Revenue villages	Nos.	1893
<b>Post offices</b>		
Head Office	Nos.	1
Sub Office	Nos.	44
Branch Office	Nos.	312
<b>Public Health</b>		
Allopathic Hospital	Nos.	47
Beds in Allopathic hospitals	Nos.	656
Community health centres	Nos.	17
Primary health centres	Nos.	8
Dispensaries	Nos.	23

Sub Health Centres	<b>Nos.</b>	473
<b>Banking commercial</b>		
(a) Commercial Bank	<b>Nos.</b>	108
(b) rural Bank Products	<b>Nos.</b>	178
(c)Co-Operative bank products	<b>Nos.</b>	6
<b>Education</b>		
(a) Primary school	<b>Nos.</b>	1696
(b) Middle schools	<b>Nos.</b>	1223
(c) High Schools	<b>Nos.</b>	380

**Table 4: Showing administrative structure of the district**

## 2.4. Demography

Gaya is the 5th highest populated district in Bihar out of the 38 districts. According to the census data, out of total 4391418 of the district most of the population is living in the rural area as only 13.24% (581,601 population as per 2011 census) are living in the urban area while 86.76% (3,809,817 population as per 2011 census) of the population is living in the rural area.

	<b>MALE</b>	<b>FEMALE</b>
	2,266,566	2,124,852
Children (Age 0-6)	399,426	383,633
Schedule Caste	683,943	650,408
Schedule Tribe	1,635	1,463

According to the 2011 Census information Gaya district is having a literacy rate of 63.67% of overall population above the average 61.80% of Bihar. The literacy of male population is 73.31% in compare to the 71.20% of state and the female literacy is 53.34% against the 51.50% of the state.

**The Collectorate plays a pivotal role in District administration. Collector in the Cadre of I.A.S heads the District.**

## 2.6. Natural Resources.

Gaya lies in the tropical to sub-tropical region. Rainfall here is the most significant factor in determining the nature of natural resources. As on 2010-11 land utilization total Area 4, 93,774 Hectare, Forest cover 77,836 Hectare, Non Agriculture Land cover 72,923 Hectare and cultivable Barren land 3265 Hectare only.

**Agriculture:** Agriculture is the mainstay of the economy. The main crops are paddy, wheat, potato and lentils. The main vegetable market is in **Kedarnath** market.

**Water Resources:** Water like ground and mineral resources is of great significance as it provides means of drinking water for man and animals, irrigation for agriculture, industrial uses, production of

hydro-electricity, transportation and recreation etc. The importance of water is so immense that the people in ancient times worshipped it.

The Mohana and Lilajan River flows through the Gaya district, some people refer to this river as the Falgu River in Gaya which contributes a lot to the peoples of Gaya. These rivers make the water available for drinking purposes, irrigation and industries purpose and enrich the natural resources of district in many other ways.

**Forests:** Out of Total 4,976 km 15.67% (77836 hectares) of total geographical area belongs to the category of reserve forests of the district. **The “Gautam Buddha Wildlife Sanctuary Gaya” established in 1976 is covering an area of 259.48sq.km and protected forest area.**

The hot and dry summer gives the deciduous forests. The most important trees are Shorea Robusta (Sal), Shisham, Cedrela Toona, Khair, and Semal.

Fertile Land: Rich farmland and flourishing orchards extend throughout the district. Following are the major crops: paddy, wheat, lentils, etc.

### Main occupation

Agriculture is the main occupation of the district of Gaya. Household level agro and cotton textile based small-scale industries such as agricultural services, production of Tilkut and Lai, incense sticks (agarbattis), stone craft, hand weaving, power-loom weaving, textiles and garments and plastic products. The economy of the district mainly depends upon agriculture.

The District of Gaya Lies Virtually in The Heart of Bihar. This is one of the holiest spot for the Hindus and there is regular flow of pilgrims in the town to offer pindans in Gaya-dham. The District falls under the categories of agriculture dominated but droughts occur when rainfall is not precipitated in the month of rainy season. Kharif & rabi crops fully depended on monsoon. The major agro-ecological situation of the district is (a) Irrigated plain having sandy loam to loam soil (b) rainfed plain having sandy loam, light to heavy textured soil and (c) Hilly upland having rainfed with undulating topography.

<b>Total Geographical Area</b>	<b>493774 Hect.</b>
<b>Total Cultivable Land</b>	<b>228643 Hect.</b>
<b>Total Forest Land</b>	<b>77836 Hect.</b>
<b>Non Cultivable waste Land</b>	<b>27541 Hect.</b>
<b>Land Used in Non-Agriculture Purpose</b>	<b>310873 Hect.</b>
<b>Cultivable waste Land</b>	<b>3237 Hect.</b>
<b>Total Fallow Land</b>	<b>123117 Hect.</b>
<b>Current Fallow Land</b>	<b>111876 Hect.</b>
<b>Other Fallow Land</b>	<b>11241 Hect.</b>
<b>Posture Land</b>	<b>2045 Hect.</b>
<b>Net Sown Area</b>	<b>182901 Hect.</b>
<b>Area Sown more than one time</b>	<b>29968 Hect.</b>
<b>Annual Rainfall</b>	<b>980.25 MM</b>
<b>Soil Type</b>	<b>Clay, Clay-loam, Loam, Sandy-loam</b>
<b>Soil pH</b>	<b>6.5-7.5</b>

(Source : Agriculture Dept.)

Gaya has a large number of informal shops for readymade garments & embroidery, wood/wooden based furniture, leather based, chemical/chemical based, repairing & servicing, engineering unit, metal based. **There is no large scale industry or public sector undertakings in Gaya.**

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## CHAPTER 3: HAZARD, RISK, VULNERABILITY AND CAPACITY ANALYSIS

The importance of HRVC is necessary for Disaster Management planning and the methodology adopted to carry out this exercise in the district to developing understanding of trends of key hazards, vulnerabilities, challenges, (non) availability of capacities or resources, local practices to cope with season and region wise risks and disasters etc. through the technical process of PRA exercises, participatory approaches.

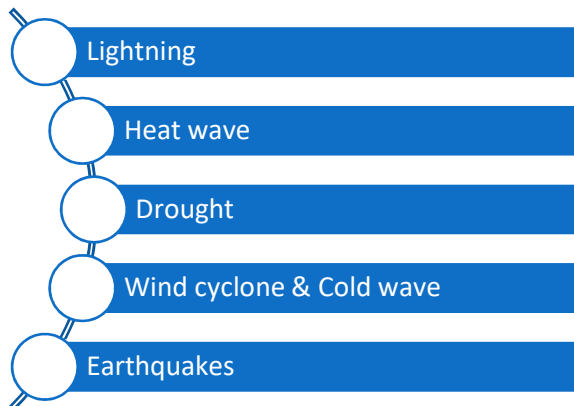
Based on history of occurrence and probability of occurrence of hazards in various Panchayat/ Blocks in Gaya a district hazard profile developed.

Purpose of the HRVCA;

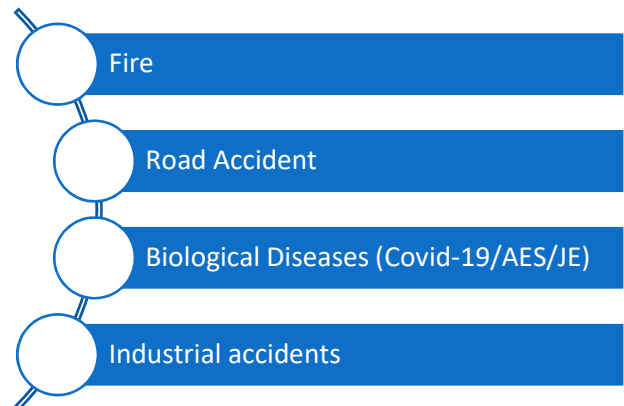
1. Evaluate all hazards, their risk and their impact on life, property and environment;
2. Assess Vulnerability of various settlements and assets to various disasters and reason behind;
3. Identify possible mitigation measures to reduce risk;
4. Identify list of existing resources for disaster management;

### Various types of common disasters in the District;

#### Natural Disasters



#### Manmade Disasters



*Gaya District Hazard profile at a glimpse in the form of chart as follows*

Hazards	Months of the Year												Vulnerable Blocks
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Flood													Bodhgaya, Tekari, Gurua
Drought													Konch, Belagnj, Dobhi, Khizarsarai, Tankuppa
Fire													Khizersarai, Fatehpur, Mohanpur, Imanganj, Bodhgaya
Earthquake													All Blocks
Road Accident													Amas, Dobhi, Bakebazar, Manpur, Khizersarai, Tekari, Nagar
Heat Wave													Nagar, Manpur, Wazirganj, Khizersarai, Konch
Cold Wave													Nagar
Hailstorm													All Blocks
Lightening													Mohanpur, Dobhi, Tekari, Belaganj, Dumariya
Drowning													Mohanpur, Khizersarai, Tekari, Nagar, Manpur

PROBABILITY	INDICATORS
High	RED
Moderate	YELLOW
Low/Negative	GREY

Source :As per report from different blocks.

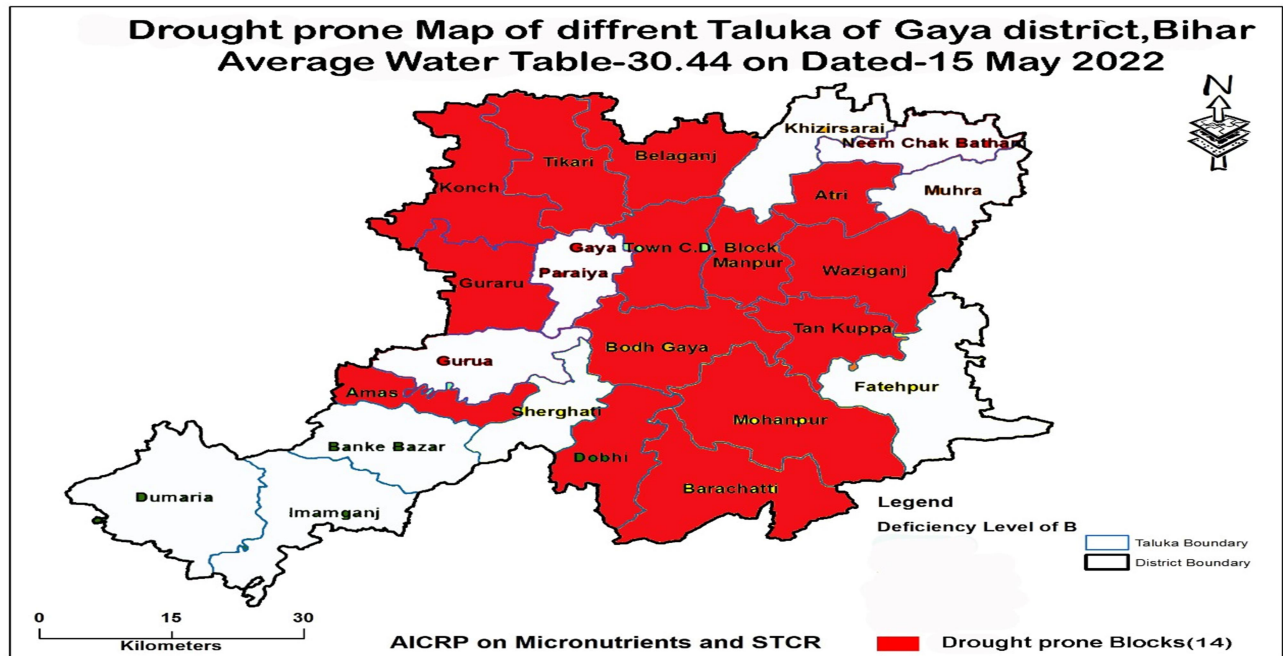
### 3.1 Hazard Profile

#### Hazards Analysis

The Gaya district is prone to multiple hazards like drought and earthquake (zone III). The district has also history of occurrences of disasters like hailstorm, fire, accidents, heat wave, cold wave, Lightening, Drowning, etc. A hazard risk assessment matrix was prepared based on the probability and frequency of occurrence of hazard in the district and accordingly priority ranking was done.

**Disaster History**

<b>Sr. No</b>	<b>Disaster</b>	<b>Year</b>	<b>Vulnerable areas or block</b>
<b>1</b>	Lightning	2018- 2021	Barachatti, Belaganj, Bodh Gaya, Dumariya, Fatehpur, Gurua, Kauch, Wazirganj, Tekari, Mohanpur, Imamganj
<b>2</b>	Drowning	2018- 2021	Atri, Belaganj, Mohanpur, Konch, Barachatti, Manpur, Gurua, Tekari, Imamganj, Gaya Sadar, Wazirganj, Fatehpur, Paraiya, Sherghati, Bodh, Gaya, Khizarsarai, Amas, Dumaria, Bankey Bazar, Dobhi, Tankuppa, Nimchakbathani, Guraru, Muhra
<b>3</b>	Fire Accident	2018- 2021	almost all the 24 blocks
<b>4</b>	Heat Wave	2018- 2021	Paraiya, Guraru, Fatehpur. Tankuppa, Gurua, Dumaria, Imamganj, Barachatti, Mohanpur, Dobhi, Atri, Mohra
<b>5</b>	Wind Cyclone	2010- 2021	almost all the 24 blocks
<b>6</b>	Earthquake	May 12, 2015 March 28, 2012 2008 (07 June) 1985 (17 Feb)	7.3 intensity; 2015 4.9-6.0 intensity; 2012
<b>7</b>	Drought	2019	Atri, Amas Barachatti, Belaganj, Dobhi, Dumariya, Fatehpur, Guraru, Gurua, Imamganj, Manpur, Mohanpur, Mohra, Neemchak bathani, Sherghati, Tankuppa & Wazirganj
<b>8</b>	Road Accident	2018- 2021	Guraru, Paraiya, Chandauti , Manpur, Tankuppa, Fatehpur, Wazirgan



Map- showing water level in the blocks affective agriculture irrigation etc.

