District Disaster Management Plan

District Banka

District Disaster Management Authority, Banka

Bihar State Disaster Management Authority
(Disaster Management Department)
Patna
Govt. of Bihar

District Disaster Management Plan
2022

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Abbreviations Used

Abbreviation/Acronym	Expanded Form
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
ASHA	Accredited Social Health Activist
AYUSH	Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy
BDO	Block Development Officer
BDRRF	Bihar Disaster Risk Reduction Framework
BMTPC	Building Materials and Technology Promotion Council
BSDMA	Bihar State Disaster Management Authority
CBO	Community Based Organizations
CCS	Cabinet Committee on Security
CHCS	Community Health Centre
CSR	Corporate Social Responsibility
CSS	Centrally Sponsored Schemes
CWC	Central Water Commission
DAO	District Agriculture Officer
DDC	District Development Commissioner
DDMA / District Authority	District Disaster Management Authority
DDMP	District Disaster Management Plan
DEOC	District Emergency Operations Centre
DG	Director General
DIO	District Information Officer
DM	Disaster Management
DM Act, 2005	Disaster Management Act, 2005
DRR	Disaster Risk Reduction
DSO	District Supply Officer
DTO	District Transport Officer
Dy	Deputy

EB	Electricity Board
ERC	Emergency Response Centre
ESF	Emergency Support function
EWS	Early Warning System
GP	Gram Panchayat
GSI	Geological Survey of India
HVCA/HRVCA	Hazard Risk Vulnerability Capacity Analysis
HYV	High Yield Variety
IAG	Inter Agency Group
IAP	Incident Action Plan
IAP/ICP	Incident Action Plan/Incident Command Plan
IC	Incident Commander
IMD	India Meteorological Department
INCOIS	Indian National Centre for Ocean Information Services
IPRD	Department of Information and Public Relations
IRS/ICS	Incident Response System/Incident Command System
MHA	Ministry of Home Affairs
MOAFW	Ministry of Agriculture and Farmer's Welfare
MOHFW	Ministry of Health and Family Welfare
NCC	National Cadet Corps
NCMC	National Crisis Management Committee
NDMA	National Disaster Management Authority
NDMF	National Disaster Mitigation Fund
NDMP	National Disaster Management Plan
NDRF	National Disaster Response Force
NDRF	National Disaster Response Fund
NEOC	National Emergency Operations Centre
NGO	Non-Government Organization
NIDM	National Institute of Disaster Management

NSS	National Service Scheme
NYKS	Nehru Yuva Kendra Sangathan
OSC	Operation Section Commander
PDNA	Post Disaster Needs Assessment
PHC	Primary Health Centre
PMAY	Pradhan Mantri Awas Yojana
PMKSY	Pradhan Mantri Krishi Sinchai Yojana
PPPP	Public Private Partnership Projects
PRI	Panchayat Raj Institutions
RO	Responsible Officer
RSSY	Rashtriya Swasthya Bima Yojana
SASE	Snow and Avalanche Study Establishment
SBI	Sukhi Baliraja Initiative
SBM	Swachh Bharat Mission
SDMA	State Disaster Management Authority
SDMP	State Disaster Management Plan
SDRF	State Disaster Response Force
SDRF	State Disaster Response Fund
SEOC	State Emergency Operations Centre
SFDRR	Sendai Framework for Disaster Risk Reduction
SHG	Self Help Group
SOP	Standard Operating Procedure
SP	Superintendent of Police
SPMRM	Shyama Prasad Mukherji Rurban Mission
TV	Television
ULB	Urban Local Bodies
UNISDR	United Nations International Strategy for Disaster Reduction

Executive Summary

The DM Act 2005 has mandated a disaster management plan at district level. Furthermore, the Roadmap for Disaster Risk Reduction (2015-30), Government of Bihar has provided envisioning guidelines to disaster managers to understand and act on disaster risk reduction taking Sendai Framework for Disaster Risk Reduction (SFDRR) into consideration.

As Bihar is one of the most multi-hazard prone states in the country, the Government of Bihar adopted the Bihar Disaster Risk Reduction Framework (BDRRF) to achieve the vision of a "Disaster Resilient Bihar". As per DM Act 2005, the District Disaster Management Authority (DDMA/District Authority), Banka is the authority and has responsibility of developing, implementing and regular updating of the DDMP.

Taking into consideration the SFDRR and BDRRF, the scope of the DDMP extends not only to the management of response and relief efforts during disaster events, but in the larger aspirations of risk-informed development in Banka district. Thus, this DDMP is applicable across all the phases of disaster risk management for a "whole-of-government" and "all-of-society" approach towards disaster risk management. The DDMP will direct a multi-disciplinary, multi-sectoral, multi-stakeholder and multi-level coordinated set of actions, facilitated by the District Authority, for robust disaster risk management practices, in the district of Banka.

Banka district is located in the southeastern part of the State of Bihar bordering Jharkhand State. Historically, Banka district is prone to drought as well as to Flash flood. However, one potential hazard is earthquake as Banka district lies in Seismic zone IV (High damage risk zone). The district is also highly vulnerable to other hazards like lightning, heat waves, cold waves, fire, stampede and several other localized hazards like snakebites, drowning cases etc. Therefore, the District Disaster Management Authority (DDMA) of Banka needs to take up Disaster Risk Reduction (DRR) and Disaster Response actions effectively to mitigate the adverse impacts of any probable event in the district.

The DDMP aimed to facilitate the DDMA in undertaking DRR and disaster response measures to mitigate adverse impacts of the hazards that Banka district is prone to. The DDMP has been segregated into the following chapters:

Chapter	Brief outline
Introduction	This chapter provides an overview towards the necessity of DDMP, and the objectives, scope, plan development methodology and the implementation, review and update of DDMP

District Profile	This chapter provides an overview of the district including key components such as the geographical location, features such as soil and rivers, the climatic and weather profile of the district, the culturally and historically important locations, and the natural resources including forest and water resources in Banka district. The chapter also includes a brief of the demographic details of Banka district with graphs and tables representing key characteristics of the demography (including the main occupation of the people) for developing a quick understanding of the district.
Hazard, Risk, Vulnerability and Capacity Analysis	This chapter provides a detailed account of the hazards that Banka district is susceptible to, and provides block wise nazari naksha for quick understanding of the hazards and vulnerability profile of Banka district. The chapter provides valuable information to the district administration for undertaking preparedness and mitigation measures to tackle important hazards such as heat wave, cold wave, and floods based on spatial-temporal qualitative and quantitative analysis. The chapter also includes a snapshot view of multi-hazard risk at block-level and the capacities (or resources) available for emergency response.
Institutional Arrangement	This chapter provides information on the institutional arrangement available at the national, state and district level and the powers, roles and responsibilities of key stakeholders. The key stakeholders include the DDMA, PRIs, CBOs, and the DEOC. Coordination mechanisms prior to, during and post disaster events are enlisted to help the DDMA's enhance preparedness levels.
Prevention, Mitigation and Preparedness Measures	This chapter provides a detailed description of the key prevention, mitigation and preparedness measures expected of the key stakeholders including the hazard/disaster-wise functions of departments/agencies in the district administration under the broad categories of prevention & mitigation, and preparedness.
Capacity building through training and awareness generation	This chapter deals with the capacity building measures identified by Banka district administration including the training needs identified by the district for its key stakeholders such as district departments, CBOs, PRIs and ULBs, Professionals, NGOs and the important training

	centers and training capacities available in the district or the State of Bihar. A detailed section of awareness generation, including specific measures to be undertaken by concerned departments/agencies of the state and other organizations/CBOs/NGOs for awareness generation to assist in enhanced preparedness and prevention of adverse impacts of disasters, is provided in this chapter.
Response Planning (Standard operating procedure)	This chapter deals with emergency response and illustrates the Incident Response Functions and the roles and responsibilities of the emergency support functions in Incident Response, Standard operating procedure to be followed during disaster.
Reconstruction, Rehabilitation and Recovery	This chapter deals with the post-disaster measures identified by key stakeholders for build back better post disaster events. One section of the chapter deals with the relief norms identified by the NDMA, and the State of Bihar as per the NDRF/SDRF norms to help district administration as a ready reckoner for emergency relief.
Budget and Financial Resources	This chapter deals with the financing for DRR measures including the preparation (and maintenance) of the DDMP. The schemes and programmes at the national and state levels supporting DRR, along with the Centrally Sponsored Schemes and other options such as risk insurance, mutual aid and CSR, are dealt in this chapter to assist the district administration to mobilize funding for DRR measures.
Monitoring, Evaluation and Update of DDMP	The guidelines for monitoring and evaluation and for regular update of the DDMP are dealt in this chapter to assist the district administration to address vulnerabilities and channelize DRR efforts.
Annexure	Annexure consists of sections such as maps, important contact numbers, detailed capacity analysis, checklists, and model certificates. These sections are included in the annexure for assisting the district administration to undertake a systematic effort towards implementation of the DDMP and help in the development of a resilient Banka and thereby a resilient Bihar.

1 Introduction

Disaster Management (DM) Act, 2005 defines a disaster as "a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence, which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of environment and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected areas."

Disaster risk is recognized as the consequence of the interaction between a (or multiple) hazard, and the characteristics that make people, places and assets vulnerable and exposed. Mathematically,

$$\text{Disaster Risk} = \text{Hazard}^{1} \times \text{Exposure}^{2} \times \text{Vulnerability}^{3}$$

The State of Bihar is multi-hazard prone and requires a multi-disciplinary approach to deal with these hazards. This also demands active participation of various stakeholders. It requires a continuous and integrated process of planning, organizing, coordinating, and implementing measures that are necessary for the different phases of disaster risk management (prevention, mitigation, and preparation to face any disaster event and to respond, rehabilitate and reconstruct in post-disaster scenarios) (Figure 1).

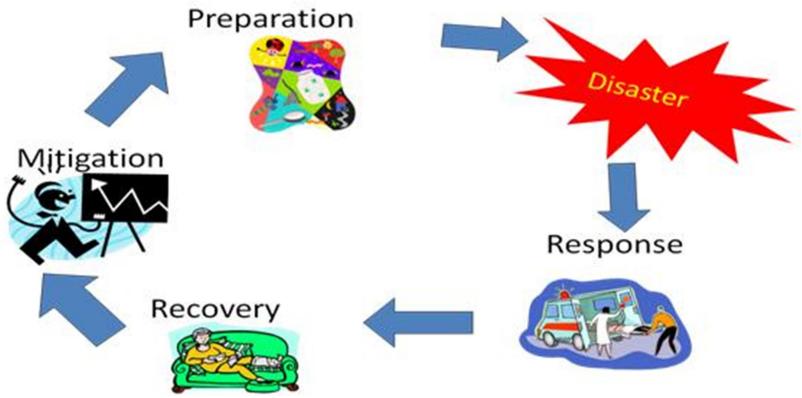


Figure 1: Phases of Disaster Risk Management

The disaster risk management process in Bihar has been evolved considerably since early 2000's and it further received strengthening after national and state level policies. The DM Act 2005 has mandated a disaster management plan at district level. Furthermore, the Roadmap for Disaster Risk Reduction (2015-30), Government of Bihar has provided envisioning guidelines to disaster managers

[1] The likelihood, probability, or chance of a potentially destructive phenomenon

[2] The location, attributes, and values of assets that are important to communities

[3] The likelihood that the assets will be damaged or destroyed when exposed to a hazard event

to understand and act on disaster risk reduction taking Sendai Framework for Disaster Risk Reduction (SFDRR) into consideration. As Bihar is one of the most multi-hazard prone states in the country, the Government of Bihar adopted the Bihar Disaster Risk Reduction Framework (BDRRF) to achieve the vision of a "Disaster Resilient Bihar". The vision of the Plan is:

"*Make Bihar disaster resilient, achieve substantial disaster risk reduction, and significantly decrease the losses of life, livelihoods, and assets – economic, physical, social, cultural, and environmental – by maximizing the ability to cope with disasters at all levels of administration as well as among communities.*"[4]

1.1 Objectives of DDMP

Along with the mandate given in the DM Act 2005, the district disaster management plan (DDMP) has incorporated the national and state commitment towards the Sendai Framework and BDRRF. Accordingly, the broad objectives of the DDMP are:

- Improve the understanding of disaster risk, hazards, and vulnerabilities of the district
- Emphasize on pre-disaster phase by promoting a culture of prevention, mitigation and preparedness at all levels in the district
- Strengthen disaster risk governance at all levels from local to district
- Emphasize on different tasks and responsibilities of the Stakeholders and line departments in the district during the pre-disaster and post-disaster phases of disaster
- Invest in disaster risk reduction for resilience through structural, non-structural and financial measures, as well as comprehensive capacity development at district level
- Promote "Build Back Better" in recovery, rehabilitation and reconstruction
- Emphasize on putting in place institutional arrangements and techno-legal framework
- Empower both local authorities and communities as partners to reduce and manage disaster risks
- Strengthen scientific and technical capabilities in all aspects of disaster management
- Capacity development at all levels to effectively respond to multiple hazards and for community-based disaster management
- Provide clarity on roles and responsibilities of various Departments and agencies involved in different aspects of disaster management
- Facilitate the mainstreaming of DRR concerns into the developmental planning and processes.