## Drought

Occurrences	Reasons	Damage and Loss
<p>Droughts are not sudden disaster but a gradual phenomenon. The effects can be felt particularly between February &amp; May when the water table dips below particularly in Gaya town block, Manpur and Bodhgaya. The effects are felt in both Kharif and Rabi seasons in case of a failed monsoon.</p>	<p>In this part, droughts are mostly Hydrological, meteorological or agriculture drought in nature owing to where kharif crop does not receive sufficient rainfall for good production during monsoon season.</p>	<p>Crop failures have been observed that increases the need for immediate finances and that has often led people to sell cattle.</p> <p>Gaya district is susceptible to drought. Out of 24 blocks 17 blocks (Atri, Amas Barachatti, Belaganj, Dobhi, Dumariya, Fatehpur, Guraru, Gurua, Imamganj, Manpur, Mohanpur, Mohra, Neemchak bathani, Sherghati, Tankuppa &amp; Wazirganj) lot affected regularly due to partial rainfall and depletion of water level. In year 2019 out of 320 panchayats 86 panchayats were severely affected.</p>



	<p>IMD defines drought in any area when the rainfall deficiency in that area is <math>\leq 26\%</math> of its long term normal. It is further classified into moderate and severe drought depending upon whether the deficiency is between 26 to 50% and more than 50 % respectively. to September is less by more than 25% of the long-term In addition, insufficient reach of irrigation channels reduces the irrigation potential and only increases dependency on rain fed agriculture.</p>	<p>Animal health adversely affected due to insufficient fodder availability or high market prices.</p>
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Year	No. of Causality
2019	05
2020	06
2021	04

## Lightning

Occurrences	Reasons	Damages
<p>A lightning strike or lightning bolt is an electric discharge between the atmosphere and the ground. Most originate in a cumulonimbus cloud and terminate on the ground, called cloud-to-ground (CG) lightning. The state also experienced large number of deaths in previous years, 2018 and 2019. But the high number of deaths in such a short time span in 2020 are much rare.</p>	<p>Lightning is an electrical discharge caused by imbalances between storm clouds and the ground, or within the clouds themselves. Most lightning occurs within the clouds. There is direct connection between weather conditions and lightning deaths. This heat causes surrounding air to rapidly expand and vibrate, which creates the pealing thunder we hear a short time after seeing a lightning flash.</p>	<ul style="list-style-type: none"> <li>• 20, July, 2021 one person was dead due to lightning strike in field In Vill – Gangti, of Imamganj block.</li> <li>• 25, July, 2021 a woman was dead due lightening strike in Vill – Rampur of Konch block.</li> <li>• 20, June, 2021 one person died due to lightening strike in field In Vill – Siriyama, of Mohanpur block.</li> <li>• 19, June, 2022 a men and a woman died due lightening strike in Vill – Simariya of Mohanpur block.</li> <li>• 28, July, 2022 a men and a woman died due lightening strike in Vill – Raniganj and Karhara of Tekari block.</li> <li>• 02, September, 2022 1 men and 3 woman was dead due lightening strike in Mohanpur block.</li> <li>• From January 2022 to till September 2022, 44 case has been reported by different block</li> </ul>

		officers.
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Number of deaths from Lightning (2018-2022)						
District	2018	2019	2020	2021	2022	Total
Gaya	11	21	25	12	31	100

## Drowning

Occurrences	Reasons	Damages
<p>The incident of drowning is a human -induced disaster which has increased considerably in the last few years. The status of age -wise death brings a very frightening situation, the death of children and up to 20 years of age is very high. About two -thirds of the monsoon season and about one -three deaths in normal days have occurred due to drowning. It is clear from this that except in winter days, there are more incidence of heat and rain. But it is clear that more or less is dying due to drowning throughout the year.</p>	<p>It has been found in Gaya that due to security measures and lack of public awareness at the places of weak pond / danger ghats / water logging area, drowning cases have increased. The incident of drowning during the festival has killed during the Chhath festival in the last four years and Ganga bath in the month of November.</p>	<ul style="list-style-type: none"> <li>• Total 38 Drowning incidents occurred in this year(2021).</li> <li>• 23, June, 2021 Three (03) person deceased due to drowning in well at Vill – Jaani Bigha Taand, Bodhgaya block.</li> <li>• 22, august, 2022 Two(02) person died due to drowning in Pond at Vill – Kuiwar, Imamganj block.</li> <li>• 21, August, 2022 Two (02) person died due to drowning in well and Pond at Vill – Musaila tola and Savarchak, Mohanpur block.</li> <li>• 27, August, 2022 Two (02) person died due to drowning in Falgu river Vill – Naubatpur and Mahmaddpur, Khizersarai block.</li> <li>• Total 37 incidents occurred in this year 2022 till September</li> </ul>

### Drowning incidents

Name of Blocks	2018 (Total No.)	2019 (Total No.)	2020 (Total No.)	2021 (Total No.)	(Total No.)
Atri	2	3	2	1	8
Belaganj	-	5	1	3	9
Mohanpur	2	3	2	7	14
Konch	-	-	1	3	4
Barachatti	2	2	-	4	8
Manpur	-	2	2	3	7
Gurua	3	-	-	3	6
Tekari	-	4	5	5	14
Imamganj	3	1	1	3	8

Gaya Sadar	3	-	1	1	5
Wazirganj	-	3	-	7	10
Fatehpur	1	-	2	3	6
Paraiya	-	-	-	-	0
Sherghati	-	-	3	1	4
Bodh Gaya	-	3	-	6	9
Khizarsarai	1	4	3	8	16
Amas	4	2	-	3	9
Dumaria	-	-	-	-	0
Bankey Bazar	-	-	-	2	2
Dobhi	2	4	3	3	12
Tankuppa	-	1	-	5	6
Nimchakbathani	-	1	-	1	2
Guraru	-	-	2	3	5
Muhra	-	-	-	3	3
<b>Total</b>	<b>23</b>	<b>38</b>	<b>28</b>	<b>78</b>	<b>167</b>

### Fire:

Occurrences	Reasons	Risk/Vulnerability
<p>A type of manmade disaster, it happens every year mostly in the months of March to May. Sometime it occurs due to mistake made by people during cooking, handling of fuels etc.</p>	<p>Houses made of Thatch are very common in the district that makes houses vulnerable to fire.</p>	<p>Every year there are many houses burnt in various parts of the district. 03, February, 2021 Three (03) person (1 Man &amp; 2 women) were burned to death due to triggering of fire by well-grate (बोरसी) which spreaded in the house in Mohra and Atri block.</p> <p>Report: In Year 2022 till 16 may, 90 incidents reported by blocks officers and district fire officer.</p>
	<p>There are five fire stations in Gaya one in city and four others in subdivisions. According to the National Fire Advisory Committee (NFAC), 1 fire station is required per 50,000 persons.</p>	
	<p>Moreover, owing to high population density, houses are constructed close to each other and dry fodder and dung cakes are stored near the huts. As a result, an outbreak in one house quickly spreads to other houses.</p>	

District	Area (Sq km)	Total Population (Census 2011)	No. of Fire Stations Operational	Average Population per Fire Station
Gaya	4,971	4,379,383	5	875,877

## Road Accidents

Occurrences	Reasons	Damages
<p>There is no pattern of occurrence of Road Accidents. The last major accident took place on 23, July,2021 which killed 7 persons on Dobhi – Chatra highway (NH-99).</p> <p>The occurrences are more likely in the morning, evening and night especially in winter and rainy seasons.</p>	<p>The common reasons and causes behind the accidents in Gaya districts are;</p> <ul style="list-style-type: none"> <li>• Not following traffic rules;</li> <li>• Sharp and Blind curves;</li> <li>• Direct Connection of Rural roads to National Highways without speed breakers;</li> <li>• Excess loading of goods in vehicles;</li> <li>• Uneven and broken Roads and bridges in rural areas;</li> <li>• Heavy population density along with National Highways.</li> </ul>	<p>21, January, 2021 Two people, were killed in a road accident in Vill - Baitaal of Bankebazar block.</p> <p>18, February, 2021, Two person were killed in road accident in Mohanpur block.</p> <p>21, January, 2021 Two people, were killed in a road accident in Manpur block.</p> <p>22, February, 2021 Two person were killed due to truck accident and one injured in Tikari block.</p> <p>Major accident took place on 23, July,2021 which killed 7 persons on Dobhi – Chatra highway (NH-99).</p> <p>04, January, 2021 Two people, were killed in a road accident in Nagar block.</p>

### Accidents According to the Classification of Road-2021: (Source State Crime Records Bureau CIB\_21 data Bihar)

Classification of Road	Number of Accidents					Number of Persons death
	Fatal	Greivous Injury	Minor Injury	Non Injury	Total	
National Highways	3242	882	47	178	4349	3517
State Highways	1598	436	23	58	2115	1747
Other Roads	2221	683	51	134	3089	2396
Total	7061	2001	121	370	9553	7660

## Heat Wave

Occurrences	Reason	Damages
<p>Global temperatures and the frequency and intensity of heat waves will rise in the 21st century as a result of climate change. High air temperatures can affect human health and lead to additional deaths. Extended periods of high day and night time temperatures create cumulative physiological stress on the human body which exacerbates the top causes of death globally, including respiratory and cardiovascular diseases, diabetes mellitus and renal disease. In recent years chances of heat wave has increase in Gaya District due to arid land belt &amp; environmental condition.</p>	<p>When maximum temperature departure is 4.50°C or more from normal, Heat Wave may be described provided actual maximum temperature is 48°C or more. The peak month of the heat wave over India and in Gaya also is May.</p>	<p>Heat waves can acutely impact large populations for short periods of time, often trigger public health emergencies, and result in excess mortality, and cascading socio-economic impacts (e.g. lost work capacity and labour productivity). They can also cause loss of health service delivery capacity, where power-shortages which often accompany heat waves disrupt health facilities, transport, and water infrastructure. In year 2019 section of 144 of CRPC was imposed in Gaya after crucial impacts of Heat Wave. In year 2022 Gaya recorded temperatures above 45 degree Celsius triggering a raging heat wave which led to the deaths. above 45 degree Celsius triggering a raging heatwave which led to the deaths.</p> <p>Report: In Year 2019 till 19 June, 40 incidents reported by blocks officers.</p>

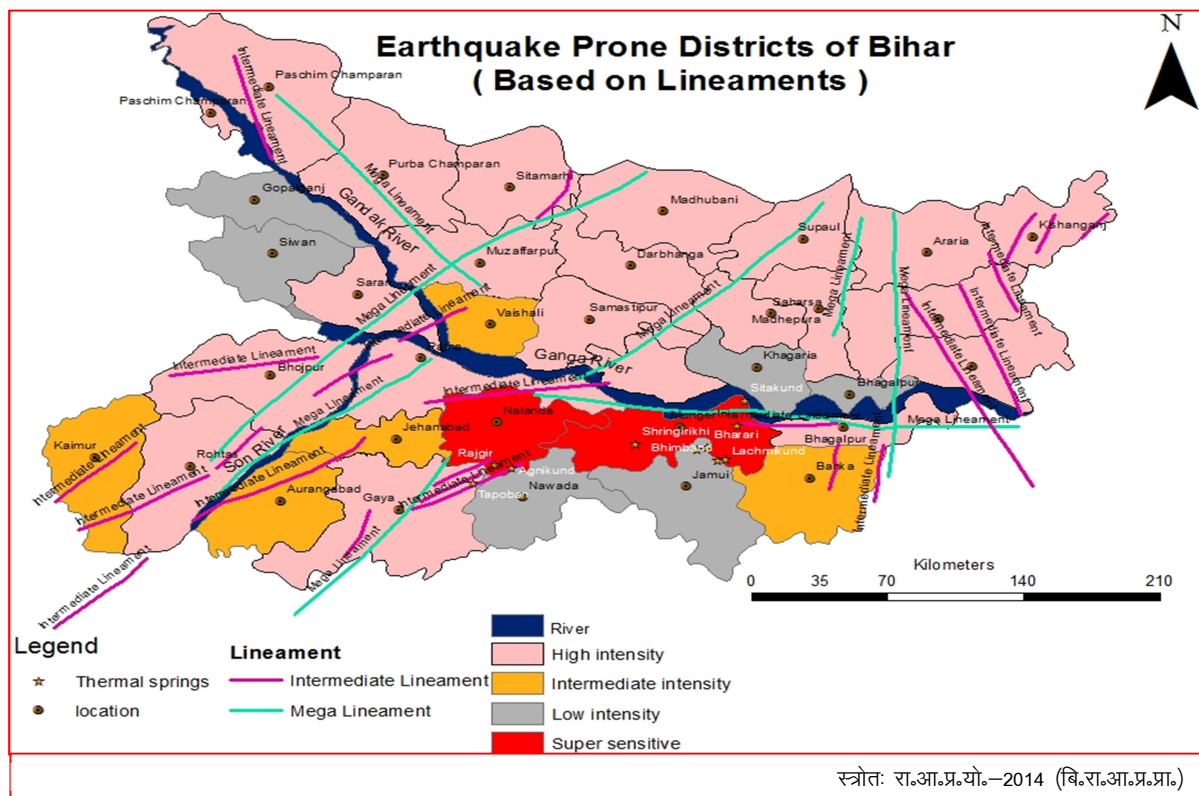
## Earthquake

new and growing urban centers in the state where building codes and control mechanisms are not enforced, earthquake remains a major threat to the district. This could result in social infrastructures such as schools and hospitals that are not built to be earthquake resistant could lead to serve damage and loss of lives as well. Approximately 70 to 75 % of the total area of the district lies in seismic zone IV and 20 to 25 % area lies in seismic zone III which is comparatively lesser risky zone for earthquakes.

### Major Earthquake in Bihar History

Sr. No	Date	Place	Magnitude	No of Deaths	Affected Districts
1	15-01-1934	India Nepal Border	8.4	70	Patna, Gaya, Shahbad, Saran, Muzaffarpur, Darbhanga, Bhagalpur
2	11-01-1962	India Nepal Border	6.0		Munger and Purnia
3	21-08-1988	India Nepal Border	6.7		Madhubani, Darbhanga
4	25,26-04-2015	India- Nepal Border	6.6	60	Patna and Border districts near by Nepal Border

#### (Detailed Earthquake Prone Map of Bihar State)



Occurrences	Reasons	Damage and Loss
Unlike several other hazards, there is no pattern of occurrence of Earthquakes. The last time any major earthquake struck this region was in the year 2015.	Movement of plates beneath the earth's surface near Indo - Nepal border on the Nepal side.	Gaya lies in seismic zone III. There is no specific record of damages and deaths in this region.

## Biological Disaster (Covid – 19)

Occurrences	Reasons	Damages
<p>Unlike several other hazards, there is no pattern of occurrence of Biological Disasters in Gaya but some time cases are seen of COVID – 19, Acute Encephalitis Syndrome (AES) and Japanese encephalitis (JE).</p> <p>Coronavirus diseases (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus.</p> <p>Most people infected with the virus will experience mild to moderate respiratory illness and recover without requiring special treatment. However, some will become seriously ill and require medical attention. Older people and those with underlying medical conditions like cardiovascular disease, diabetes, chronic respiratory disease, or cancer are more likely to develop serious illness. Anyone can get sick with COVID-19 and become seriously ill or die at any age.</p> <p>Acute encephalitis syndrome (AES) is a serious public health problem in India. It is characterized as acute-onset of fever and a change in mental status (mental confusion, disorientation, delirium, or coma) and/or new-onset of seizures in a person of any age at any time of the year.</p>	<p>We know that the disease is caused by the SARS-CoV-2 virus, which spreads between people in several different ways.</p> <p>The virus can spread from an infected person’s mouth or nose in small liquid particles when they cough, sneeze, speak, sing or breathe. These particles range from larger respiratory droplets to smaller aerosols.</p> <p>Current evidence suggests that the virus spreads mainly between people who are in close contact with each other, typically within 1 metre (short-range). A person can be infected when aerosols or droplets containing the virus are inhaled or come directly into contact with the eyes, nose, or mouth. The virus can also spread in poorly ventilated and/or crowded indoor settings, where people tend to spend longer periods of time. This is because aerosols remain suspended in the air or travel farther than 1 metre (long-range).</p> <p>People may also become infected by touching surfaces that have been contaminated by the virus when touching their eyes, nose or mouth without cleaning their hands.</p> <p>Acute encephalitis syndrome (AES) is a serious public health problem in India. It is characterized as acute-onset of fever and a change in mental status (mental confusion, disorientation, delirium, or coma) and/or new-onset of seizures in a person of any age at any time of the year. The disease most commonly affects children and young adults and can lead to considerable morbidity and mortality.</p>	<p>Total death in gaya district due to COVID-19 is around 609 or more. The number (Number of deceased person) is received after the recommendation of Disaster Management department, Patna (Bihar), and Different government medical collages and hospitals and others district authorities.</p> <p>Total number of cases of JE (Japanese encephalitis) &amp; AES (Acute Encephalitis Syndrome) is Zero (0) in the year 2022.</p>

### 3.3 CAPACITY ANALYSIS

This section includes an assessment of both vulnerabilities and capacities within the line departments. As part of the process, a number of consultations were held with several line departments on one-to-one basis. The exercise revealed the existing capacity of line departments to deal with emergency in terms of trained manpower, equipment and resources.

Capacities and resources analysis should highlight the capability and availability of resources with the district administration and stakeholders to reduce disaster risk and to organize effective response. Capacities could be policies, institutions, equipment, early warning, and trained human resources to handle variety of responses and coordination functions, financial resources that the districts take holders have for disaster risk management. Following are the details of Key equipment, resources and infrastructure available in the Gaya District.

The combination of all the strengths, attributes and resources available within an organization, community or society to manage and reduce disaster risks and strengthen resilience.

Annotation: Capacity may include infrastructure, institutions, human knowledge and skills, and collective attributes such as social relationships, leadership and management.

**Coping capacity** is the ability of people, organizations and systems, using available skills and resources, to manage adverse conditions, risk or disasters. The capacity to cope requires continuing awareness, resources and good management, both in normal times as well as during disasters or adverse conditions. Coping capacities contribute to the reduction of disaster risks.

**Capacity assessment** is the process by which the capacity of a group, organization or society is reviewed against desired goals, where existing capacities are identified for maintenance or strengthening and capacity gaps are identified for further action.

**Capacity development** is the process by which people, organizations and society systematically stimulate and develop their capacities over time to achieve social and economic goals. It is a concept that extends the term of capacity-building to encompass all aspects of creating and sustaining capacity growth over time. It involves learning and various types of training, but also continuous efforts to develop institutions, political awareness, financial resources, technology systems and the wider enabling environment.

This section includes an assessment of both vulnerabilities and capacities within the line departments. As part of the process, a number of consultations were held with several line departments on one-to-one basis. The exercise revealed the existing capacity of line departments to deal with emergency in terms of trained manpower, equipment and resources.



SI No.	Equipment Category	Availability of Equipments	Available Location	Disaster Types
1.	<b>Search and Rescue Equipment</b>	<b>160</b>	Available in Blocks and Sub divisional Offices.	Fire, Earthquake, Flood, Accidents(Road and other) etc.
2.	<b>Skilled Manpower</b>	<b>496</b>	Available in Blocks and Sub divisional Offices	Flood , Drowning etc.
3.	<b>Transportation</b>	<b>37</b>	Available in Blocks and Sub divisional Offices	All types of disaster
4.	<b>Safety &amp; Shelter</b>	<b>862</b>	Available in Blocks and Sub divisional Offices	All types of disaster
5.	<b>Medical Emergency Supply &amp; Services</b>	<b>86</b>	Available in Blocks and Subdivisional Offices	All types of disaster

(Based on the data updated on BSDRN till July, 2022)

**Following detailed list are attached in the Annexures**

1. Annexure 1: Resources list in BSDRN portal
2. Annexure 2: Health Profile of the Gaya District
3. Annexure 3: List of trained Master Trainers (Safe Swimming Program)
4. Annexure 4: List of Masons trained
5. Annexure 5: List of available equipment for Disaster Management
6. Annexure 6: Department wise list of equipment available
7. Annexure 7: List of vulnerable villages along with list of safe shelters
8. Annexure 8: Detailed power and functions of District Disaster Management Authority
9. Annexure 9: List of trained PRIs including Sarpanch and Mukhiyas on Disaster Risk Reduction
10. Annexure 10: Bihar state disaster relief norms

## CHAPTER 4: INSTITUTIONAL ARRANGEMENT

### 4.1. DDMA

As per the DM Act 2005 the DDMA to be formed in each district and it will be the nodal agency for preparation, functioning and review of the District Disaster Management Plan (DDMP). The DDMA will prepare the DDMP and monitor the implementation of the National Policy, the State Policy, the National Plan and the State Plan. The Gaya DDMP is an operational module for district administration (owned by the DDMA) and it helps to effectively response and mitigates the different types of disasters with locally available resources as per Section 30, of the DM Act 2005.

The DDMP is designed as per the current need and the major strategies to respond to any disaster events have also been considered. In this multi-hazard district plan, all the disasters will be handled properly following the use of resource inventory, Standard Operating Procedures (SOP), keeping coordination with the line agencies and proper community based awareness activities. SOP of line departments is designed to make them alert. It also ensures a checklist for all the stakeholders for an action oriented response structure and to study their preparedness level, role and responsibilities during, after and at normal time of the disaster.

DDMP is a Multi-Sector and the strategies for strengthening institutional and functional capacities, the roles and responsibilities for different government departments and for different stakeholders during different disasters including early warning system and further response for district level different disasters.

DDMA provides guidelines to various entities involved in disaster management in the District/State to discharge their responsibilities more effectively.

Sr. No	Officer	Designation
1.	District Magistrate	<b>Chairperson</b>
2.	President, Zila Parishad	<b>Co-Chairperson</b>
3.	Senior Superintendent of Police	<b>Member</b>
4.	District Deputy Collector	<b>Member</b>
5.	Additional District Magistrate	<b>Member</b>
6.	Civil Surgeon	<b>Member</b>
7.	Executive Engineer (Zila Parishad)	<b>Member</b>

### 4.2. PRIs

- Provide assistance to DDMA in Disaster Management activities.
- Ensure training of PRI members and employees on their roles in Disaster Management

- Ensure that resources relating to Disaster Management are maintained as to be readily available for use in the event of any threatening disaster situation or disaster.
- Ensure that all construction projects under the PRIs conform to the standards and specifications accordingly.
- Carry out immediate response, assessment, relief, rehabilitation and reconstruction activities in the affected area within the district. \

### 4.3 CBOs

- Assist in prevention and mitigation activities under the overall direction and supervision of the DDMA.
- Participate in all training activities organized and should familiarize themselves with their role in Disaster Management.
- Adhere to the relevant rules regarding prevention of disasters, as may be stipulated by relevant local authorities.
- As a part of Corporate Social Responsibility (CSR) undertakes DRR projects in consultation with the DDMA for enhancing district's resilience.

### 4.4 District EOC

The District EOC (District Emergency Operations Centre) on the basis of DDMP is the well equipped focal point of activity in a disaster situation in the district with flexibility to expand when demand increases and reachable when the situation comes to normal. The DEOC is connected with the State EOC in the upstream which further connects to National EOC and other EOCs in the downstream including other field offices during emergencies.

#### Objectives of the Emergency Operations Centre

- The EOC at the District level is the nerve centre for coordination and management of disasters. The objectives of the EOC shall be to provide centralized direction and control of any or all of the following functions:
- Receive and process disaster alerts and warnings from nodal agencies and other sources and communicate the same to all designated authorities, officers in the district and to the community till village level.
- Monitor emergency operations
- Facilitate Coordination among ESF of Departments/Agencies.
- Requisitioning additional resources during the disaster phase
- Issuing disaster/incident specific information and instructions specific to all concerned;
- Consolidation, analysis, and dissemination of damage, loss and needs assessment data;
- Forwarding of consolidated reports to all designated authorities.
- The DEOC will be connected with the SEOC. The control room 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 Room who will be posted to manage the EOC.

#### 4.4. Coordination mechanism

DDMA and DEOC to coordinate with all heads of department at the district level, ESFs, COs, BDOs, Task Forces, NGOs, CBOs, Corporate and the community for effective implementation of DM Plans at all levels. DDMA should also have a link with neighbouring districts in case of disasters covering neighbouring districts.

- Facilitate and coordinate with local Government bodies to ensure that pre and post Disaster Management activities in the district are carried out.
- Assist community training, awareness programmes, pre-positioning and the installation of emergency facilities with the support of local administration, non-governmental organizations and the private sector.
- Function as leader and take appropriate actions to smoothen the response and relief activities to minimize the adverse impact of disaster.
- Recommend Relief Commissioner and State Government for declaration of disaster
- Generally, Emergency Operation centre (EOC) is the enabler of communication and coordination. Pre-Disaster meetings to review the DDMP with all stakeholders should be planned.
- For achieving the objective, the plan should have a pre-established and practiced mechanism for Inter, intra and extra agency coordination

## **CHAPTER 5: PREVENTION, MITIGATION AND PREPAREDNESS MEASURES**

Preventative measures reduce the likelihood of a disaster event occurring or the severity of an event should it eventuate. Prevention and mitigation strategies should work towards reducing the financial and social costs to communities over time, improving the built environment, and reducing the impact on, and damage to, life, property, culture and the environment. Investment in disaster risk prevention and reduction enhances the socio-economic resilience of people, communities, countries and their assets, as well as the environment.

The DDMA is responsible to deal with all phases (Preparedness, Prevention, Mitigation, Response & Recovery) of Disaster Management within the district also ensure all relevant department/agencies enforcement of the codes, bylaws and act such as National Building Code, Bureau of Indian Standards, etc. in the upcoming development projects, construction work, and commercial complexes.

All department/agencies ensure implement guidance and orders given by DDMA and avail following effective mechanisms to prevent, mitigate risks and vulnerability and strengthen its and preparedness against identified hazard:

- Long term planning for mitigation, preparedness and prevention investments in the district,
- Enforcement of regulations, particularly the building codes and land use,
- Review and evaluation of development plans and activities to identify ways to reduce risks and vulnerability, and
- Capacity building, including warning, the provision of relief and recovery assistance and community level identification of risk and vulnerability

**PREVENTION MEASURES:** Follow basic rules and regulations in environmental management, site selection, urban planning and sound construction are critical to the safety of communities, whereas socio-economic measures can be used to increase resilience, spread risk and responsibility, create redundancy and minimize the impact.

**MITIGATION MEASURES:** All mitigation measures are important as they save lives and reduce the cost of response and recovery of the community. The Multi-Hazards Mitigation Action approach targeting both structural and non-structural mitigation measures which aim at reducing the physical and socio economical vulnerability, enhancing capacity and reduce damaging impacts of disasters across the district for all disasters.

**PREPAREDNESS MEASURES:** Comprehensive state of readiness to deal with any degree of threatening of hazard, risk or even disaster and the effects thereof has to be checked by the DDMA particularly on all new development projects, construction work, and commercial complexes and strictly enforcing adhering rules in views of disaster preparedness.

## 5.1 Key functions of departments/ agencies

The powers & functions of the DDMA in the event of any threatening disaster situation or disaster area :

- Give directions for the release and use of resources available with any Department of the Government and the local authority in the district;
- Control and restrict vehicular traffic to, from and within, the vulnerable or affected areas;
- Control and restrict the entry of any person into, his movement within and departure from, a vulnerable or affected area;
- Remove debris, conduct search and carry out rescue operations;
- Provide shelter, food, drinking water provisions, healthcare and services;
- Establish emergency communication systems in the affected areas;
- Make arrangements for the disposal of the unclaimed dead bodies;
- Recommend to any Department of the Government of the State or any authority or body under that Government at the district level to take such measures as are necessary in its opinion;
- Require experts and consultants in the relevant fields to advise and assist as it may deem necessary;
- Procure exclusive or preferential use of amenities from any authority or person;
- Construct temporary bridges or other necessary structures and demolish structures which may be hazardous to public or aggravate the effects of the disaster;
- Ensure that the non-governmental organizations carry out their activities in an equitable and non-discriminatory manner;
- Take such other steps as may be required or warranted to be taken in such a situation.