[4] Based on National Disaster Management Plan (NDMP), 2016, NDMA, Ministry of Home Affairs, Govt. of India

The DDMP is a guide for achieving the objectives of the disaster management phases i.e. prevention, preparedness, mitigation, response, and recovery. This plan will also help the stakeholders to remain prepared to respond to disasters with a sense of urgency in a planned way to minimize human, property and environmental loss.

1.2 Scope of the DDMP

Taking into consideration the SFDRR and BDRRF, the scope of the DDMP extends not only to the management of response and relief efforts during disaster events, but in the larger aspirations of risk-informed development in Banka district. Thus, this DDMP is applicable across all the phases of disaster risk management for a "*whole-of-government*" and "*all-of-society*" approach towards disaster risk management. The DDMP will direct a multi-disciplinary, multi-sectoral, multi-stakeholder and multi-level coordinated set of actions, facilitated by the District Authority, for robust disaster risk management practices, in the district of Banka.

1.3 Plan Development Methodology

The Plan development methodology is depicted in

Figure 2.

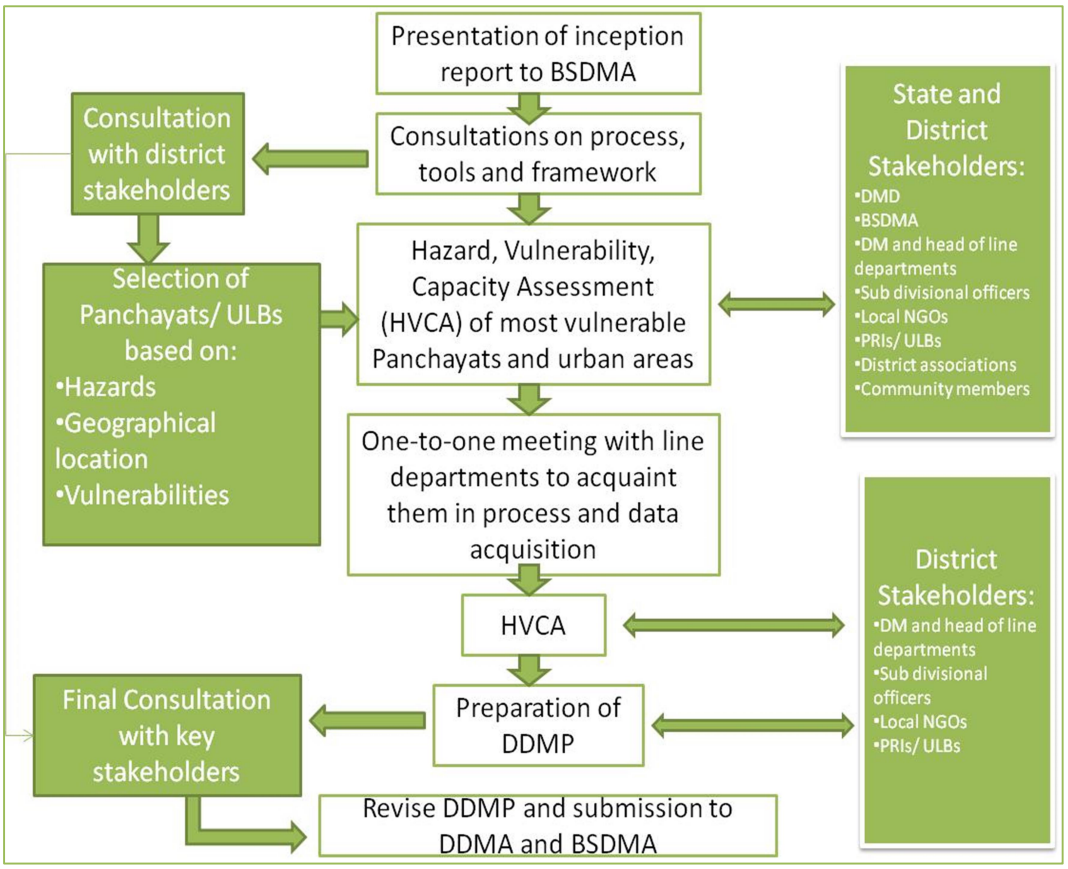


Figure 2: DDMP Development Methodology

1.4 Implementing DDMP: Main stakeholders and their responsibilities

As per DM Act 2005, the District Disaster Management Authority (DDMA/District Authority), Banka, has the authority and responsibility of developing, implementing and regular updating of the DDMP. However, the ownership of the DDMP and its processes lie with all concerned stakeholders in the district collectively. The DDMA shall act as the fulcrum for the implementation of the DDMP. The District Magistrate (DM) as the chairperson of the DDMA is a central figure for ensuring successful implementation of the DDMP. Under the guidance of the DM, the DDMA will coordinate with the line departments, private and public sector, Panchayats, urban local bodies, community based organizations and the community to implement the plan and achieve a disaster-resilient Banka.

Section 31 (4) of the DM Act 2005, mandates that the DDMP be reviewed and updated annually. It is recommended that the DDMP be internally reviewed on a yearly basis and either be updated or reaffirmed. The updates or reaffirmed document may also be used to summarize the accomplishments of the past year and help the administration to prioritize mitigation goals for the next year.

1.5 Plan review and update

Training- After developing a plan, it must be disseminated and District Authority must train their personnel so that they have the knowledge, skills and abilities needed to perform the tasks identified in the plan. Personnel should also be trained on the organization-specific procedures necessary to support those plan tasks.

Exercise the Plan - Evaluating the effectiveness of plan involves a combination of training events, exercises and real-world incidents to determine whether the goals, objectives,

decisions, actions and timing outlined in the plan led to a successful response. The purpose of an exercise is to promote preparedness by testing polices plans and training personnel.

Revise and Maintain - Planning teams should establish a process for reviewing and revising the plan. Reviews should be a recurring activity (under clause 31 of the DM Act 2005). Review should be done at least annually. It is mandatory to review and update the plan after the following events:

- A major incident e.g. COVID19 Outbreak
- A change in operational resources (e.g., policy, personnel, organizational structures, Management processes, facilities, equipment).
- A formal update of planning guidance or standards.
- A change in the district‘s demographics or hazard or threat profile.
- The enactment of new or amended laws or ordinances.

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

The District Authority of Banka shall compile its database of resources and propose new mechanisms for improvement of the capacity to deal with disasters. The review and update (Plan Maintenance) certificate is provided in section in the annexure.

2 District Profile

Banka district is located in the southeastern part of the State of Bihar bordering Jharkhand State. The Banka district lies south of the river Ganga and constitutes a part of the Ganga basin. It falls under Badua –Chandan sub-basin. This district was established on 21stFebruary 1991. Prior to this, it was a sub-divisional town under Bhagalpur district. The district is well recognized with the presence of Mandar Hill situated in Bounsi Block at about 18 Kms from the district headquarters. The Mandar Hill is reflected in mythological story of the Skand Purana (Samudramanthan event).

Historically, Banka district is prone to drought as well as to flood. However, one potential hazard is earthquake as Banka district lies in Seismic zone IV (High damage risk zone). The district is also highly vulnerable to other hazards like lightning, heat waves, cold waves, fire, drowning, stampede and several other localized hazards. Therefore, the District Disaster Management Authority (DDMA) of Banka needs to take up Disaster Risk Reduction (DRR) and Disaster Response actions effectively to mitigate the adverse impacts of any probable event in the district.

2.1 Geographical Location and Features

The district is located at a Longitude of 86°30'E to 87°12'Eand the Latitude is 25°03'40" N to 25°30'N (Figure 3). It is situated at a altitude of around 88.9 meters above MSL. Banka district is surrounded by six districts, eastern and southern boundary coincides with Deoghar, Dumka and Godda district of Jharkhand state, western boundary coincides with Jamui district and north-west side to Munger district and with Bhagalpur district in north. Geographical area of the district is 3,020 sq km. Banka district has one Nagar Parishad Banka and three Nagar Panchayats Bounsi, Katoriya & Amarpur. Banka town is the administrative headquarter of the district. Following are the administrative divisions of the district:

Administrative Division	Number
No. of Sub-Division	01
No. of Blocks	11
No. of Panchayats	182
No. of Revenue Villages	2,000
No. of Urban Local bodies	04