## 5.2. Key Functions common for all departments/ agencies

All department/agencies ensure implement guidance and orders given by DDMA and avail following effective mechanisms to reduce risks and vulnerability and strengthen its capacity against identified hazard:

- Long term plan for mitigation, preparedness and prevention investments
- Enforcement of regulations, particularly the building codes and land use,
- Review and evaluation of development plans and activities to identify ways to reduce risks and vulnerability, and

- Capacity building, warning, provision of relief and recovery assistance and community level identification of risk and vulnerability.
- Preparation and Implementation of District Disaster Management Plan is a joint and collective task. Various stakeholders like Panchayati Raj Institute, Government Line Department, Disaster Management Authority, Community Organisation and other private and public organisations are responsible to prepare and implement the DDMP.

Department	Preparedness	Prevention	Mitigation
DDMA	Bring the preparedness measures to the levels required for responding effectively to any disaster or threatening disaster situation.	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 concerned Departments	Ensure implementation of guidelines for prevention of disasters and mitigation of its effects
Education	Incorporate disaster management education in the curriculum of students	Construct disaster resilient schools	Support DDMA for educating PRIs and local communities on disaster management
Health	Identify community resources applicable to the physical, social, and psychosocial Effects of a disaster and educate/ train community on emergency and medical grounds.	Prevent the spread of diseases by providing health advisories on injury prevention, food and water safety, and vector control	Develop and advocate public policies designed to reduce the public health impact of potential disasters
Police	Conduct and plan the Emergency Traffic, Detail communication, Identify Security Plan, Resource Mapping, and Training of volunteers.	Communication Plan/ Liasoning with rescue teams	Ensure on time execution of preparedness activities
Public works department	Maintain the departmental equipment, position of approach roads and other roads fit of all the villages and periodically inspect the buildings, residences and high-rise buildings under their control to avoid any mis-happening..	Strictly observe and guarantee that the building byelaws and rules are implemented during the construction regarding disaster resilient construction.	Identify the disaster vulnerable locations and enforce disaster resilient constructions

Municipal administration	Extensive data collection, maintain directories of resources, develop action plans, capacity building, training and community awareness. Activities and Articulate the Command Structure for effective management of activities that immediately follow the disaster.	Examine construction in the area and if hazard safety standards have not been followed, direct the relevant entities to secure compliance of such standards and include maintenance of early warning system, identification of buildings to be used as evacuation sites, stockpiling relief and rescue materials and identify alternative means for emergency communication	Promote and support research, development of new technologies and the use of local knowledge in measures that aim at supporting risk reduction.
Fire and emergency services	Orientation and training of village-wise volunteers and communities, provide security in emergencies and be available where support services are required e.g. carrying of the injured, identification of the dead, keeping record of the same and handing over of the dead bodies to relatives etc.	Organize inspection of the building and sending inspection report for fire safety with recommendations to the concerned authorities and with a copy to BSDMA & DMD for necessary action.	Enforce fire related measures in the existing buildings, Specifically Govt., multistoried and other strategic ones.
Community Based Organisation	Awareness and Information campaigns Training of Volunteers Advocacy and planning	Conduct and implement projects and activities of disaster prevention	Strengthen the non-structural elements of all disasters through training and capacity building

Table : 27 Showing Departments/ Agencies of Gaya District

## Disaster wise functions of departments/agencies

### Lightning

Department	Preparedness	Prevention	Mitigation
<b>DDMA</b>	Issue alert of Lightning and disseminate information received from IMD, promotion for the use of Indravajra app among the public.  Emergency operation center at district level to be made functional for broadcasting early warning of thunderstorms /lightning. Disaster experts	Emergency operation center at district level to be made functional for broadcasting early warning of thunderstorms / lightning.  Provide information regarding Indravajra app to all officers/personnel up to district, block, tehsil and village level and compulsorily download i	Establish Early Warning System and Inter-Agency Coordination to alert residents on thunderstorm/ lightning  Provide training of early warning broadcasting to the personnel working in Emergency Operation Center.  DDMAs/District



	will ensure the above works by coordinating with the Additional District Magistrate	Indravajra app.  Make the villagers aware of what to do and not to do at the time of thunderstorm / lightning through the accountant, village development officer and village headman and to be widely publicized.	Collectors to be proactively anticipate emerging criticalities in the district and evaluate their preparedness plans accordingly to address the gaps and revitalize the mitigation strategies.  Installing lightning conductor or arrestor in old, existing and new buildings and it should be strictly followed.
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## Fire

Department	Preparedness	Prevention	Mitigation
<b>DDMA</b>	<p>To equip the emergency operations center with modern communication resources.</p> <p>To analyze the risk and causes related to fire and prepare a check list related to the responsibilities of the concerned stakeholder.</p> <p>On the basis of this check list, assess the villages and take action by declaring it as a fire disaster prone village.</p> <p>Capacity building related to fire related techniques and preventive measures –</p> <p>To organize like celebrating fire safety week regularly by Panchayat representatives, village level personnel of various departments, volunteers and representatives of NGOs. Creating a time bound program related to fire</p>	<p>To run awareness campaign for prevention of fire, broadcast suggestions/advice from district level through Doordarshan and Radio and ensure compliance of Pantrak 1042 dated 02.03.2016, Headquarter of Bihar Home Rakshavahini, Patna.</p> <p>To analyze the risk and causes related to fire and prepare a check list related to the responsibilities of the concerned stakeholder.</p> <p>On the basis of this check list, assess the villages and take action by declaring it as a fire</p>	<p>Preparation of Fire Control Rooms and ensuring proper mechanism for early warning at village level through Tehsildar, Sarpanch, Patwari etc.</p> <p>Ensure proper mechanism for early warning at village level through</p> <p>Ensure proper functioning of DEOC with fully functional resources and availability of fire safety equipment.</p> <p>Compliance of Bihar Fire Rules 2014.</p> <p>Ensuring compliance of fire safety directives in the</p>

	safety.	disaster prone village.	National Building Code 2005.  To give wide publicity regarding preventive action.
<b>Fire services</b>	<p>To make public the telephone and mobile numbers of the fire stations established at the district, sub-division and police stations.</p> <p>Keep your fire fighting vehicle fully stocked with the necessary materials and always have trained firefighters ready.</p> <p>To keep up-to-date road maps of fire prone areas, to be fully acquainted with them and to observe them regularly.</p> <p>To ensure availability of latest firefighting equipments.</p>	<p>Permission to be constructed in multi-storey buildings and offices on the basis of a map with full fire fighting arrangements.</p> <p>Preparation of fire fighting plan of important buildings in the district and testing it from time to time through mock drills.</p> <p>Organize regular training of firefighters.</p> <p>To do public awareness work for the prevention of fire for the people.</p>	
<b>Education Department</b>	<p>Organizing fire safety week in all schools.</p> <p>To do other work of community awareness.</p>	Design a proper public relations system to ensure rumor control.	<p>To make arrangements for fire safety in school buildings.</p> <p>School Safety Capacity building at the institutional level should be promoted by carrying out various activities under the program (SSP).</p>
<b>Animal Husbandry</b>	<p>To make the villagers aware to keep the pet animals safe from fire.</p> <p>Proper storage of medicines etc. for the animals affected by fire.</p>		

<b>RTO</b>	<p>Provision of training to drivers, conductors and employees in first aid and basic life saving techniques.</p> <p>To ensure adequate stock of first aid kits and maintenance of fire extinguishers in all vehicles and depots in the district.</p>	<p>Identify vehicles for fire rescue operations and prepare for quick deployment of vehicles for various purposes like large scale evacuation, transport of response teams, relief items, victims etc.</p>	<p>Create a database of private fire extinguisher vehicles available with schools, colleges and other private agencies, so that it can be used for the purpose of evacuation, if necessary</p>
<b>Health</b>	<p>Training arrangements for Mobile Medical Groups, Psychological First Aid Groups, Psycho-Social Care Groups and Paramedics Quick Response Medical Groups (QRMTs).</p> <p>Various activities related to capacity building and training measures By completing thus increasing capacity building at the institutional level.</p>	<p>Damage and need assessment training and formation of groups in the department.</p> <p>Arrange for timely procurement of portable equipment for field and hospital diagnostics etc.</p> <p>Ensuring the training of members.</p>	<p>Ensure availability of portable supplies including adequate space for storage of medicines, availability of stock of medicines, survival equipment and portable oxygen cylinders, portable X-ray machines, portable ultrasound machines, triage tags, etc</p>
<b>Police</b>	<p>Conduct training for police personnel to deal with various situations for capacity building in the district.</p> <p>Deployment of trained city soldiers under District Disaster Management.</p>	<p>To develop a mechanism for early warning of various threats by police stations and police.</p> <p>Prepare the deployment plan of Home Guard and other volunteers to protect the property of the affected community.</p>	<p>Train police personnel and employees of PCR vans in first aid and basic life saving techniques.</p>
<b>Civil defence and Municipal Corporation.</b>	<p>Training for volunteers in search and rescue (SAR), first aid, traffic management, dead body management, evacuation, shelter and camp management, public care and crowd management.</p>	<p>Make arrangements for procurement of search and rescue equipment through appropriate channels of district administration.</p>	<p>Disseminate information through books, magazines, radio, television, film shows, newspapers, documentary films, meetings etc.</p>

<b>Building Construction Department</b>	Discouraging the use and storage of highly inflammable materials in building construction.	To make necessary corrections from time to time in safety related instructions by taking lessons from fire incidents.	Compliance of Bihar Fire Rules 2014. Compliance with fire safety directives in the National Building Code 2005.  Permitting the construction of various types of hospitals, banks, blood banks and sensitive office buildings on the basis of a fire proof map.
<b>Panchayati Raj departments</b>	<p>There must be space between the constructions of village buildings/huts so that it can be easily accessed in case of fire.</p> <p>To maintain water sources like ponds, ahars, pines, pools, wells etc. in the villages, keep them ready by getting them flown.</p> <p>To conduct public awareness work related to fire.</p> <p>Listing the availability of fire fighting materials like water sources, pumping sets, hose pipes, nozzles, long ladders etc. at the village level.</p>	<p>To focus on the use of firefighting techniques in the construction of rural buildings/huts. Soil coating on the lower part of the huts and the place where the lamp is kept. Change in cooking times to prevent fires in the summer months. To make sure the availability of water for public works and to sensitize the villagers on other things by the Panchayat.</p>	<p>To make encroachment free by widening the access path of Ahar Pond, Peen. Incorporate the technology of building a fire-cum-house in the future plan of your Panchayat. Compliance with standard operating procedure for fire.</p>

## Drought

Department	Preparedness	Prevention	Mitigation
DDMA	Awareness generation and capacity building on water conservation techniques (Bihar DRR Roadmap 2015)	Establish infrastructure for drought warning and dissemination	<b>Strengthen and upgrade existing drought forecasting system</b>

	Encourage Water Resources Department, Department of Minor Irrigation, Department of Agriculture & PHED and other specialized agencies to take up drought prevention and mitigation measures.		<b>Impart training to the stakeholders involved in drought mitigation and management</b>
	Instruct Panchayati Raj Department/PHED/Rural Development Department/ Building Construction Department/ Education Department/ Health Department etc. for promotion of rainwater harvesting measures as a drought prevention measure and encourage them to incorporate rain harvesting measures in all building construction works undertaken by the District Administration. In association with Department of Agriculture, Rural Development Department and Department of Environment and Forest & through other specialized agencies work out drought prevention, mitigation and preparedness measures from crop State of Bihar State Disaster Management Plan		
	Instruct energy department to arrange in advance for electricity supply during drought situation		
<b>Agriculture Department</b>	Identify drought prone areas through GIS mapping ,	Support horticulture related farmers with small irrigation in schools.	
	Survey and study of identified drought prone areas	Encourage solar energy systems for irrigation and electricity generation	Strengthen and stabilize irrigation system with water resource department
		Training, awareness generation of farmers and develop action plan for disaster risk reduction	Formulate prevention, mitigation and preparedness measures along with budget allocations
		Application of	Formulation of

		advanced agro-Science technology and agro-engineering inputs to improve agriculture production	policy and strategizing the implementation of
			<b>Connecting people with government</b> <b>ANN</b> <b>KALS</b> <b>YOJNA</b>
	rain harvesting programme & activities		
	Working out Crop Contingency Plan storage of seeds, fertilizers, rainfall estimation etc. for drought situation		Ensure availability of water until the last moment in Canals and in taps
	Develop strategies for effective implementation of optional cropping scheme		On the basis of assessment, ensure availability of required material to respond droughts
	Prepare WhatsApp group including nodal person, officials, different stakeholders for quicker communication		Maintain proper coordination with insurance companies to ease response in relief related work
	Ensure availability and implementation of drought resilient crops		Identify, search and implement drought resident techniques with help of KVK (Bihar DRR Roadmap2015)
	Providing Agriculture Input subsidy.		With the help of MGNREGA ensure implementation of drip irrigation, shower

			irrigation etc. at farmers
	Strategize the storage and supply of seeds, fertilizers and pesticides		Awareness generation of farmers on different schemes run by government
	Working out ecological betterment of the areas		As per need provide subsidies to farmer on diesel, fodder, seeds, fertilizer etc.
	Organize the irrigation facilities Working out alternative cropping programme and activities storage of seeds, fertilizers etc. for drought situation		Promote and develop cold storages as per agriculture department roadmap
<b>Animal Husbandry and Fisheries Department</b>	Establish and practice protocols for Early Warning approval and dissemination.	Preparation of drinking water sources at proper locations	Encourage the adaptation of technique for preservation of green fodder.
	Check supply/ storage of life saving vaccines in advance and safe storage for them.		
	Arrangement of vehicle for transport of sick animals		
	Identification of the safe place in the Panchayat with the help of community and field staff of the department.		
	Fodder storage at safe places.		
	Awareness to the officials for the safety of life, material, equipment and for this placement of the items at safe places.		