Table 1: Administrative divisions of Banka District

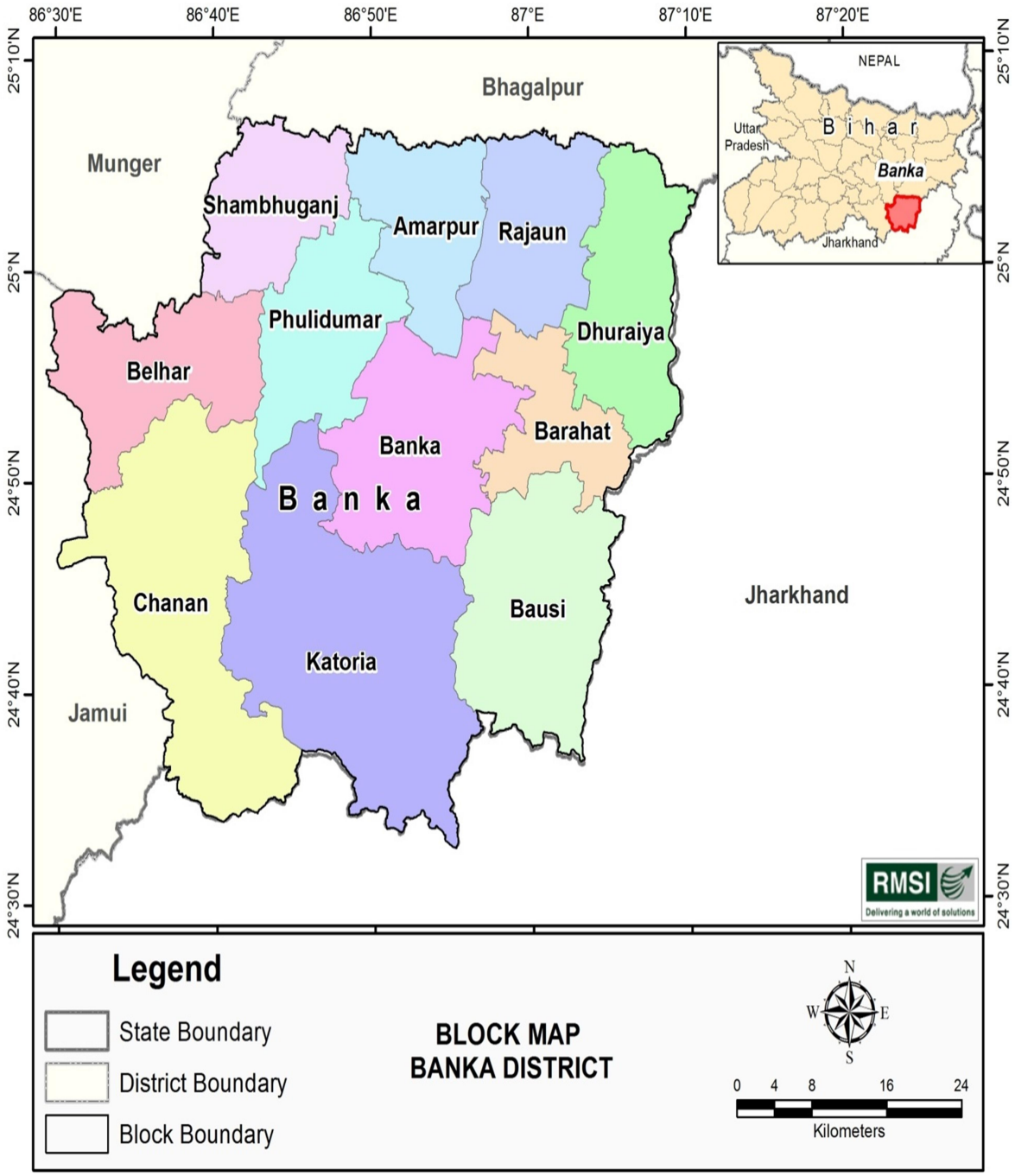


Figure 3: Map of Banka district

The topographical map of Banka district is provided in Figure 4. The southern blocks of Banka district fall in the Chota Nagpur plateau while the northern blocks of Banka district fall in the Ganges basin.

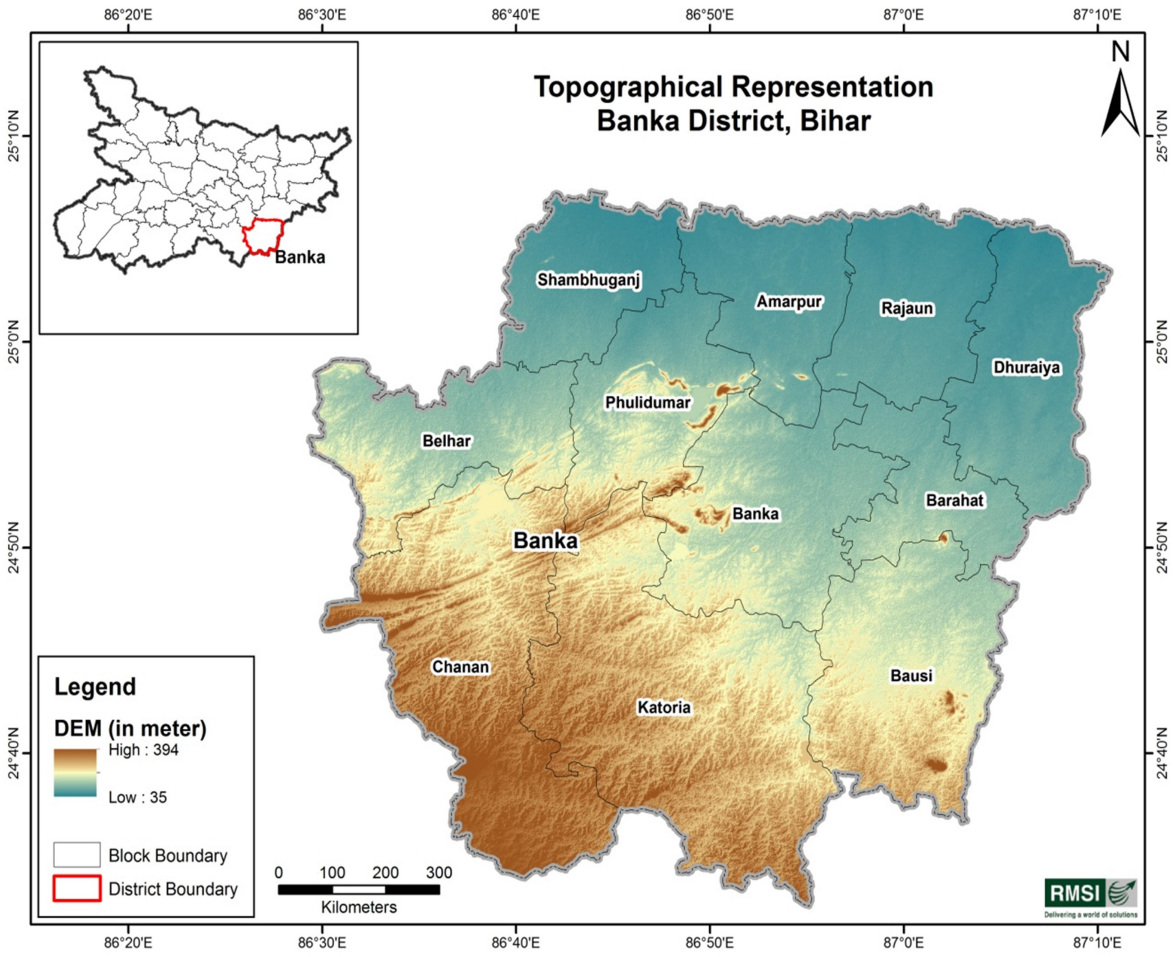


Figure 4: Topographic map of Banka district

2.1. SOIL

Banka district is characterized by a wide variety of soils, which can be broadly grouped into two categories, the alluvial soil and mountainous soil. The alluvial soil derived partly from the older alluvium deposit and partly from the newer flood plain deposits. It is characterized by light grey to dark grey color and fine texture. The mountainous soil derived from the weathered product of rocks is coarse grained, ferruginous, low in nitrogen, medium to high potash and acidic in nature. Sandy loam and loamy sand soil types are prevalent in the district.

The rivers, originating from the Chhotanagpur plateau, bring along with it significant amount of sediments that results in their deposition along the bank of the rivers. This leads to soil being medium or heavy texture with negligible marsh lands.

2.2. RIVERS

Banka district lies south of the river Ganga and constitutes a part of the Ganga River Basin. It falls under Badua–Chandan sub-basin.

It has three watersheds, namely Badua Nala, Chandan river watershed and the left bank watershed of Burigeria Nala. The major part of the district falls under Chandan river watershed. Chandan River is the main river of Banka District. The Belharni River and Badua River flows in the northwestern area of the district. Chandan and Odhani River flows from middle of the district. The river Cheer meets river Chandan in the north- eastern of Mandar Giri, which rises in the east of Mandar. Badua Nala forms the northwestern boundary. Chandan river flows through the central part of the district. Burigeria Nala forms the eastern boundary of the district. All the three rivers/nalas originate from the hilly tracts present in the south of the district and flows from south to north direction.

The streams namely Kudar, Odhani, Panchkatia are the main tributaries of Chandan River while Lohargara, Karunior, Belharna are the main tributaries of Badua River. All the rivers are ephemeral in nature. It almost dries in summer but is flooded during rainy season. Construction of embankments and channels on Chandan and Badua Rivers has made them useful. These channels not only irrigate the fertile lands but also help in preventing floods.

2.2 Climate and Weather Profile

Climate of Banka district is warm and tropical, characterized by hot summer and pleasant winter. April to June comprises summer month while November to March makes cold season. The southwest monsoon arrives in the month of June and continues until the end of September.

TEMPERATURE

The months of April, May and June witness maximum temperatures and the months of December and January are the coldest.

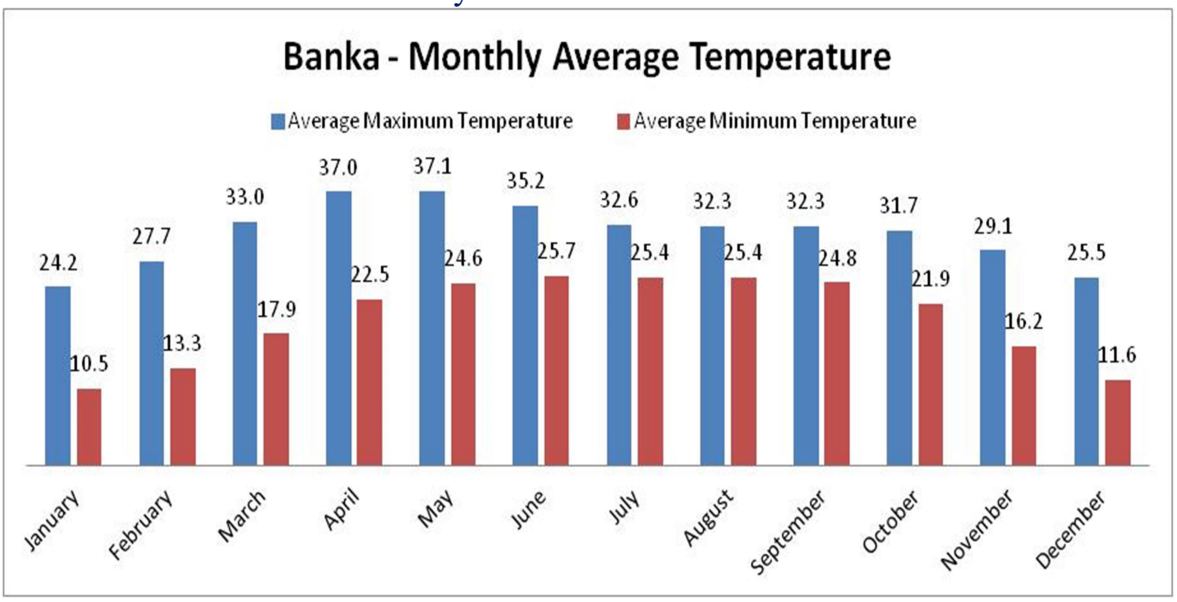


Figure 5: Monthly Average Temperature - Banka

RAINFALL

Month-wise average rainfall in Banka is depicted in

Figure 6. About 80 percent of the total rainfall is received between mid-June to mid-October. December is the driest month. Most of the precipitation occurs in July. The advancing South west monsoon winds (Bay of Bengal branch) brings most of the rainfall in the region. Less than 20 percent of the pre-monsoonal rains is due to the *Norwesters*. Additionally, *Western Disturbances* brings rainfall in the month of December and January.

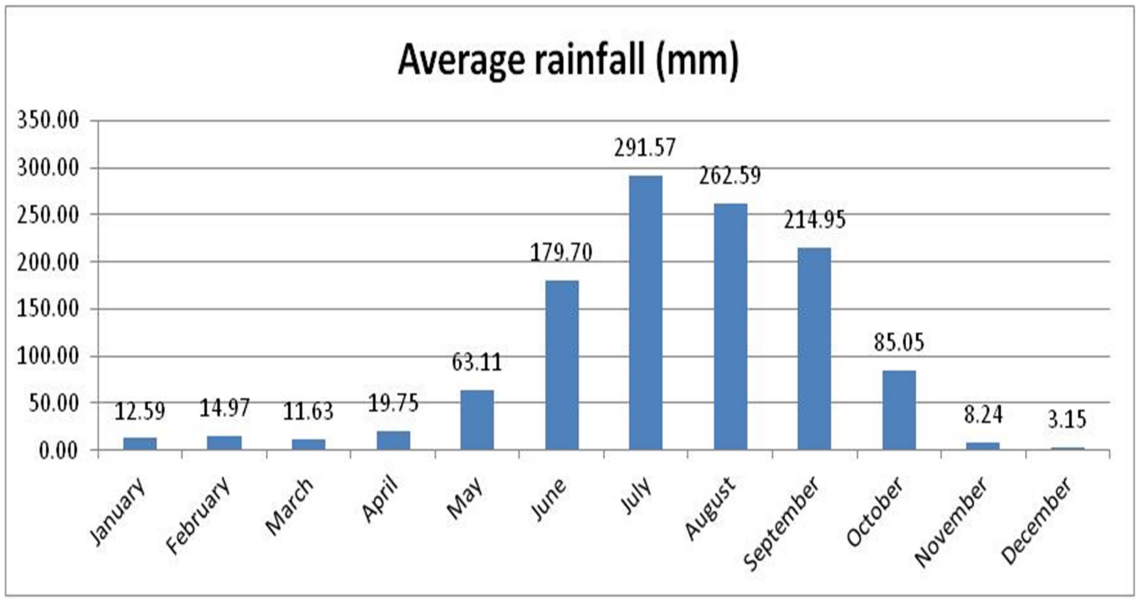


Figure 6: Average rainfall - Banka district - month-wise

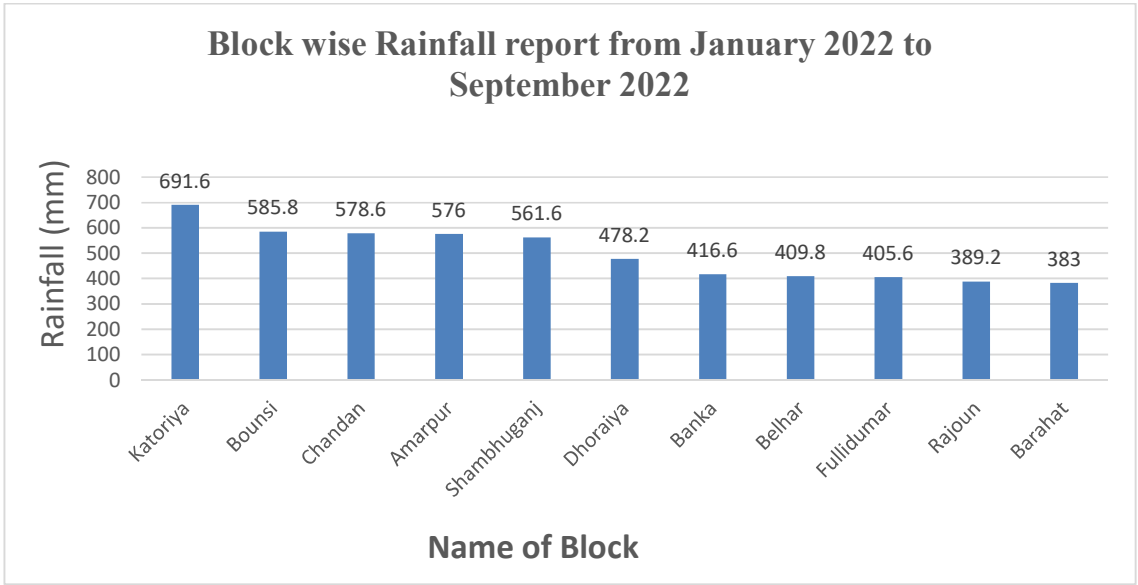


Figure 7: Block wise Rainfall - Banka district

EXTREME WEATHER CONDITIONS

Based on soil characteristics, rainfall, temperature, and terrain, four main agro-climatic zones in Bihar have been identified each with its own unique characteristics. Banka District falls under Agro-Climatic Zone IIIA (South East alluvial plain) which is located south of the river Ganges. Zone IIIA is drought prone.

2.3 Cultural and Historical Perspective

Banka is prospective religious tourism spot for both Hinduism and Jainism. Mandar Hill, Teldiha Mandir are among the many places to visit in the district.

The district is known for its rich tribal culture and its cottage industries. Khadi and Silk textile products of the area are popular. Most of the raw silk cocoon is produced in Katoriya (Amarpur Block); in fact, major part of the raw materials required for silk industry in Bhagalpur is supplied from here.

2.4 Demography

According to the Census 2011, Banka district has a population of 2,034,763 and is ranked 228th in India (out of 640 districts). *As per Census2011*, 96.5 % population of Banka district lives in rural areas. The total population living in rural areas is 1,963,546 and in urban areas is 71,217. The population of males and females are 1,067,140 and 967,623 respectively. The district has a population density of 674 inhabitants per square kilometer. Its population growth rate over the decade 2001-2011 was 26.48%. Banka has a sex ratio of 907 females for every 1,000 males.

Population distribution of the district is shown in below figures:

	Rural	Urban
Total population	1,963,450	71,313
Male population	1,029,097	38,043
Female population	934,353	33,270

	Total	Male	Female
Working Population	374,097	295,336	78,761
Non-working population	1,263,683	549,323	714,360