	Renovate the fishponds and ox-bow lakes. Ensure that the fishponds are protected.		Awareness generation and capacity building trainings of key line department officials on various aspects of disaster and incorporation of disaster resilience work in the routine work
	Open the fisheries departmental office at block level to understand the ground realities Improve the better functioning among the people.		
	Training and exposure to fish farmers in scientific aquaculture, Renovation of water bodies through Panchayats, Awareness on marketing for the fish Farmers		
	Setting up of model farms in the districts and the exposure visit of the Panchayats so that they gain Knowledge.		
	Allocate separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency.		
	Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.		
	Ensure recharging of different water sources		
<b>Bharat Sanchar Nigam Limited</b>	Send alert messages during emergencies.		
<b>Education Department</b>	Ensure disaster management be part of curriculum in all schools, colleges.	Ensure proper water supply in Schools and Change of school hours	Generate awareness and capacity building trainings of key line
	Build awareness among the departmental staff, communities and the key stakeholders engaged		



	with the department on potential disaster risks and measures to reduce the risk. Ensure proper drinking water facilities at school level		department officials on various aspects of disaster and incorporation of disaster resilience work in the routine work
<b>Energy Department</b>	Establish and practice protocols for Early Warning and dissemination.	Electricity supply at irrigation and water supply sources	Proper planning for maximum electricity supply in rural areas for irrigation during drought situation
	Ensure proper electricity supplies through agriculture feeder in vulnerable areas and also at drinking water sources		
	Considering the drought situation, establish 24 hr operational control rooms.	Give priority to damaged and burned transformers for repairing and changing	
	Provide Minimum of 16 hour electricity to drought affected villages for all purpose use		
<b>Fire and Emergency services Department</b>	Assess the vulnerable points in the infrastructure, especially hazardous industries and take measures like timely repairs etc.		Awareness programs and capacity building trainings of key line department officials on various aspects of disaster and incorporation of disaster resilience work in the routine work
	Ensure proper awareness initiatives in vulnerable location where the fire arise due to excessive heat, staggered placement of water tenders in district.		
<b>Health Department</b>	Medical camps in affected areas.	Conduct regular surveillance of public health measures	Generate awareness and capacity building trainings of community Dos and Don'ts for

			Heatwave
	Checklist of medicines and medicals facilities to have in the camps.		
	Stockpiling of medicine critical medicines for heat stroke		
	Ensure availability of medicines for heatwave, diarrhoea, Fever, Dehydration, dermatitis etc. at PHC and CHC level		
	Prepare Monitoring Cell under the chairmanship of Civil Surgeon during drought situation to ensure health of affected people to address malnutrition among children, women, Pregnant and lactating mothers, ensure health kit at PHC and CHC level		
<b>Irrigation Department</b>	Identify the drought prone areas, availability of water resource in the area and level of ground water in the area.	Enact and enforce the laws regulating the ground water exploitation	Develop mechanisms for water audits
	Formulate prevention, mitigation and preparedness measures.	Ensure dissemination of water till tail/end of canals.	Encourage people to use advance technology of drip and sprinkle irrigation
	Strategize the cropping pattern in association with the Department of Agriculture and create Irrigation facilities accordingly.		
	Monitor and supervise the watershed and rainwater harvesting facilities in the drought prone areas.		
<b>Public Health Engineering Department</b>	Install extra hand pumps to sustain the supply of drinking water and maintenance/repair of old ones.		Encourage indigenous rain water harvesting and conservation
	Formulate rain-harvesting practices and promote the same in vulnerable areas.	Ensure quicker repairing of non-functioning hand pumps	

	Establish 24 hr control rooms to monitor and respond droughts	If Hand pumps are dried up provide water through tanks	
	Prepare Departmental action plan to address drought	Create water tanks by digging land at proper places to provide water for animals	
	Conduct drinking water need assessment, ensure proper availability of water tanks		
	Ensure availability of water hand pump repairing material before drought Construct new water taps, if the present quantity is not sufficient		
	Establish proper coordination with electricity department to ensure reach of water suppliers in Urban areas for Uninterrupted water supply, ensure availability of submersible pumps		
	Establish joint control room with Municipal corporation and PHED Department to redress water supply related complains.		
<b>Food Corporation</b>	In consultation with Department of Disaster Management, setup centres for supply of food grains on subsidized rates or free, as decided.	Construct warehouse and cold storages for preservation/ storage of food grains	Establish 24 hr control rooms at different level during drought situation
			Ensure proper availability of food grains under Annpuran and Antyodaya Yojana through assessment of available and resources may required

			Under Shatabdi Ann Kalash Yojna, ensure availability of one quintal food grains at every village so that no one will die because of hunger
<b>Water Resource Department</b>	Maintenance of sluice gates etc. and construction of channels for distributing river waters to ponds.	Construct/ Repair dams, reservoirs, lift irrigation, tubewells, tanks, farm ponds and canals for surface irrigation	Strengthen water conservation techniques.
	Identify potential emergencies. Refer to the contingency specific action plans for the same.		Ensure supply of water in drought situation
	Ensure proper functioning of tube wells and repairing/cleaning of canals, bridges, small irrigation canals etc.		

Table 29: It Showing Prevention Mitigation and Preparedness Actions for Drought

## Road Accidents

<b>Department/Division Name</b>	<b>Prevention</b>	<b>Reduction / Mitigation</b>	<b>Response/Recovery</b>
District Administration / District Disaster Management Authority	Awareness Programmes	<p>Identification of Black Spots</p> <p>Organize Road Safety Program (9-15 Jan) every Year. Ensure participation of School kids, children from NCC.</p> <p>Establish Driving Training Centers</p>	<p>Formation of District Level Road Safety Committee and ensure regular meetings.</p> <p>Promote Community Policing</p> <p>Publish guidelines before any festivals regarding the road safety.</p>

Transport Department	Follow Traffic Rules Strictly Don't use mobile phone while driving Follow guidelines issued by Bihar Transport Department.	Regular Maintenance of vehicles and its fitness  Prohibit candidates with poor visibility from driving.  Ensure using Seat Belt/ Helmet.  Organize awareness programme	First Aid Box in every Private and Government Vehicles.
Police	Ensure Traffic Rules regulation		Ensure Road Safety guidelines issued by Transport Department, Government of Bihar.  Traffic regulation at crossroads/ T Points. *‘One way’ and ‘Noentry’ regulation.  Ensure emergency vehicle.
Health Department		Depute Paramedic Teams to take victims to hospital on time.	Formulation of Quick Response Team
		Detailed information of Trauma Centre, Referral Hospital	Training of community regarding First-Aid  Depute teams near Black Spots.  Avail Medicines, Bandage, and stature in the hospital in the right quantity.  Detailed info of blood bank, MRI, X-Ray Centre, Blood Donor, Specialist.
Education Department		Celebrate Road Safety Programme  Create awareness amongst students	

### Heat Wave

Department Name	Preparedness	Prevention	Mitigation
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<b>DDMA</b>	<p>Taking cognizance of the announcement of weather forecast.</p> <p>To conduct awareness campaigns to use cotton clothes as much as possible and to eat hot and fresh food.</p>	<p>Provision of drinking water at places like market/railway station/bus stand etc.</p> <p>Wide publicity of the following suggestion- If it is necessary to go out, then never go out on an empty stomach.</p> <p>Come out after drinking water and covering your head completely.</p> <p>Always protect yourself from hot air. Carry drinking water and avoid dehydration.</p>	<p>Fixing of summer working hours in schools/colleges and government/non-government establishments.</p> <p>To change the opening and closing times of the children's schools.</p> <p>Instructing to keep the school closed in case of severe heat wave.</p> <p>To determine the summer work period in MNREGA work and other construction works.</p>
<b>Health Department</b>	<p>Quantity needed for the treatment of heat-heat-borne diseases such as heat rash (heat boils), convulsions (heat cramps), fainting (heat rash), heat exhaustion, heatstroke, dehydration In medicine storage.</p>	<p>To issue necessary advisories from time to time for the community to avoid heatstroke.</p>	
<b>Animal husbandry</b>	<p>To store animal related medicines.</p>	<p>Dissemination of appropriate advice to livestock / poultry farms/ dairy farms for measures to prevent heat-wave and cold wave.</p>	

	Promote tree plan plantation and green energy with all sectors and society		Plan and Coordinate with Health Department for creating Medical posts at places of mass gathering including religious functions and regular markets
	Work out for Crop Contingency Plan		Encourage crop Rotation
	Provide for Agriculture Input subsidy		Ensure proper irrigation and steady water supply to the standing crops
	Strategize the storage and supply of seeds, fertilizers and pesticides		
	Work out on the ecological betterment of the Areas		
	Organize the irrigation facilities		
	Work out on alternative cropping programme and activities		
	Establish and practice protocols for Early Warning approval and dissemination.	Preparation of plans for provision of adequate drinking water supply for cattle during scarcity.	Publicize protective techniques through pamphlets and posters, for safeguarding poultry and cattle during heat wave.
	Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.	Ensuring sufficient stock of medicine in all veterinary hospitals.	
	Spread awareness to the officials for the safety of life, material, equipment and for this placement of the items at safe places.		
	Training and exposure to fish farmers in scientific aquaculture, Renovation of water bodies through Panchayats,		

	Nominate a nodal officer for disaster management.		
	Standby arrangements for temporary electric supply or generators Send alert messages during emergencies.		
	Spread awareness to the officials for the safety of life, material, equipment and for this placement of the items at safe places.		
	Promote the schemes on non- conventional energy sources.		
	Promotion of fire safety standards		
	Organize awareness and training		
	Active involvement in disaster management activity, identify the voluntary workers from NGOs, Educational, institutions and provide them training.		
<b>Health Department</b>	Prepare and Implement inter-sectoral District Health Plan including drinking water, sanitation & hygiene and nutrition.	Adopt heat- driven examination techniques at local hospitals as well as urban health centres.	Designing and initiation of programs and efforts for training and capacity building regarding communication on illness due to heat, for medical staff members at PHC's, UHC's. This also includes field and staff workers, nursing staff, paramedics, ANM's and ASHA workers.
	Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.		
	Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures		



	to reduce the risk.		
	Ensure proper arrangements for treating heatwave affected people at all PHC, CHC, Sub Division, District and referral hospitals		
	Ensure sufficient availability of ORS and IV drops at all hospitals and clinic		
	Start mobile medical units for quicker Responses.		
<b>Home Guard Department</b>	District based training centre for the training of the soldiers		
<b>Irrigation Department</b>	Improve in the field of more tube well facilities to the people so that people total dependence on the monsoon should reduce.		
<b>Public Health Engineering Department</b>	Establish and practice protocols for Early Warning approval and dissemination.	Identify and establish drinking water sources in vulnerable location	Awareness generation and capacity building trainings of officials on Dos and Don'ts in Heatwave
	Establish mechanisms for the delivery of safe drinking water, halogen tablets, and bleaching powder in the relief camps/shelters in disaster probable areas.		
<b>Food Corporation</b>	Coordinate with Supply Department to ensure that all safety measures are in place for proper storage, transportation and distribution of supplies.	Ensure nutritious food supply in vulnerable areas and in storage houses	

	Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.		
	Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.		

Table 32 Showing Prevention Mitigation and Preparedness Actions for Heat Wave

### 3. Earthquake

Department	Preparedness	Prevention	Mitigation
DDMA	Organize orientation and training of responders, engineers and masons for safe construction including the Mock drill for the community in disaster management	Instruct Building Department to Identify lifeline weak buildings and retrofit them. Ensure fire audit also.	<b>Provide good quality seismic micro- zonation maps to all stakeholders</b> <b>.Establish seismological network and round-the-clock monitoring</b>
	Coordinate with relevant departments regarding enforcement of Building Codes, Fire Safety Rules and Certification of Building etc.		<b>Capacity building of Engineers &amp; Architects in earthquake risk mitigation (to design seismically safe buildings and related techno-legal requirements)</b> <b>Awareness Generation among community for do's</b>
	<b>Follow-up with Road &amp; Building Construction Department, Public Works Department &amp; other departments about the availability of heavy-duty cutting and debris clearing machines, their specifications, placement,</b>		
	storage and their operators & upkeep of the same for ready use.		and don'ts for earthquake safety,

	<p>Follow-up with concerned agencies about the arrangements for putting up stopgap bridges on emergency basis &amp; formation. In addition, training of the team for the erection of temporary bridges.</p> <p>Follow-up with BSNL about the arrangements for the restoration of communication system &amp; act accordingly</p> <p>Follow-up with Health Department about facilities available, both in private &amp; public sector, for health services in hospital preparedness for mass casualty in vulnerable areas and act accordingly</p> <p>Follow-up with PHED about the drinking water facilities created in the vulnerable areas and Department's readiness to provide the same in emergencies &amp; act accordingly</p> <p>Follow-up with Energy Department about arrangements for the restoration of power supply and providing for supply of power through alternative sources of energy &amp; act accordingly</p>		
<b>Animal Husbandry</b>	<p>Identify animal safe shelters for animals.</p> <p>Check supply of life saving vaccines in advance and safe storage for them.</p> <p>Arrange vehicle for transport of injured animals</p> <p>Identify the safe place in the Panchayat with the help of community and field staff of the department.</p>		Shed for animals should be earthquake resistant or of lightweight material so that the animals remain unharmed.
	Fodder storage at safe places.		
<b>Bharat Sanchar Nigam Limited</b>	Sending alert messages during emergencies.		Undertake mandatory technical audits of structural designs of major projects by the respective competent authorities.