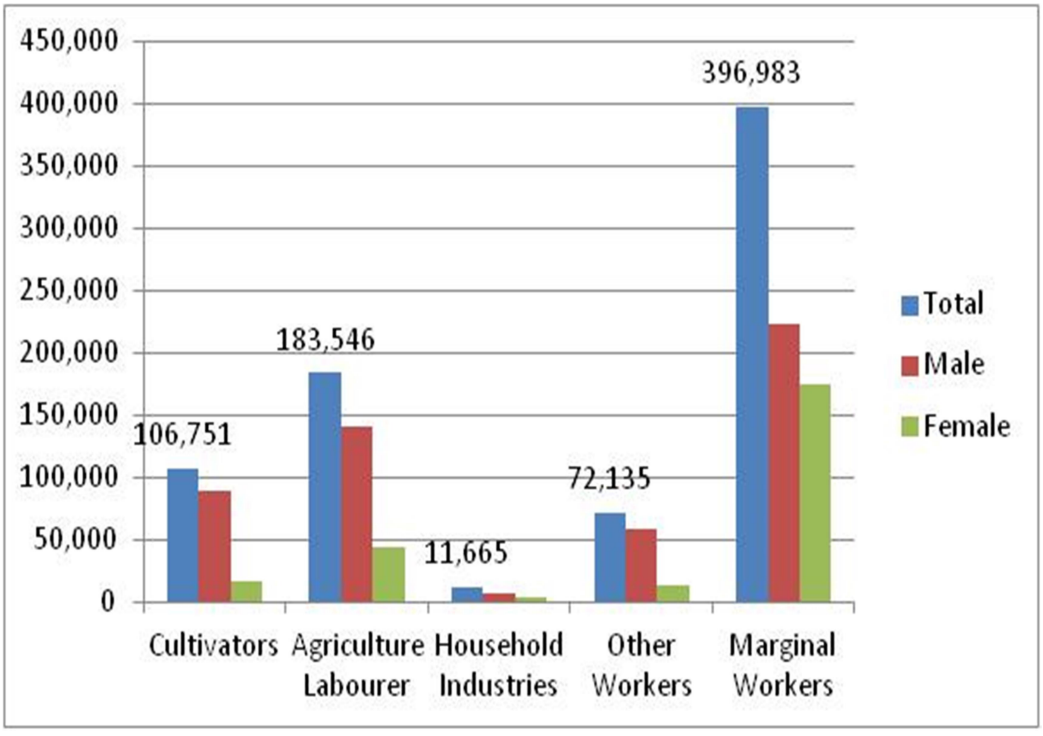


Figure 8: Occupation distribution in Banka district

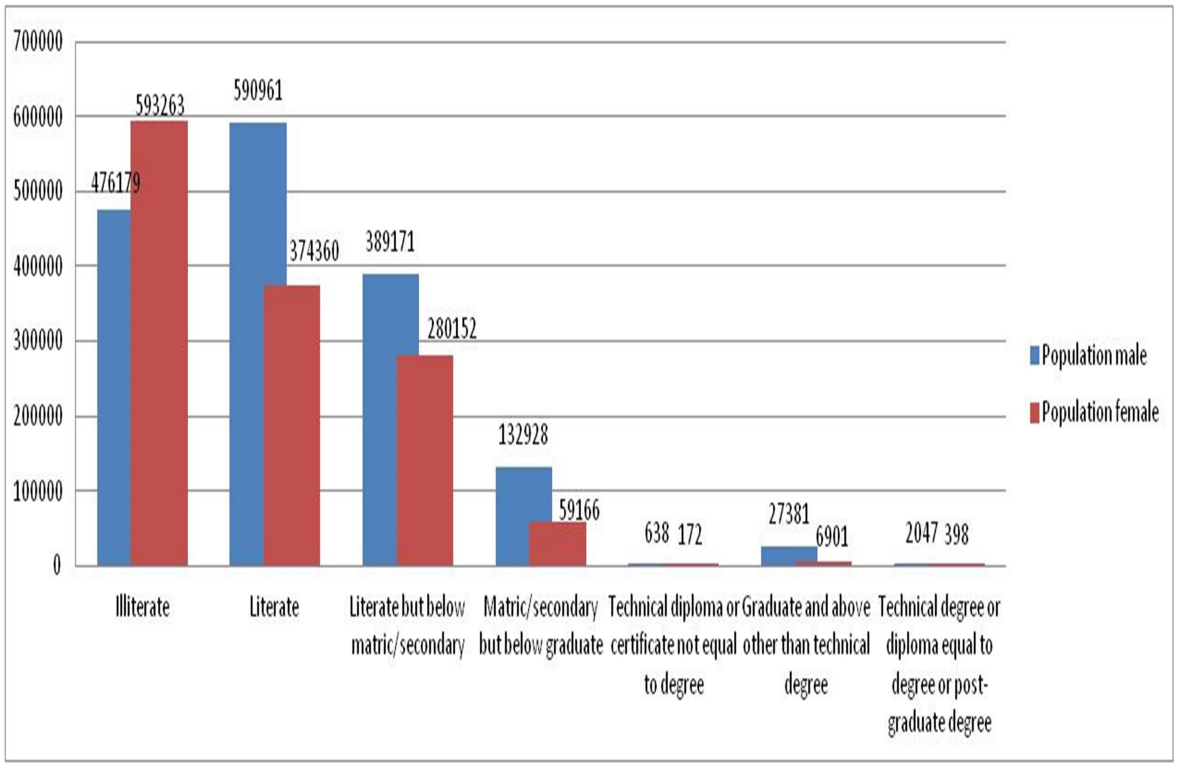


Figure 9: Population by gender and education: Banka district

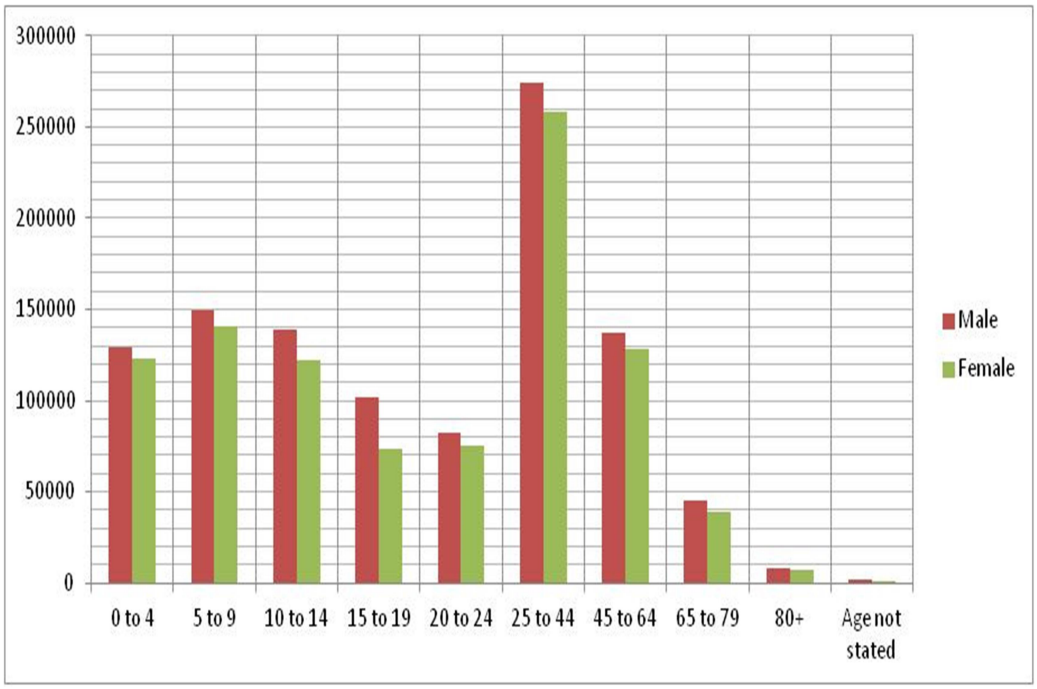


Figure 10: Population disaggregated by age- Banka district

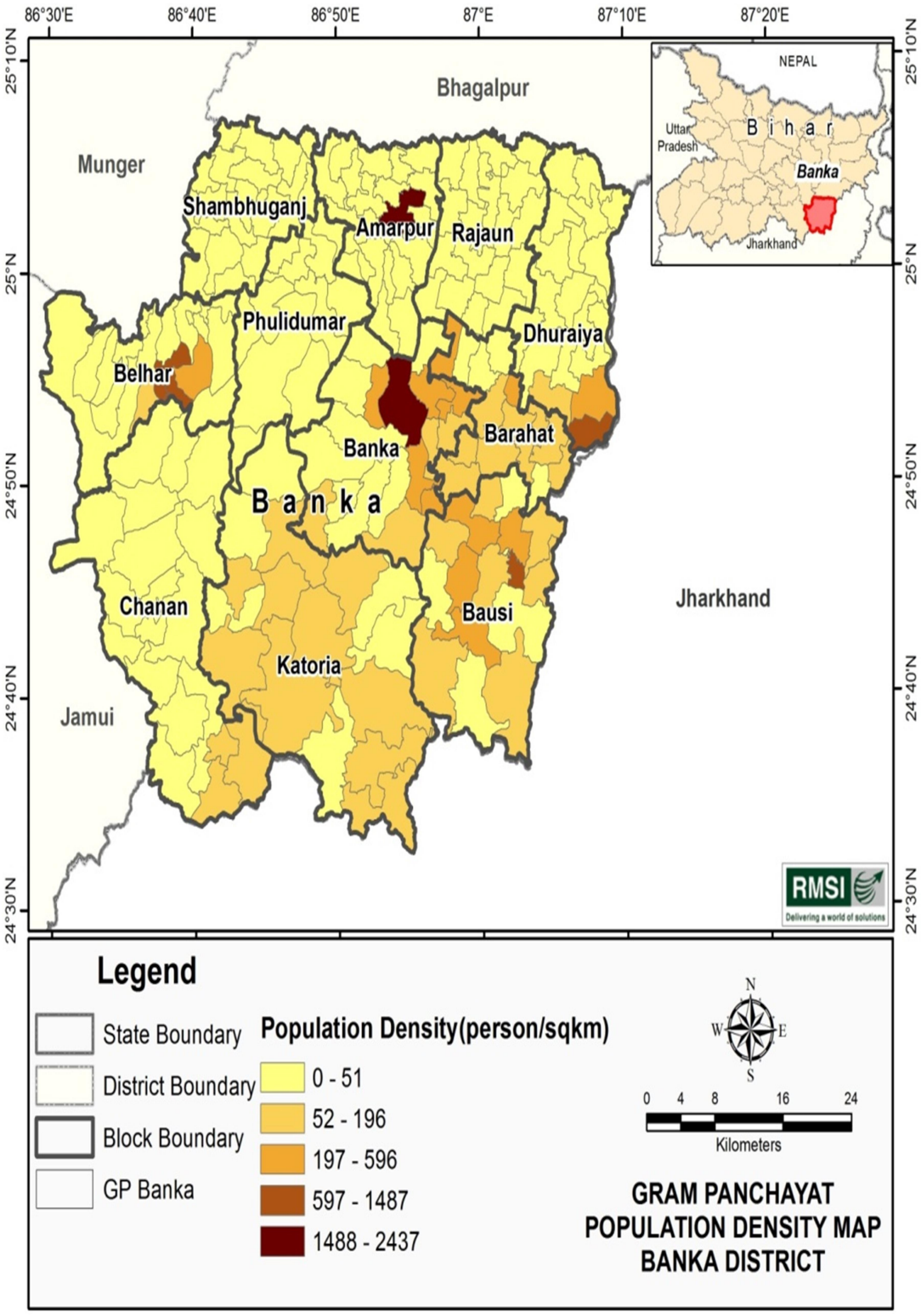


Figure 11: Population density map - Banka district

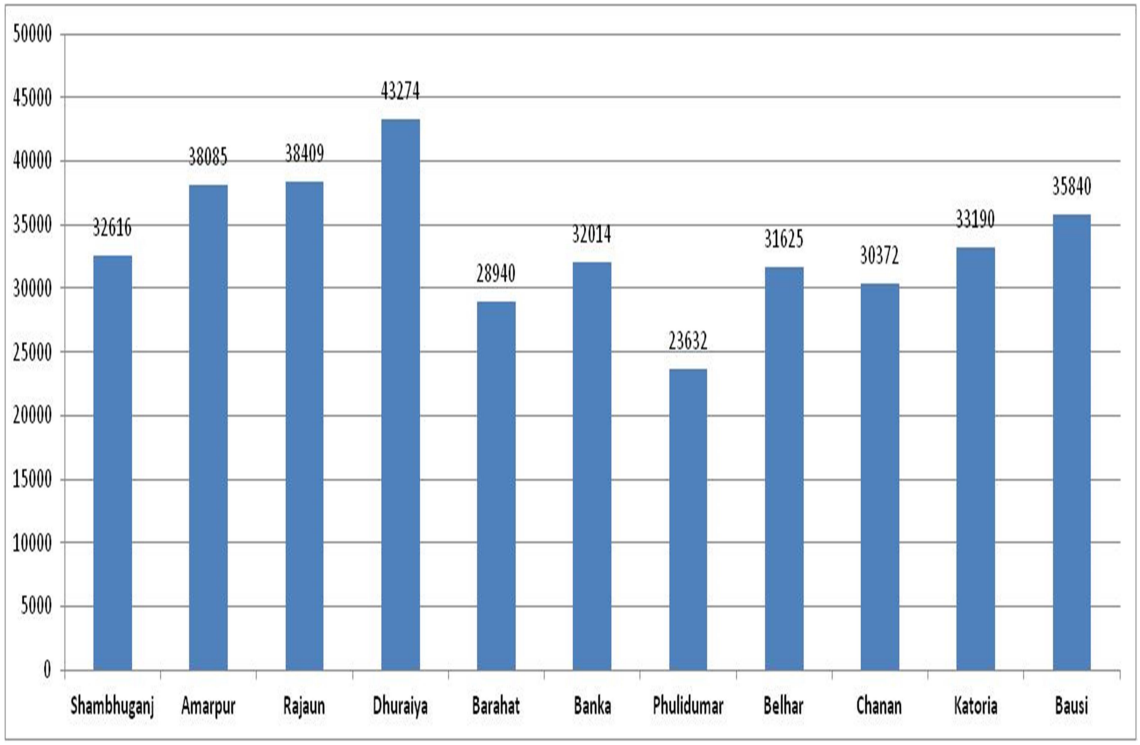


Figure 12: Block wise households - Banka district

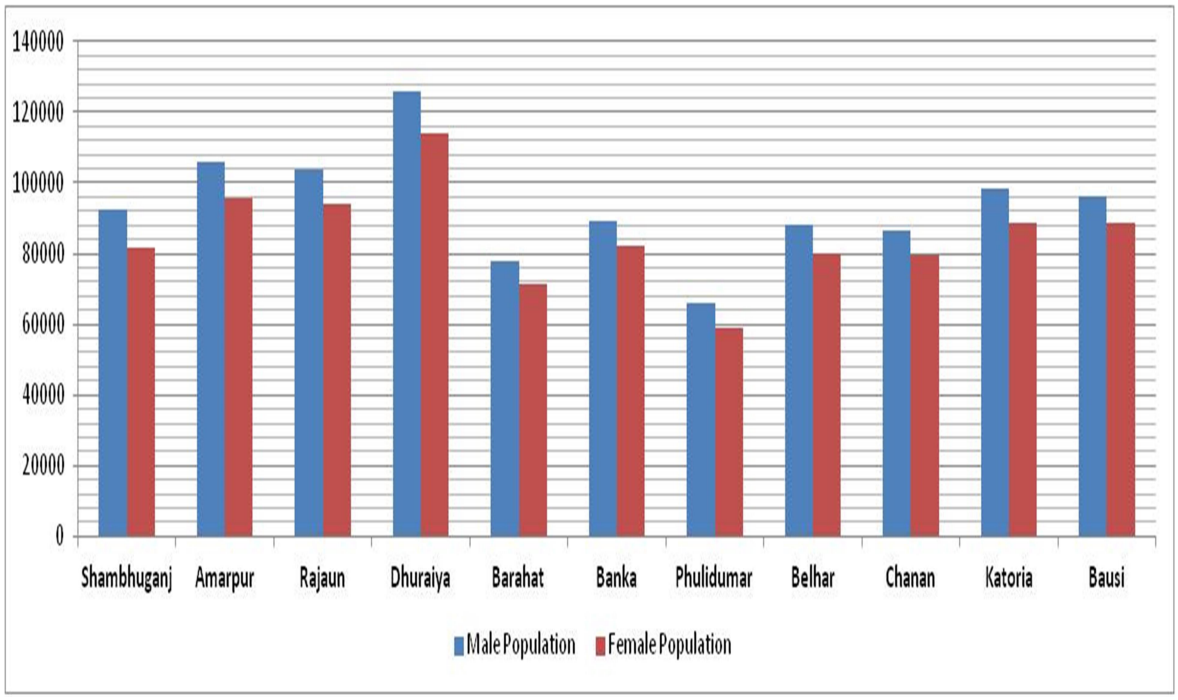


Figure 13: Block wise male and female population - Banka district

2.5 Administrative Structure

The organization structure of Banka district administration is presented in Figure.