<b>Public Works Dept. (PWD)</b>	Arrange extra vehicles/ heavy equipment, such as front-end loaders, towing vehicles, earth moving equipment, water tank supplies etc.	Establish appropriate mechanisms for compliance review of all construction designs submitted to ULBs.	Assess the seismic risk and vulnerability of the existing built environment by carrying out structural safety audits of all critical lifeline structures.
		Slope stabilisation on hilly areas	Develop seismic strengthening and retrofitting standards and guidelines for existing critical life line structures.
<b>Education Department</b>	Construct of earthquake resistant school buildings.	Retrofitting in already constructed buildings.	Undertake mandatory technical audits of structural designs of major projects by the respective competent authorities.
	Conduct regular mock drills at school on earthquakes		Introduce earthquake safety education in schools, colleges and universities and conducting mock drills in these institutions about MSSP School Safety programme.
	Awareness generation of teachers and students of earthquake and its dos and don'ts		
<b>Electricity Department</b>	Identify vulnerable and weak infrastructures and retrofitting of the same		Undertake mandatory technical audits of structural designs of major projects by the respective competent authorities.
<b>Fire Department</b>	Assess the vulnerable points in the infrastructure, especially hazardous industries, and take measures like timely repairs etc.		Training its staff in search and rescue operation
	Ensure proper awareness generation and capacity		
	building for search and rescue and first aid		

	Support NDRF/SDRF/ Police/ Home guard for search and rescue work		
<b>Health Department</b>	The preparations shall be made keeping in mind injuries caused by falling off and from buildings, heavy structures-specifically bone injuries etc.	Equip buildings with basic first aid facilities.	Prepare Hospital mass casualty management plans  Training of doctors / paramedics to meet emergency situation due to earthquake
	Mobile unit should be ready to reach at any affected places and ensure training & empanelment of private clinics/hospitals.	Ensure construction of earthquake resilient buildings and retrofitting of old damaged building	
<b>Irrigation Department</b>	Formulate prevention, mitigation and preparedness measures.	Construction of earthquake resilient water supply channels.	
<b>Public Health Engineering Department</b>	Create drinking water facilities in relief camps and in shelter for livestock.	Construction of earthquake resilient water supply channels	Repair damaged water sources on immediate bases
<b>Food Corporation</b>	In consultation with Department of Disaster Management, setup centres for supply of food grains on subsidized rates or free, as decided.	Construction of earthquake resilient storage houses	Ensure supply of food grains with updated price to affected people
	Ensure safety of Petrol, diesel, kerosene, LPG etc. from earthquake		
<b>Water resource Department</b>	GIS mapping of the breaches in embankments caused by earthquake	Construct earthquake resilient embankments	Enforce and monitor the compliance of earthquake-resistant building codes, town planning byelaws and other safety regulations.
	Repair the breaches and maintenance of other embankments		
<b>Panchayati Raj Department.</b>	Panchayati Raj representatives will do advocacy for construction of earthquake resistant houses as per the technical specifications available.		Enforce and monitor the compliance of earthquake-resistant building codes, town planning byelaws and other safety regulations.
	Bring awareness about earthquake among Communities		

<b>Municipal Corporation</b>	Link all developmental work with Disaster risk reduction		
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Table 30: It Showing Prevention Mitigation and Preparedness Actions for Earthquake

## Epidemic (COVID 19)

<b>Department</b>	<b>Preparedness</b>	<b>Prevention</b>	<b>Mitigation</b>
<b>DDMA</b>	<p>Issue alert on spread of epidemic on Short / Medium / Long range duration and disseminate information received from NDMA/BSDMA and Ministry of Health &amp; Family Welfare to the public at large</p> <p>Disseminating public awareness messages on how to protect against the COVID-19 through print, electronic and social media and Information, Education and Communication (IEC) materials such as pamphlets, posters and advertisements and Television Commercials (TVCs) on Do's and Don'ts and treatment</p> <p>measures for of COVID-19 related illnesses</p> <p>Avoid spread of fake news, advisories, rumors and unnecessary information through proper media management.</p>	<p>Social Distancing measures, use of masks and other safety measures should be popularized and people should be perused and strictly followed.</p> <p>Washing hands time and again and maintaining overall hygiene and cleanliness strictly followed.</p> <p>Promote advisories on travel, hygiene, avoiding crowd contact; quarantine of people, arriving from countries notified by MoHFW, use of personal protective equipment (masks, hand sanitizers usage); isolation of patients.</p> <p>Build awareness among the departmental staff, communities and schools on potential disaster risks and measures to reduce the risk.</p>	<p>Establish Early Warning System and Inter-Agency Coordination to alert residents on COVID-19.</p> <p>Who will do what, when, and how is made clear to individuals and units of key departments, especially for health?</p> <p>Hold coordination meetings with credible NGOs and other civil society organisations, in order to see that the community cooperation is enhanced.</p> <p>DDMAs/District Collectors to proactively anticipate emerging criticalities in the district and evaluate their preparedness plans accordingly to address the gaps and</p>

			<p>revitalize the mitigation strategies.</p> <p>DDMA/DM in tandem with SDMA/Relief Commissioner coordinate with the local industries /corporate, under CSR activities, to mobilize emergency health relief and other relevant medical logistics. DDMA would ensure that the NDMA guidelines are followed so far as temporary shelters for migrant workforce returning from different state and maintaining physical distance of at least one meter between two persons and COVID-19 infected persons not considered as stigma.</p>
<b>Public Health Department</b>	<p>Integrated Disease Surveillance System (IDSP) will be operationalized at the district level</p> <p>Active surveillance in containment zone with contact tracing within and outside the containment zone.</p> <p>Expanding laboratory capacity for testing all suspect samples, close contacts, ILI and SARI</p> <p>Establishing surge capacities for isolating all suspect / confirmed cases for clinical management.</p>	<p>Circulate public hygiene and awareness etiquette as well as Do's and Don'ts on social media outreach platforms</p> <p>Conduct tabletop discussions and exercises on isolation, Quarantine, infection control, confinement measures;</p> <p>Mass screening mechanism, home isolation; amalgamation of Public Health and Law Enforcement drills, risk communication, surge capacity -and networking.</p> <p>Psychosocial care helpline</p>	<p>District IDSP units will be trained to acquire the capabilities of using standard case definition, regular data collection and analyzing data to detect early warning signs and take actions to mitigate any community outbreak.</p> <p>Surveillance at airports, ports and border crossings will be strengthened with appropriate controls.</p> <p>Rapid Response Team (RRT) will be trained under IDSP to undertake mapping of</p>

	<p>Implementing social distancing measures.</p> <p>Intensive risk communication</p>	<p>and SOP for panic prevention needs to be in place with help of expert agencies</p>	<p>cases and contacts so as to delineate the containment and buffer zones.</p> <p>Identify and enhance capacities of isolation facilities in all districts</p> <p>Adequate segregation mechanism for international or patients from other states arriving or under treatment from these countries needs to be in place. Special care for the need of the elderly is needed</p>
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## CHAPTER 6: CAPACITY BUILDING AND TRAINING

To implement DDMP the DDMA require Capacity Building for Disaster Response of the 13<sup>th</sup> Finance Commission, NDMA Fund & State Fund to capacitate all the stake holders like officials, policy makers, engineers, architects, masons, doctors, nurses, teachers, police, fire personnel, drivers, NGOs and volunteers (NYK, NCC, NSS). Schools and colleges are also included in Capacity Building and training.

Prepositioning of critical infrastructures at appropriate locations, Damage and Needs Assessment, Search & Rescue/First Aid training and Mock Drills are the priority of the DDMA which is imparting by CD&HGs. Gender and Disaster awareness is also one of the components in Capacity Building along with preparation of DM Plans by all stakeholders.

BSDMA is organizing various training programs, workshops and meetings towards orientation of various aspects of disaster management such as

- Lifesaving skill training,
- Disaster risk reduction,
- School safety
- Boat safety
- Safe construction
- Trainings on Emergency Response Functions such as first aid, search and rescue, emergency operation centre, emergency feeding and welfare, communication and damage assessment etc.
- Trainings for coordinated disaster management activities and response operations are highly required especially for the persons engaged in emergency services, government –line departments, non-government organizations, professionals, citizens and important private sector groups

### a. Institutional capacity building

District Disaster Management Authority can organize trainings, seminars, and workshops with the help of Bihar State Disaster Management Authority for Civil Defence and Home Guard, Fire, emergency services Department, Health departments, and other related departments. Various capacity building programs of such as trainings of BAS officers, are already organized by BSDMA.

As per the need of district administration BSDMA is keen to provide capacity building trainings to meet emergencies. Following are the mass training program carried out by BSDMA<sup>1</sup>;

1. Training for retrofitting techniques for engineers / architects ;
2. Training program of Mukhiya, Sarpanch and other Panchayat representatives on 'Disaster Risk Reduction and Management'
3. Vocational Training on Disaster Management and Risk Reduction and Management of Bihar Administrative Service Officers
4. Four day training program of veterinarian on management of animals in disaster
5. Vocational Training Program on Disaster Management and Risk Reduction in flood prone areas / areas Block Development Officer / Circle Officers
6. School safety; etc.

Please refer list of various training programme <http://bsdma.org/Training-Workshops.aspx?id=1> .

### b. Community- including CBOs and PRIs

Community awareness is highly in need as the district is more prone towards various hazards such as lightning, heat wave, fire incidents, earthquake, etc. The community awareness programs should incline on the following points:

- Types of disasters and basic Do's and Don'ts related to those disasters
- Post disaster epidemic problems
- Construction and retrofitting techniques for disaster resistant buildings
- Communication of possible risk based on vulnerable areas in the district
- Evacuation related schemes and community preparedness problems

BSDMA has distributed booklets for trainings of various PRI officials, CBO etc. Please refer different training modules of BSDMA <http://bsdma.org/Publication-Reports.aspx> .

### c. Professionals

Professionals are an integral part of Disaster Risk Reduction process. Building capacity of professionals becomes a significant step in strategizing for disaster risk reduction and capacity building at the community level. District Professionals, which needs to be part of capacity building and training, are Engineers, architects, doctor nurses, teachers etc.

Please refer different training module of professional <http://bsdma.org/Publication-Reports.aspx> .

#### **Professionals should impart training on following points:**

- Construction and retrofitting techniques for disaster resistant buildings
- First aid and Post disaster health problems
- communication and damage assessment
- search and rescue
- emergency operation centre

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<sup>1</sup><http://bsdma.org/Training-Workshops.aspx?id=1>

#### d. Training Institutes and other facilities

Various training programs are organized at Bihar Institute of Public Administration & Rural Development (BIPARD), Bihar State Disaster Management Authority (BSDMA) etc. for different stakeholders as well as community time to time. The district also has support of NDRF & SDRF teams. The master trainers trained by BSDMA are supposed to organise training programmes for other stakeholders at district, subdivision and block levels. DDMA is required to facilitate such training programmes.

#### e. Awareness Generation

Awareness programs for disaster risk reduction are essential for the mobilization and participation of stakeholders, professionals and citizens in prevention strategies and risk mitigation. Awareness program includes the understanding the prevailed risk of district and measures to control the risk with available resources, in partnership with other stakeholders of the district. The various channels utilised to build community awareness are mentioned below.

##### i) Schools

- a) Gram Shiksha Samiti
- b) Shiksha Abhbhavak Meeting
- c) Eco Clubs
- d) Paryavaran Mitra Clubs
- e) Meena Manch
- f) Baal Sansad
- g) Scouts & Guides

##### ii) Colleges

- a) NSS
- b) NYKS
- c) NCC

##### iii) Police personnel at ground/Panchayat level.

##### iv) Civil Defence volunteers

##### v) NGOs and CBOs.

##### vi) PRIs

### Some important programs run by District Administration Gaya

1. Safe Swimming Programs.
2. Road Safety Program.
3. Earthquake Safety Week.
4. Lightning alert awareness program.
  - 4.1. This program (Pilot Project) is run by BSDMA.

- 4.2. Safety Chariot(सुरक्षा रथ ) driven with the help of NGO.
- 4.3. 2.5 Lakh Pamphlets has been distributed in all blocks of gaya district.
- 4.4. Nukkad Natak Program was organized at more than 80 vulnerable locations in all blocks.
- 4.5. Lightning prevention banner (Do's and Don't) were put up at more than 55 crowded place in gaya district.

## CHAPTER 7: RESPONSE PLANNING

Declaration of disaster and activation of response and relief activities is based on the severity of disaster. To do so, first priority is to determine whether the resources are sufficient to cope with the severity of disaster or not. If the situation is beyond the coping capacity of community in the affected area, then a disaster shall be declared at different levels. As per the National Disaster Management Authority guidelines, these scenarios are of four levels that are Level 0 (L0), Level 1 (L1), Level 2 (L2) and Level (L3).

### Level 0

L0 denotes normal times, which are expected to be utilized for close monitoring, documentation, prevention, mitigation and preparatory activities. This is the planning stage where plans at all levels from community to the state shall be put in place. Training on search and rescue, rehearsals, evaluation and inventory update for response activities will be carried out during this time.

### Level 1

L1 specifies disasters that are localized. One or few sectors/areas blocks of activity are affected. It can be managed at the district level, however, the state and centre will remain in readiness to provide assistance if needed. The following actions required to be taken during this level.