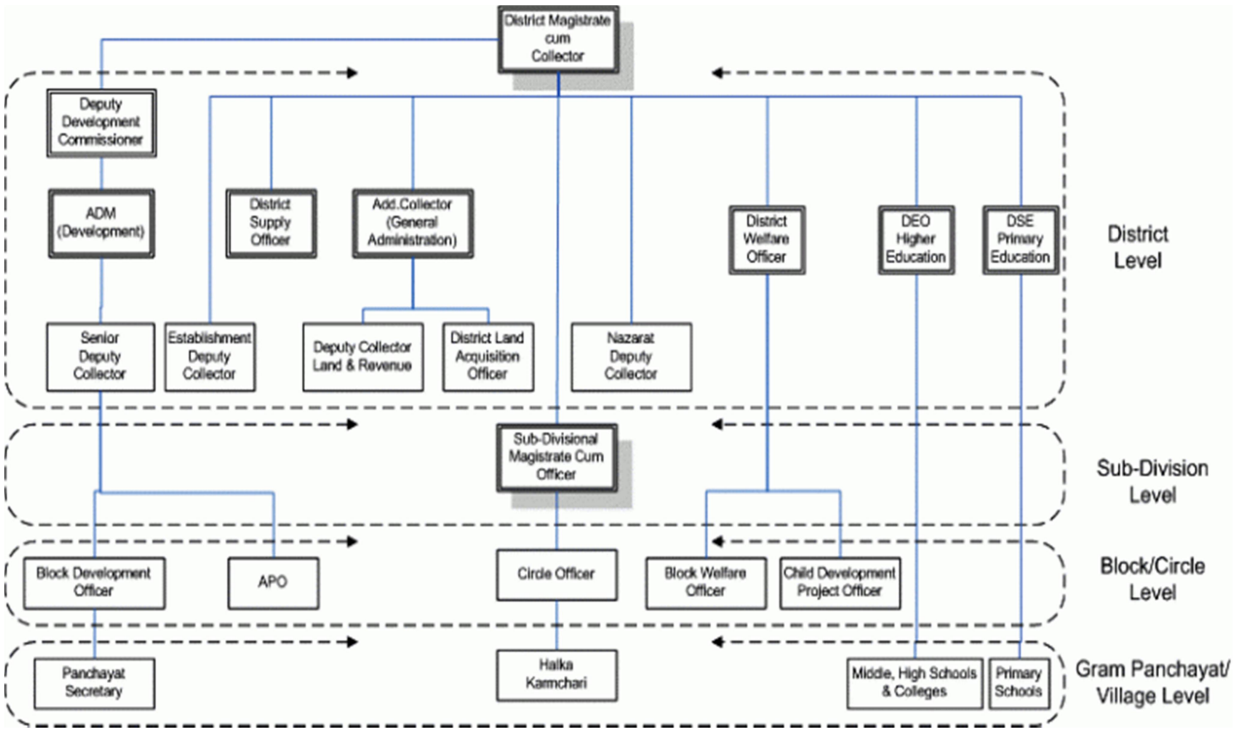


Figure 14: Organization structure of Banka district

2.6 Natural Resources

FOREST

The district has some forested area under Banka, Bounsi and Katoriya forest ranges. The forest of Banka range is prevalent on Hill slopes whereas the forest in other two ranges is mostly found in undulating land. Among the prominent variety of trees in forested areas are the Sal, Abuns, Asan, Kendu, Bahera, Kadam, Amaltas and Mahua. Tasar worms are reared on Asan trees

WATER RESOURCES

The surface water resources in Banka district

Following are the major irrigation schemes in the district:

- Chandan Reservoir Irrigation Scheme,
- Kajia Danr Irrigation Scheme,
- Badua Reservoir Project- Shambhuganj and Belhar Blocks,
- Chandan-Bilasi Irrigation Scheme – Banka,
- Odhani Reservoir Irrigation Project – Banka, Phullidumar
- Laxmipur Reservoir Irrigation Project- Bounsi Block

Chandan reservoir is the major irrigation project in Banka district. Its command area comprises of Banka, Barahat, Rajoun and Dhuraiya blocks of the district. Gross command area is 1.40 mha and the irrigation facility is available only to 0.64 mha in kharif season and 7,690 ha during rabi (inclusive of water directed from small structures like ahar etc).

The ground water yield ranges from 60 m^3/hr to 124 m^3/hr for a water table of 21m and 8m respectively. In the southern parts of the district, availability of ground water is controlled by joints, fissures and other structural zones of weakness. Ground water occurs in the weathered formations in unconfined conditions and in deeper fractures within hard rocks.

Water is available between 2.85-8.76 m below ground level pre-monsoon and 1.62-5.55 m below ground level post monsoon. Despite the availability of ground water, its utilization is less than surface water for irrigation. All blocks of Banka district are under 'safe category' for ground water management. None of the blocks have been notified by either Central Ground Water Board or by State Ground Water Authorities. The southern areas of Chandan and Katoriya blocks are suitable for artificial recharge.

2.7 Main Occupation

Main occupation of the people of the district is agriculture and agro-based industries as land in 7 out of 11 blocks are plain and fertile. Blocks such as Chandan, Katoriya, and Bounsi are hilly. People are also engaged in the secondary and tertiary sectors. The traditional occupation in this area has been the rearing of milch cattle. Animals are used in agricultural work even today. In urban areas, rearing of cows of hybrid quality has increased. Milk production in the district has increased due to marked progress in the veterinary health facilities. Fisheries have become one of the important occupations, which support the livelihood of people. A number of reservoirs, tanks are used for pisciculture in the district. The chief fish market and trade center is Amarpur block. Traders buy fishes from different center outside the district as well.

- **Agriculture**
  Being a predominantly agrarian economy, the source of livelihood in the district primarily depends on agricultural products. More than 80% people depend upon agriculture. Paddy, sugar cane and staple crops like cereals and vegetables are the main crops grown in the district. Main cash crops of the district are oilseeds, tobacco, jute, potato, red chilies, and tomato. Sugarcane is the most important cash crop of the district. The farmers of Amarpur, Rajoun, and Dhuraiya, blocks grow sugarcane in abundance. There are several mills to produce *gur*, molasses from sugarcane. As agriculture is rain fed, the failure or premature cessation of rainfall leads to crop failure.

Besides that, the district is highly vulnerable to drought which affects the crop production.

- **Animal Husbandry**

  Apart from agriculture, animal husbandry is one of the key sectors, which plays an important role in employment and provides income opportunities to the rural masses.

  According to the livestock census of 2017, the total livestock population in Bihar was 14,65,128. Around 50% percent of total livestock population comprises of cattle. Taking note of the importance of the sector, the state government has taken several important steps for its development. These include breed up gradation, health and nutrition, insurance scheme for milch animals, and marketing of the products of the sectors. Total artificial insemination centers in the district is 20 as on date.

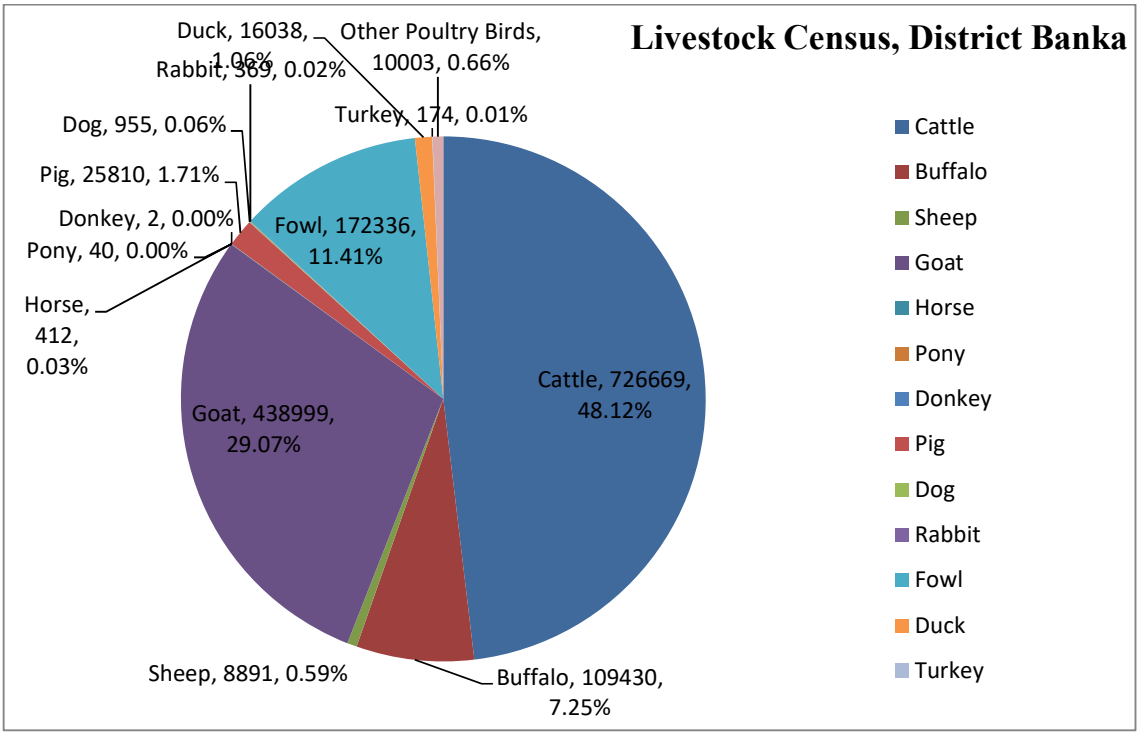


Figure 15: Livestock Census, District Banka

- **Industry**

  Banka District is relatively less industrialized. Agro based industries are though having generous presence, Banka has three four rice producing and transaction centre like Vijay haat and Rajoun. Amarpur belt is famous for *Gur* producing mills based on raw material sugarcane.

Timber industry and stone artifacts are thriving here. Stone crusher industries at Bounsi and Shiv shankar Chemical Works in Rajoun block are among the important industries of the district. A traditional Tussar silk textile weaving industry is situated in village Katoriya of Amarpur block. The district administration has been supporting actively to promote this village in silk weaving. There are more than thousand weaver families in the village Biraidih Churaili, Masuriya, Dumra, and Jagay of Banka Urban areas. The livelihood of these families is dependent mainly on Handlooms. This district has remarkable potential for agro-based industries because of the large production of maize and oilseeds etc.

- **Services**
  Beside agriculture and industries there are other services like painting, fisheries, handicrafts, and weaving etc. which are the primary source of income for many families and also a vital source for the economic growth of the district.

3 Hazard, Risk, Vulnerability, and Capacity Analysis

The HRVCA in Banka district is a systematic analysis that involves the following steps:

i. Hazard identification and profiling of the potential hazards in Banka
ii. Vulnerability assessment of the potential population and assets exposed to the identified hazards
iii. Capacity analysis to identify the ability of the district to cope with the hazards and reduce negative impacts.

The HRVCA is an important step in disaster risk management. Bihar DRR roadmap also envisages resilient villages, livelihood, critical infra, basic services, and cities. But in order to plan for resilience, there must be a systematic study of the pertinent hazards, vulnerabilities and capacities. This understanding would help in prevention by reducing the incidences of hazards, mitigating losses during hazard events by focusing on preparedness, response and relief, and build back better post any disaster event to reduce future risk**.**

Banka is mainly a drought-prone district regularly affected by droughts causing damage to crops, human lives, and animals. Banka district also faces various other hazards apart from drought such as Lightning, Road Accident, Drowning, fire, earthquake, heat/cold waves, fire hazard etc. Road accidents in the district happen majorly due to negligence and heavy traffic movement. The district is vulnerable to the following hazards at varying levels of intensity and hazard specific details are presented in the subsequent section.

Natural Hazards	Man-made Hazards
• Drought • Lightning • Fire • Earthquake • Heat Waves • Windstorm/Cyclonic wind • Cold Waves • Flash Flood • Incessant rains/untimely rain • Snakebite • Ground Water Contamination	• Road/Rail Accidents • Epidemics (Covid-19) • Drowning in river, pond, dams • Stampede • Boat accidents • Rope-way accidents

Table 2: List of hazards in Banka district

The District hazard profile is represented in Table 3

Table 3: Hazard seasonality map for Banka district

Hazard	Jan	Feb	Mar	April	May	June	July	Aug	Sep	Oct	Nov	Dec
Drought					√	√	√	√	√	√		
Lightning							√	√	√	√		
Fire	√	√	√	√	√	√	√	√	√	√	√	√
Earthquake	√	√	√	√	√	√	√	√	√	√	√	√
Heat Waves					√	√						
Cyclonic winds/ Windstorm				√	√	√						
Cold wave	√											√
Flood							√	√	√			
Incessant/ Untimely Rains						√	√	√	√	√		
Road/Rail Accidents	√	√	√	√	√	√	√	√	√	√	√	√
Stampede								√	√			
Epidemic	√	√	√	√	√	√	√	√	√	√	√	√

Sl.No.	Hazard	Blocks prone to hazard
1	Drought	Bounsi, Katoriya, Dhuraiya, Phullidumar, Banka, Barahat
2	Lightning	All blocks
3	Fire	Katoriya, Bounsi, Banka, Amarpur, Rajoun
4	Earthquake	All blocks
5	Heat Waves	Katoriya, Bounsi, Banka, Barahat, Dhuraiya, Belhar
6	Cyclonic winds/ Windstorm	All blocks
7	Cold wave	All blocks
8	Flash Flood	Bounsi, Katoriya, Amarpur, Dhuraiya, Banka, Belhar, Shambhuganj

Sl.No.	Hazard	Blocks prone to hazard
9	Incessant/ Untimely Rains	All blocks
10	Road/Rail Accidents	Katoriya, Bounsi, Banka, Rajoun, Chandan, Shambhuganj
11	Stampede	Shambhuganj(Teldiha mandir Durga puja), Katoriya, Belhar, Chandan (Shravani mela) and Bounsi (Mandar mahotsav)
12	Epidemic	All blocks

Table 4 Blocks prone to hazard

3.1 Hazards Profile

DROUGHT HAZARD

Drought is the most severe hazard for the district, the historical data shows that district has been declared drought affected district at 5 instances during the last 15 years period from 2001-2016 (2001, 2004, 2009, 2010, 2013). In addition to this, the change in rainfall pattern can affect the crops yield in the district. The district has developed an agricultural contingency plans which focuses on flood and drought. The deviation in the rainfall pattern particularly less rainfall during Rabi season impact the district as the soil of the district is highly permeable and is poor to retain moisture. The year 2013 was declared as drought year by the state as it received 25% deficit rain and 33 districts including Banka was declared as drought-affected district.

Sl. No	Crop name	Target (h)	Achievement (h)	Percentage
1	Paddy	107500	105158	97.82 %
2	Pulse	2045	1430	69.93 %
3	Oilseeds	145	36	24.83 %

Table 5 : Contingency Plan of Agriculture Crop

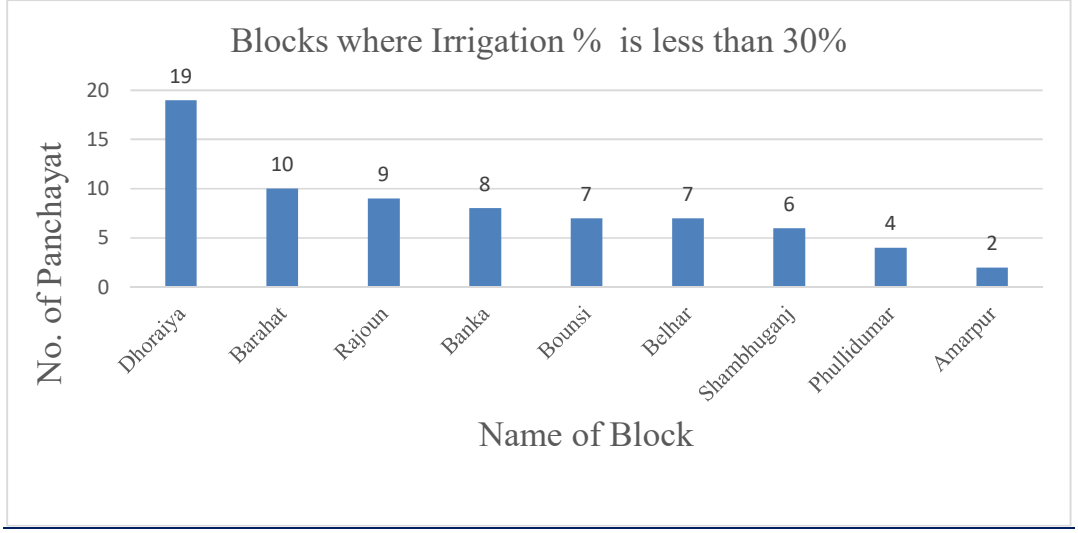


Figure 15 : Irrigation % is less than 30%

LIGHTNING HAZARD

Lightning is a sudden high-voltage discharge of electric charge that takes place between clouds and travel all the way to the ground. Lightning strikes are common occurrences in the monsoon season across Bihar. The conditions responsible for lightning are created where warm, moist air rises and mixes with cold air above. A significant number of recent deaths are farm laborers and people working in the open fields. Probability of occurrence of lightning in Banka district is observed as more or less at higher side. it can occur at any place.

Lightning Death , year and block wise Banka District

SL.No	Name of Block	2022	2021	2020	Total
1	*2*	*3*	*4*	*5*	*6*
1	Amarpur	2	3	2	7
2	Banka	2	1	4	7
3	Bounsi	1	3	2	5
4	Belhar	0	2	2	4
5	Barahat	2	1	1	3
6	Chandan	1	2	4	6

7	Dhuraiya	4	2	5	10
8	Phullidumar	0	2	0	2
9	Katoriya	5	4	4	10
10	Rajoun	0	2	5	7
11	Shambhuganj	1	1	4	6
Total		**18**	**23**	**33**	**67**

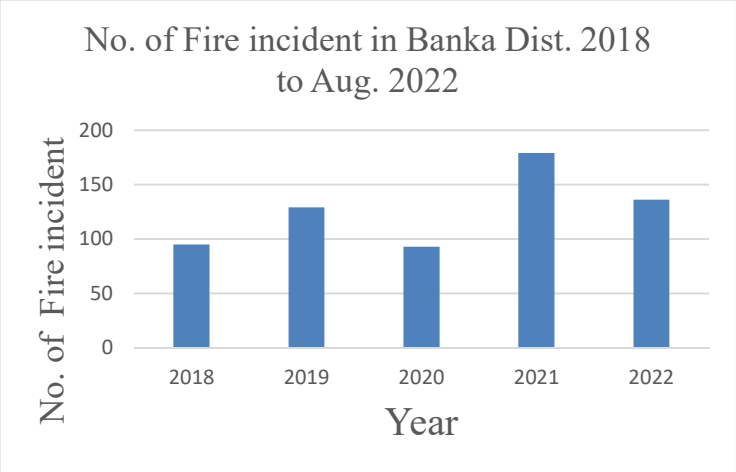
Table 6: Lightning Death, year and block wise, Banka district

Sensors based early warning system has been developed by Department of Disaster Management with the support of earth network, established 8 sensors in 07 districts. Early warning alerts about lightning can be received in any part of state before 30-35 minute before. The early warning alerts being disseminated to community through SMS.

Indravajra app- Bihar government is issuing an alert regarding the weather and telling people how to avoid them. At the same time, in this episode, the Government of Bihar Disaster Management team has introduced a mobile app named Indravajra. **This app will alert people 40-45 minutes before lightning strikes**. Indravajra app has been downloaded from Android-play-store to Android mobile. After downloading this app, registration has to be done through mobile number. Indravajra app alerted people 40-45 before lightning struck. Your smart phone's ringtone will ring as an alert.

FIRE HAZARD

As per the fire risk assessment of Fire Hazard and Risk Analysis in the Country for revamping the fire Services in the Country, Bihar report, MHA, 2012, Banka s categorized as “medium risk” based on population density, residential and industrial built up area.



Sr. No.	Block Name	Fire Incident in Year-2019	Fire Incident in Year-2020	Fire Incident in Year-2021	Fire Incident in Year-25-08-2022	Total Fire Incidents
1.	Banka	30	16	28	19	93
2.	Amarpur	05	06	33	20	64
3.	Barahat	29	27	44	23	129
4.	Belhar	07	00	00	04	11
5.	Bounsi	20	13	21	23	77
6.	Chandan	02	02	03	01	08
7.	Dhuraiya	12	10	06	15	43
8.	Phullidumar	11	02	03	11	27
9.	Katoriya	06	08	04	08	26
10.	Rajoun	04	07	12	06	29
11.	Shambhuganj	03	02	01	01	07
Total		**129**	**93**	**155**	**131**	**508**

EARTHQUAKE HAZARD

As per the earthquake hazard map of BMTPC the district falls under the Zone IV (high damaging risk zone) and the Munger-Saharsa ridge fault, a prominent sub surface fault, passes near by the district. The macro seismic zonation map for Banka district is represented in Figure .

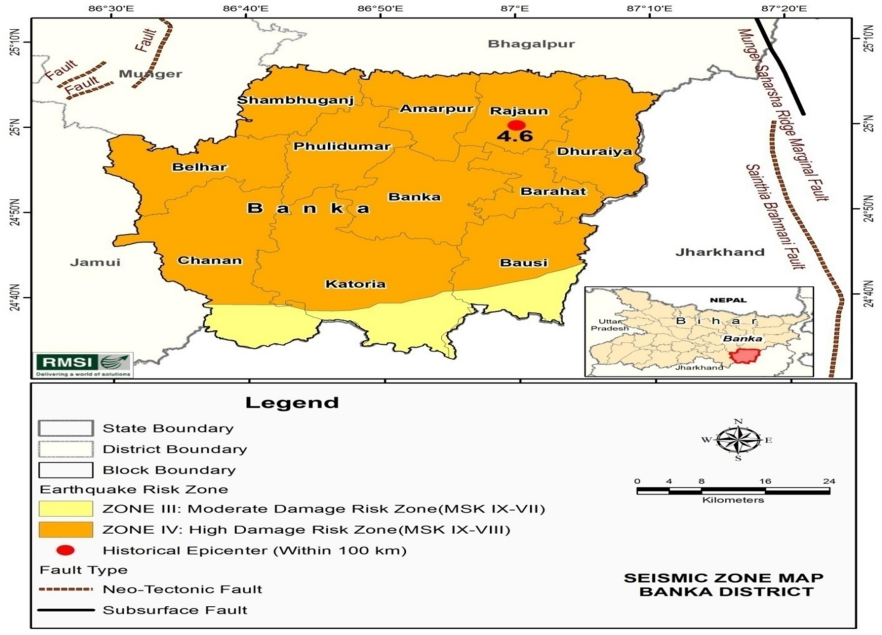


Figure 16: Seismic zone map of Banka district

(Source: RMSI Analysis based on published historical and instrumental catalogues and research papers such as from IMD, Survey of India, various research institutes in the country, etc.)

HEAT WAVE

Heat Wave is a condition of air temperature which becomes fatal to human body when exposed. Quantitatively, it is defined based on the temperature thresholds over a region in terms of actual temperature or its departure from normal. Increased frequency and severity of heat waves can lead to more illness and death, particularly among older adults, the young, and other vulnerable groups such as school going children, daily wagers, etc.

Heat Wave is considered if maximum temperature of a station reaches at least 40^0C or more for plains regions.