Sr. No.	Actions	Responsible Dept./Agencies	Time frame
1.	District Magistrate shall declare disaster of L1 in consultation with members of DDMA	DM	Immediately
2.	Activate District Emergency Operation Centre along with Block and Circle level Control Rooms	DDMA	Immediately
3.	Activate Incident Response System at District Level and notify state authority	DDMA	Immediately
4.	Conduct Meeting of members of DDMA along with head of line departments and other stakeholders	DDMA	Immediately
5.	Mobilize the resources available in the district	DDMA & line	Immediate

		departments	
6.	Contact local humanitarian organizations for their assistance for immediate support	DEOC	Immediate
7.	Take updates from the incident area and update the same District Administration	DEOC	Within 2 hours
8.	Conduct Rapid Damage and Needs Assessment and circulate to all concerned	DDMA	Within 2 hours
9.	Media briefing about the scenario	DDMA	Within 2 hours
10.	Prepare detailed assessment report	DEOC	Within 24 hours
11.	Withdrawal of declaration of disaster on normalization of the situation.	DM	As on normalization of the situation

### Level 2

L2 specifies disaster situations that may require assistance and active participation of the state, and the mobilization of resources at the state level. Humanitarian needs are of a sufficiently large scale and complexity that significant external assistance and resources are required. Multi-sectoral response is needed with the engagement of a wide range of humanitarian actors. In L2, the district level resources are insufficient; however, the disaster can be managed with state-level resources.

Sr. No.	Actions	Responsible Dept./Agencies	Time frame
1.	District Magistrate shall declare disaster in consultation with members of DDMA and call for further assistance of State Government	DM/BSDMA/ DDMA	Immediately
2.	Activate District Emergency Operation Centre along with Block and Circle level Control Rooms	DDMA/ DMD	Immediately
	Activate Incident Response System at District Level and notify state authority	DDMA	Immediately
3.	Conduct Meeting of members of DDMA along with heads of line departments and other stakeholders	DDMA	Immediately
4.	DMD &BSDMA shall activate State Emergency Operation Centre and notify national authority	BSDMA/DMD	Immediately
	Contact humanitarian organizations for their	BSDMA/DMD	Immediately

	assistance for immediate response		
5.	Establish Staging area to collect mobilized resources for deployment to the affected area	DDMA	Immediately
6.	Set up Incident Command Post to monitor and operationalize field activities	DDMA	Immediately
7.	Establish transit camps and temporary shelters and provide all necessary support through response teams	DDMA	Immediately
8.	Conduct Rapid Damage and Needs Assessment and circulate to all concerned	DDMA	Within 2 hours Later
9.	Media briefing about the scenario	BSDMA	Within 2 hours
10.	Prepare preliminary assessment report	DDMA and BSDMA	In first 24 hours
11.	Conduct detailed damage and needs assessment report	DEOC/DDMA	Within 24 hours
12.	Maintain coordination with all stakeholders and keep updating all about situation	DEOC	Ongoing
13.	Withdrawal of declaration of disaster on normalization of the situation.	BSDMA/DMD	As on normalization of the situation

### Level 3

L3 disaster situations arise from large-scale disasters where districts and the state may not have the capacity to respond adequately and require assistance from the central government for reinstating the state and district machinery. Humanitarian needs are of a sufficiently large scale that significant external assistance and resources are required. Multi-sectoral response is needed with the engagement of a wide range of international humanitarian actors also.

Sr. No.	Actions	Responsible Dept./Agencies	Time frame
1.	Prime Minister shall declare a calamity of sever nature as 'National Calamity' and call for further assistance from national stakeholders for immediate response	PMO/ MHA GOI	Immediately
2.	Activate Incident Response System at District, State and National Level	DEOC	Immediately

3.	Activate State and National Emergency Operation Centre	NDMA and BSDMA DMD and MHA	Immediately
4.	NDMA shall mobilize National Disaster Response Force teams and resources to affected districts. SDRF will also be mobilized to the affected area	NDMA MHA and DMD	Immediately
5.	Establish inter agency groups to have uniform and well-coordinated response	NDMA	Immediately
6.	Establish Staging areas to collect mobilized resources for deployment to the affected area	DMD/BSDMA and DDMA	Immediately
7.	Set up Incident Command Posts to monitor and operationalize field activities	SDMA, DMD and DDMA	Immediately
8.	Establish transit camps and temporary shelters and provide all necessary support to the affected communities through response teams	Department of Disaster Management and DDMA	Immediately
9.	Media briefing about the scenario	NDMA	Within 2 hours
10.	Convene a regional Inter Agency Group meetings with relevant sector/cluster leads to: <ul style="list-style-type: none"> <li>• discuss coordinated approach</li> <li>• outline priority needs</li> <li>• detail immediate response plans</li> <li>• agree on assessment mechanism, notably joint Rapid Damage and Needs Assessment</li> </ul>	NDMA	Within 2 hours
11.	Maintain coordination with all the stakeholders and keep updating all about situation	SEOC and DEOCs	Ongoing
12.	Prepare preliminary assessment report	IAGs	In first 24 hours
13.	Conduct detailed damage and needs assessment report	DMD and DDMA	In first 48 hours



14.	Plan for rescue and relief operations in affected areas	BSDMA and NDMA	In first 72 hours
15.	Withdrawal of declaration of disaster on normalization of the situation.	PM	As on normalization of the situation

### **7.1 Response Plan: Declaration of Disaster**

Deputy Commissioner as the ex-officio chairperson of District Disaster Management Authority is responsible for declaration of disaster as well as activation of response and relief activities. First priority is to determine whether the resources are sufficient or not. If the situation is beyond the coping capacity of community in the affected area, then a disaster shall be declared. Declaration can be on the basis of level of disasters in affected area as per the NDMA guidelines.

### **7.2 Implementation of DDMP and Activation of IRS**

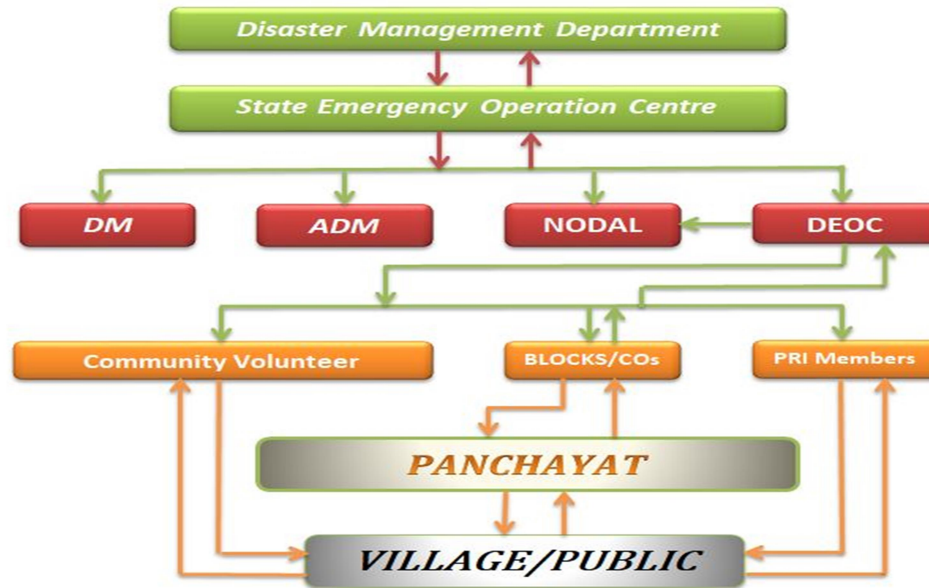
On declaration of disaster, DDMA shall activate IRS at district level. The District Magistrate, as Responsible Officer (RO) will activate various sections, branches, divisions, units and other facilities, as and when required.

DDMA shall ensure implementation of District Disaster Management Plan for activation of IRS, roles and responsibilities of departments and their officers, Emergency Support Functions, and implementation of DDMRI for resource mobilisation.

### **Early Warning & Coordination**

To alert departments and public for the disaster about to strike, use EWS and immediate coordination with various critical stakeholders.

## INFORMATION DISSEMINATION CHANNEL



There should be proper liaison and coordination among the stakeholders involved in the comprehensive disaster management for ensuring the implementation of the components involved in the DDMP. It is the responsibility of the Coordination Team Manager (CTM), Gaya to liaison with concerned line departments, agencies, NGO's, INGO's, BO's, etc. and their representatives at various locations, keeping Incident Commander (IC) informed about arrivals of all the Government and Non-government agencies and their resources, and organise briefing sessions of all Government and Non-government agencies with the IC. This coordination will also involve facilitating disaster-response by addressing special needs of services like sign language interpreters or language translators for communication and other needs. CTM will also be responsible for management of all the VIPs and VVIPs visiting the affected area. CTM must coordinate with police to ensure their safety and security without affecting response and relief work.

### Emergency Support Functions

Emergency support functions (ESF) are essential services for prompt and well-coordinated management of disaster. It is to be noted that each Response Branch Director (RBD) will be responsible for the tasks assigned to his/her respective department. Table below explains the purpose of different ESFs during any disaster. Annexure gives detailed roles and responsibilities of departments in various ESFs.

### Rapid Assessment Report

Rapid damage and needs assessment team will produce a report describing the magnitude of disaster with respect to life loss, property loss and other urgent needs of the affected areas. This assessment provides a base for planning response activities. This report should further be communicated to DMD and BSDMA.

### **Emergency Relief**

There are norms of compensation for ex-gratia grant payable to people affected by calamities like flood, drought, hailstorm, fire, lightening and earthquake for loss of human life, damage of crops, loss of cattle, and loss of personal property by fire and damage to houses due to floods. Relief in district should be cultural sensitive and appropriately distributed. Considering district profile of Gaya, special attention is necessary for population from scheduled caste, women, children and old age people during the process (vulnerability as discussed in chapter 3). It is the responsibility of each responsible department within the District Administration to see that rights of affected population particularly that of vulnerable population are not violated during the process.

### **Withdrawal of Declaration of Disaster**

This would be about normalization and withdrawal of special orders which were given to bring situation under control at the beginning.

## **CHAPTER 8: RECONSTRUCTION, REHABILITATION AND RECOVERY**

Post-disaster activities are complex process involving several dimensions such as livelihood restoration, psychological care, environmental rehabilitation, etc. This requires strong linkages between government, nongovernmental organisations as well as international organisations and should be seen as an opportunity to work with communities in the district Application of knowledge, capacity, and strategic plan and management skills can prepare DDMA, institutions and agencies to promote resilience against future disasters. The process demands coordinated focus on multi-disciplinary aspects under the holistic framework of post disaster reconstruction, recovery and rehabilitation programs.

### **8.1. Damage Assessment**

Damage Assessment is a precondition for effective Disaster Management. There are two stages for Damage Assessment:

- Preliminary Damage Assessment which is conducted immediately after a disaster and

- Detailed Damage Assessment which is conducted before reconstruction and rehabilitation by all relevant departments.

The DDMA should initiate the post disaster activities on the basis of the detailed damage assessment reports. Priority to be given lifeline infrastructures and communication systems like roads, bridge, administrative buildings, schools etc. Further, on the basis of extent and type of damage to buildings (public, private, government, etc.), district administration should initiate reconstruction measures.

Reconstruction, Rehabilitation & Recovery measures are processes to build back better & are the activities in the post-disaster phase.

## 8.2. Relief to the victims

Emergency relief is the right of every victim regardless of their status which plays most important role in betterment of psychological trauma, livelihood, health, education in entire disaster recovery process. Therefore, it should consist of a comprehensive multi-disciplinary activities and approaches involving rehabilitation of housing, infrastructure, livelihood, health, education, environment, etc. to ensure sustainable development of disaster affected communities.

**Livelihood Restoration/ Generation:** The socio- economic rehabilitation committee shall further co-ordinate along with Employment Agency, District Welfare Department and NGO's to ensure financial arrangements such as loans and assistance for self-employment. Other livelihood support activities which can be provided by the schemes under Welfare Department

**Child Protection:** The socio- economic rehabilitation committee shall further coordinate along with child and welfare department to install playschools, orphanages etc. at community level. Under the Balwadi Programme, pre-school education, routine health check-up, nutrition, play and other related activities are covered. Financial Assistance under the Non-School Going Disabled Children and Destitute Children, ICDS, etc. could also be used. Provide active strategies for Child protection.

**Rehabilitation of Vulnerable communities-** Widows / Destitute, Old Age Person and Physically Challenged

- The socio- economic rehabilitation committee should co-ordinate along with Department of Social Welfare to ensure that each Widows / Destitute, Old Age Person and Physically Challenged is registered under various schemes and measures to support livelihood.

### Restoration of Social Capital

- DDMA shall constitute a Social Capital Restoration Committee to ensure intact social bonding of the people during distribution of houses.

- The committee shall co-ordinate with distributing agency to ensure that the social fabric is not weakened in the process of allocation of houses. Families with better cooperation with each other should be allocated close to each other.

### **Environmental Rehabilitation**

- DDMA shall constitute an Environmental Rehabilitation committee to ensure decontamination of water bodies, soil, air and other environmental problems
- The committee shall co-ordinate along with Bihar State Pollution Control Board, Industrial Safety and Health, Environmental and Forest, Agriculture and Health department to monitor carry out decontamination.

### **8.3. Restoration of Basic Infrastructures**

Restoration of basic infrastructure including roads, bridges, drinking water supply, electricity, communication network, school, health centres etc may be required to be built in the existing sites or in the new relocated site depending upon the nature and extent of the rehabilitation programme. Repair/reconstruct the lifeline buildings/critical buildings which are necessary for treating the affected people or rehabilitation in these buildings as shelters.

### **8.4. Repair/ reconstruction of life line building**

For repair or reconstruct of life line buildings, the existing inhabited settlements may be completely reconstructed at a new site for which land acquisition may have to be done. Housing rehabilitation may also be carried out by way of upgradation of existing damaged houses through repairing and retrofitting. Much depends of carefully studied damage and needs assessment and consultation with stakeholders.

### **8.5. For all other items given in introductory para and more if relevant**

#### **Basic Amenities**

DDMA, Gaya shall ensure the provision of the following basic amenities at all reconstruction and relocation sites.

#### **Health Facilities**

- DDMA shall constitute a committee to ensure for provision of health facilities at all reconstructing sites in the district.
- The committee shall co-ordinate with constructing agencies and departments (Private agencies, PWD (B&R), Urban Development Authority, Housing board, etc.) in association

with Health department and ensure functioning of health facilities along with necessary infrastructure at strategic locations at all reconstruction sites.

- Schemes under health department such as NRHM should be used for the same.

### **Educational Facilities**

- DDMA shall constitute a committee to ensure provision of educational facilities for all the reconstructing sites in the district.
- The committee shall co-ordinate with constructing agencies (PWD B&R, Urban Development Authority etc.) in association with Education department for ensuring education for disaster affected children/ students in the district.
- Various departmental schemes such as Anganwari programme, creche programme, children's library can be used for the same.

### **Water**

- DDMA shall constitute a committee to ensure provision of adequate water supply for all the reconstructing sites in the district.
- The committee should ensure potable water for drinking and water for other use is provided by PHED department through proper functional pipelines and other arrangements.
- The committee shall co-ordinate with reconstruction agencies to ensure that each household/ constructed unit is provided with adequate water storage facilities.

### **Drainages and Sanitation Facilities**

- DDMA shall constitute a committee to ensure provision of proper drainage and sanitation facilities for all reconstruction sites in the district.
- The committee shall co-ordinate with PHED and constructing agencies (Private, PWD (B&R), Urban Development Authority, Housing Board, etc.) to ensure proper drainage system and other hygiene and sanitation activities in rehabilitation sites.

### **Electricity**

- DDMA shall constitute a committee to ensure provision of electricity and sufficient lighting facilities for all the reconstructing sites in the district.
- The committee shall coordinate with electricity department and Municipality to ensure provision of electricity and associated infrastructure in all the rehabilitated sites with permanent connections.

### **Transportation and Connectivity Facilities**

- DDMA shall constitute a committee to ensure provision of proper road connectivity and transportation facilities for all the reconstructing sites in the district.
- The committee shall coordinate along with PWD (B&R) Department, Bihar roadways and Regional Transport Authority (RTO/RTA) RTA to ensure road connectivity and transportation facilities for the reconstruction sites.
- DDMA shall coordinate with electricity department and Municipality to ensure provision of electricity and associated infrastructure in all the rehabilitated sites with permanent connections.

## CHAPTER 9: BUDGET AND FINANCIAL RESOURCES

According to DM ACT 2005 Section No. 53 of Chapter IX, Finance, Account and Audit.), Section 48 of the DM Act 2005 explains the State Disaster Response Fund (SDRF) and State Disaster Mitigation Fund (SDMF), District Disaster Response Fund (DDRF) and District Disaster Mitigation Fund (DDMF) are to be created at the State & District Levels.

The disaster response funds at the district level would be used by the DDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines and norms laid down by the Government of India and the State Government.

### 9.1. Schemes and programmes supporting DRR

#### State Allocation

- Every year the Revenue & Disaster Management Department, Government of Bihar prepares the Budget for Disaster Management in the State and releases the fund through the State Disaster Management Authority.

#### National Disaster Response Fund (NDRF)

#### State Disaster Response Fund (SDRF)

- As per Section 48 (1a) of the DM Act, 2005, SDRF is to be created with 90% Central Share and 10% State Share. This fund is made available to the DDMA for post-disaster activities & relief as per norms of NDRF/ SDRF.

#### **State Disaster Mitigation Fund (SDMF)**

- As per Section 48 (1c) of the DM Act, 2005, SDMF is to be created for predisaster activities and to be made available to the SDMA.

#### **Department Fund**

- As per Section 39 (e) of the DM Act, 2005 each department of the State Government shall allocate funds for measures for prevention of disaster, mitigation, capacity building and preparedness.

#### **Recommendation of the 13th Finance Commission**

- The Thirteenth Finance Commission (2010-2015) recommended fund for Capacity Building for Disaster Response at the District, Block and Village levels. This recommendation helps to capacitate all stakeholders in DM and also for preparation and updation of DM Plans.
- All State Government Departments, Boards, Corporations and ULBs would prepare their DM plans including the financial projections to support these plans. The necessary financial allocations would be made as part of their annual budgetary allocations and ongoing programmes and should be used for mitigation and preparedness measures. They will also identify mitigation projects and project them for funding in consultation with the SDMA/DDMA to the appropriate funding agency. The Departments should also keep in mind for mainstreaming or integration of DM into their development plans and projects. The guidelines issued by the NDMA vis-à-vis various disasters should be considered while preparing mitigation projects.

#### **Disaster Risk Insurance**

- DDMA should look at other options of new financial tools like catastrophe risk financing, risk insurance, micro insurance etc. to compensate for massive losses on account of disasters.

## **9.2. Central government plan and non-plan schemes**

#### **Additional Central Assistance**

In the context of disaster finance post-disaster reconstruction, there is provision for Additional Central Assistance (ACA). Over and above the provision of the SDRF, funding is provided from the NDRF in the wake of calamities of severe nature. On receipt of memorandum from the affected states, an Inter-Ministerial Central Team comprising of representatives of the Central



Ministries/Departments is constituted and its report, after examination by the Inter Ministerial Group (IMG) headed by Home Secretary, is placed before High Level Committee (HLC) for their consideration and approval of funds from NDRF.

### **Prime Minister Relief Fund**

At the national level, Prime Minister's National Relief Fund was created shortly after Independence with public contribution to provide immediate relief to people in distress for:

- Immediate financial assistance to the victims and next of kin.
- Assisting search and rescue.
- Providing health care to the victims.
- Providing shelter, food, drinking water and sanitation.
- Temporary restoration of roads, bridges, communication facilities and transportation.
- Immediate restoration of education and health facilities.

## **9.3. Other Options**

### **Chief Minister Relief Fund**

- At the state level, a provision has been made to provide immediate support to the distressed people affected by the natural calamities disasters, or road, air or railways accidents, under the Chief Minister Relief Fund.

### **Convergence with Central Sponsored Schemes**

- Various employment generation schemes, especially those such as the National Rural Employment Guarantee Scheme (NREGS), assure financial relief to needy families in drought-affected areas. They can be easily integrated with relief programs post disaster to increase the availability of funds for relief expenditure.
- Another scheme that has been effectively dovetailed with calamity relief is the Pradhan Mantri Awas Yojana-Gramin (PMAY-G) Indira Awas Yojana (IAY) which has accomplished useful relief work in terms of providing housing to the affected families. Ten percent of the annual allocation under PMAY-G IAY is earmarked for this purpose.
- The provision has been made for the mid-day meal to remain functional in the drought hit areas.

### **Other Financial Sources**

- District authority can take assistance from UN bodies and International organizations, NGOs and private donors (depending on their mandates) for relief, rehabilitation and other disaster risk reduction activities. Activities undertaken as Corporate Social Responsibility (CSR) can be channelized for mitigation and capacity building purposes as well as the disaster response.

### **Risk Transfer and Disaster Insurance (A Recommendation)**

Risk Transfer is a tool that enables a concerned party to share/transfer a portion of the disaster risk to another party, for a certain fee. This party can be the government itself or the microfinance institutions. The absence of disaster insurance means that the government has to bear a huge cost for compensation and rehabilitation work in post-disaster situations.

- The Insurance Regulatory and Development Authority (IRDA), India has framed micro insurance regulations that allow distribution of micro insurance products in the state. The regulations cover insurance for personal accidents, health care for individual and family and assets like houses, livestock, tools and others. In Bihar, various Ministries/ Department have their insurance schemes related to health, crops, livestock, and other which can be utilize in case of disaster.

## **CHAPTER 10: MONITORING, EVALUATION & UPDATION OF DDMP**

The DDMA is the authority for maintaining and reviewing the DDMP. As per Sub Section (4) of Section 31 of the Disaster Management Act, 2005, the plan would be reviewed and updated annually. The plan will then be uploaded in the District Website.

The DDMP has to be properly monitored and evaluated. This can be done by conducting Table Mock Exercise/ Mock Drill and Mock Exercise at District, ULB, Block and village levels. These exercises can be conducted twice a year preferably in the month of May and October.

After the simulation exercises, the DDMA will encourage interactions with all the stakeholders to evaluate the gaps, lessons learnt with proper documentation for further improving the capability to deal with future disasters.

### **10.1. Guidelines for monitoring and Evaluation of the plan:**

The District Disaster Management Authority (DDMA), Gaya must ensure the planning, coordination, monitoring and implementation of DDMP. The District Magistrate, Gaya is the overall in charge of all the activities related to disaster management.

Monitoring and evaluating of the effectiveness of plan and its maintenance involves a combination of training events, exercises etc. to determine whether the goals, objectives, decisions, actions and timing outlined in the plan will result in an effective response. Guidelines for monitoring and evaluation of the plan are as given below:

### **Monitoring & Evaluation- Mock Drill**

The purpose of monitoring and evaluation of DDMP is to determine:

- Adequacy of resources
- Coordination between various departments/agencies
- Community participation
- Partnership with NGOs
- Partnership with insurance companies to work on disaster insurance schemes

### **Regularly review the implementation of the DDMP**

- Implementation of DDMP within the district, its updation and quarterly mock-drill
- Implementation of all policies and plans of State Government
- Implementation of all NDMA guidelines
- Implementation of all instructions of Revenue & Disaster Management Department
- Department should ensure that all schemes based on the parameters of mitigation, relief and rehabilitation are identified and implemented
- Implementation of all guidelines/instructions related to disasters from Government of India and State Government
- All officers to be trained in Disaster Management.
- Implementation of National bylaws
- Implementation of Fire-safety and building bylaws
- Implementation of all on-site plans of the respective industries
- Establishment and proper functioning of Emergency Operation Center (EOC)
- Check the efficacy of the plan after any major disaster/emergency in the district and see what did work and what did not work and make amendments to the plan accordingly.
- Keep Bihar State Disaster Resource Network (BSDRN) and India Disaster Resource Inventory (IDRN) updated and connected with the plan.
- Update coordinates of responsible personnel and their roles/responsibility every six months or whenever a change happens. Names and contact details of the officers/officials who are the nodal officers or the in-charge of resources to be updated on regular basis.

- Plan should be web enabled with access on intra and internet.
- Plan should be circulated to all stakeholder departments, agencies and organizations so that they know their role and responsibilities and also prepare their own plans.
- Regular Drills/exercises should be conducted to test the efficacy of the plan and check the level of preparedness of various departments and other stakeholders.
- Regular training and orientation of the officers/officials responsible to implement the plan should be done so that it becomes useful document to the district administration.
- Army, NDRF, SDRF and other agencies should be integrated into the plan exercise regularly.
- DDMA should hold regular interaction and meetings with the Army or any other central government agencies for strengthening coordination during disasters.
- The DEOC should be made responsible for keeping the plan in updated form and collecting, collating and processing the information.

### **Review and Update of the DDMP**

The DDMA, Gaya will be responsible for the review of the DDMP. This needs constant review and updation based on the following requirements:

- Major change(s) in the operational activities and location
- Valuable inputs from actual disasters
- Lessons learnt from trainings
- Inputs from mock drills/simulation exercises
- Lessons learnt from near-miss incidents
- Changes in disaster profile of Gaya
- Technological developments/ innovations in identifying potential hazards or mitigating them
- Changes in regulatory requirements
- Updation of databases using GIS
- Change in demography of population of Gaya and nearby places
- Changes in geo-political environment

## **Abbreviations**

BRGF: Backward Regions Grant Fund

BSNL: Bharat Sanchar Nigam Limited

CBO : Community Based Organizations

CE	:	Chief Engineer
CEO	:	Chief Executive Officer
CMC	:	Crisis Management Committee
CMO	:	Chief Medical Officer
CMRF:		Chief Minister Relief Fund
CSO	:	Civil Society Organization
DDMA:		District Disaster Management Plan
DDMP:		District Disaster Management Plan
DDRF:		District Disaster Response Force
DM	:	District Magistrate
DMT	:	Disaster Management Team
DRR	:	Disaster Risk Reduction
EOC	:	Emergency Operation Centre
ESF	:	Essential Service Functions
EWS	:	Early Warning System
FRT	:	First Response Team
GIS	:	Geographic Information System
GP	:	Gram Panchayat
GPS	:	Global Position System
HFA	:	Hyogo Framework for Action
HRVCA:		Hazard Risk Vulnerability Capacity Analysis
HVCA:		Hazard Vulnerability Capacity Analysis
IAF:		Indian Armed Force
IAG:		Inter-Agency Group
IAP:		Immediate Action Plan
ICDS	:	Integrated Child Development Services
IMT:		Incident Management Teams
IRS:		Incident Response System
IRT:		Incident Response Team
IYA:		Indira Awas Yojna
LSG:		Lower Selection Grade
MGNREGS	:	Mahatma Gandhi National Rural Employment Guarantee Scheme
MLA:		Member of Legislative Assembly
MNREGA:		Mahatma Gandhi National Rural and Education Guarantee Action
MP:		Member of Parliament
MPLADS:		Member of Parliament Local Area Development Schemes
MAMSI:		Meters above mean sea level
NABARD:		National Bank for Agriculture and Rural Development
NCC	:	National Cadet Corps
NDMA:		National Disaster Management Plan
NDRF:		National Disaster Response Force/Relief Fund
NGOs:		Non- Government Organizations
NREGA:		National Rural Employment Guarantee Act
NREGS:		National Rural Employment Guarantee Scheme
NRHM:		National Rural Health Mission

NSV:	National Service Volunteer
NYK:	Nehru Yuva Kendra
OEOC:	Onsite Emergency Operational
CenterPDS:	Public Distribution Shop
PHC:	Primary Health Center
PHED:	Public Health Engineering Department
PMRF:	Prime Minister Relief Fund
Q&A:	Quality and Accountability QRT : Quick Response Team
SDMA:	State Disaster Management Plan
SDRF:	State Disaster Response Force/Relief Fund
SHG :	Self Help Group SME Small and Medium Enterprise
SOP:	Standard Operating Procedure
SP:	Superintendent of Police
SSA:	Sarva Shiksha Abhiyan
UN:	United Nations
UNISDR:	United Nations International Strategy for Disaster Reduction
WASH :	Water Sanitation and Hygiene