I. Based on departure from normal

a. **Heat Wave:** Departure from normal is 4.5^0C to 6.4 ^{0}C

b. **Severe Heat Wave:** Departure from normal is more than 6.4 ^{0}C

II. Based on actual maximum temperature

a. **Heat Wave:** When actual maximum temperature is equal to or higher than 45^0C

b. **Severe Heat Wave:** Departure from normal is more than is equal to or higher than 47^0C

An analysis of the daily temperatures in Banka district (from 1951-2016) reveals the following significant information:

- In the month of March, 40 degree Celsius was reached only once on the 31st of March (in the year 1973)
- In the month of April, maximum temperatures have crossed 40 degree Celsius on 233 occasions. The district administration can expect the maximum temperature to increase above 40 degree Celsius around the 10th of April. The highest temperature recorded in Banka district in April since 1951 is 43.1 degree Celsius. With a median of 6, the district administration can expect at least 6 days of above 40 degree Celsius temperatures in the month of April.
- June: with a mean of 7.59 and a median of 7 days, the district administration can expect at least 7 days in June over 40 degree Celsius in Banka. The first week of June is the crucial as temperatures is observed to continuously stay around 40 degree Celsius as shown in Figure

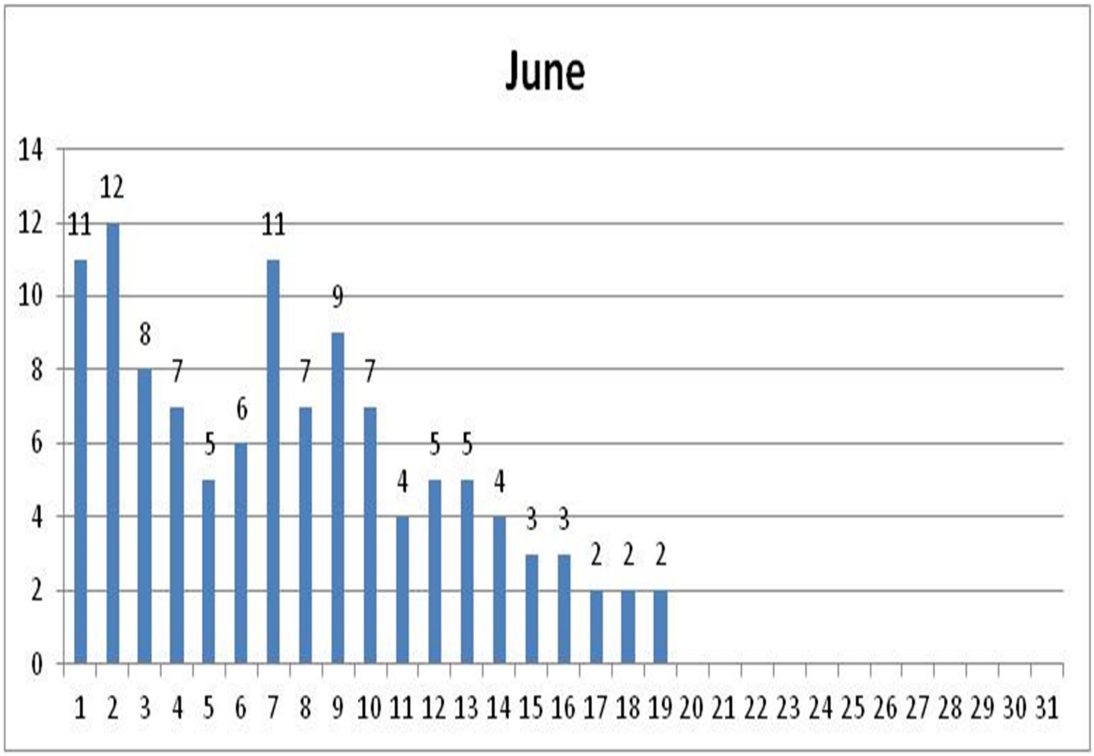


Figure17: Incidence of above 40 degree Celsius in June - Banka district

WINDSTORM / CYCLONIC WIND

Cyclonic winds are caused by atmospheric disturbances around a low-pressure system distinguished by swift and often destructive air circulation. Violent storms, bad weather and rains usually accompany cyclonic winds. The windstorms or thunderstorms, which descend from Nepal, are said to be a violent version of *Norwesters (Kaal Baisakhi*) that are common around April and May. These localized thunderstorms in the Gangetic plains are associated with strong storms and torrential rains. Wind speed reaches to 47m/s (169km/h) which puts whole Banka district in high damage risk zone.

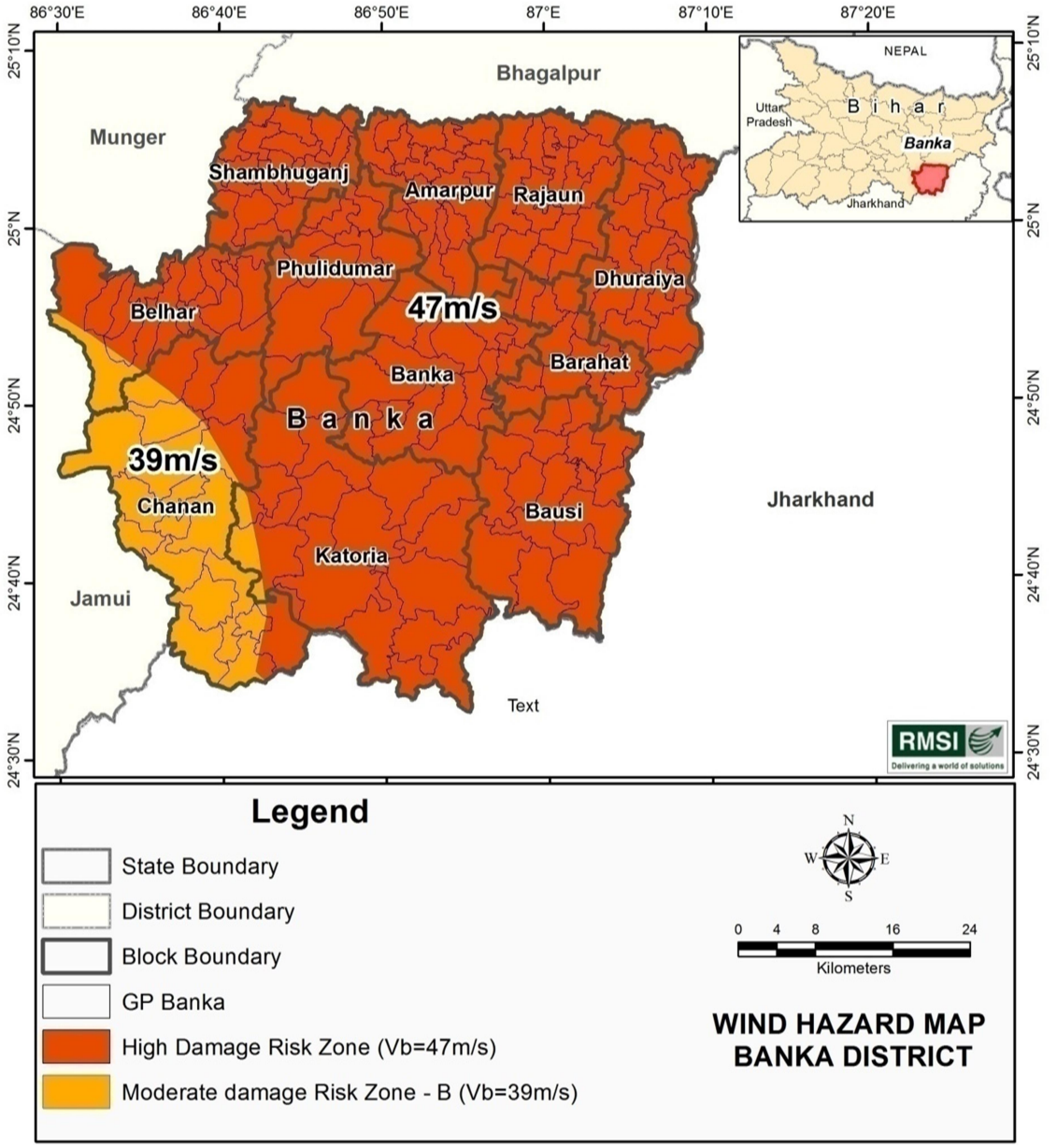


Figure 18: Wind hazard map - Banka district

COLD WAVE HAZARD

A Cold wave is a rapid fall in temperature within a 24- hour period requiring substantially increased protection to agriculture, industry, commerce and social activities. The precise criteria for a cold wave are the rate at which the temperature fall, and the minimum to which it falls. This minimum temperature is dependent on the geographical region and time of year. The district experiences severe cold waves conditions during the months of December and

January. The average temperature during these months is around 15 degrees Celsius. Severe cold waves conditions reported in 2008, 2011 and 2012 in the district in the recent past.

INCESSANT RAINS AND UNTIMELY RAINFALL

Incessant and untimely rainfall creates problem, which lead to uncomfortable situation for the people in the district. It has been observed that such incessant and untimely rains are occurring frequently in recent past. Climate change scientists associate such rainfall patterns to the climate change and its impacts.

EPIDEMICS

The recent pandemic declared by WHO, Covid-19 posed serious challenges to human life. It also challenged the existing health infrastructure and administrative set up. Timely interventions and proactive testing tracking and isolating helped in controlling the pandemic. High population density areas specially were vulnerable to pandemic where ratio was relatively higher.

Associated social challenges like reverse migration of the resident population posed greater risk of infection and threat to existing resources. This pandemic aggravated the already poor socio economic conditions of the deprived and vulnerable section.

Sl.No.	Phase	No. of Death	Remarks
1	Covid-19 (1st Phase 2020)	22	
2	Covid-19 (2nd Phase 2021)	127	
3	Covid-19 (3rd Phase 2022)	7	
Total		**156**	

Table7 : Covid-19 Death Report(Source: District Health Society, Banka)

Sl.No.	Target of 1st Dose & 2nd Dose	Achievement	% age
1	1727010	1371632	79.42
2	1353378	1325945	97.97
Total		**2697577**	
Precaution dose		273839	
Total Vaccination		**2971416**	

Table 8 : Covid-19 Vaccination Report(Source: District Health Society, Banka)

ROAD / RAIL ACCIDENTS

Banka district has a good road network connectivity. 95% percent of the total villages is linked to the rural and urban road network. The roads in the district largely consist of State highways, P.W.D. district board roads, municipal roads and village roads that are connected with the district headquarters.

Sl. No.	Highway Name	Distance	Remarks
1	NH-33A	54 Km	
2	SH-19,22,25,83,85	169 Km	
3	Major District Road	243 Km	
Total		**466 Km**	

Table 9 : Road Network Connectivity Report
(Source: Road Construction Department, Banka)

Sl.No	Block	Black Spot	Grey Spot	PHC/ CHC (Distance from grey spot)	Cause of accident
1	Bounsi	Zero	Bounsi Chowk, Near Hanuman Mandir	Referral Hospital, Bounsi 1.1 KM	Over Speed, Heavy Vehicle Transportation and Temporary Encroachment
			Block Office Mor	Referral Hospital, Bounsi 3.1 KM	T point, over speed
			Shyam Market	Referral Hospital, Bounsi 8.4 KM	Dense population, Over speed, Transportation of Heavy Vehicles
2	Banka		Samukhiya Mor	PHC Banka 4.8 KM	Dense population, Over speed
			Dhaka Mor	PHC Barahat 8.3 KM	Dense population, Over speed and Transportation of Heavy Vehicles
			Azard Chowk	PHC Banka 1 KM	Transportation of Heavy Vehicles
			Jogdiha	PHC Banka 7.1 KM	Dense population
3	Rajoun		Punsia Mor	CHC Rajoun 6.3 KM	Dense population, Over speed and Transportation of heavy vehicles
			Tekni Mor	CHC Rajoun 13.3 KM	Over speed (SH) and Transportation of heavy vehicles
			Terah Mile	CHC Rajoun 6.1 KM	Dense population, Over speed (SH) and Transportation of heavy vehicles

4	Amarpur		English Mor	Referral Hospital Amarpur 6.3 KM	Dense population, Over speed (SH) and Transportation of heavy vehicles
			Mahagama Mor	Referral Hospital Amarpur 8.3 KM	Dense population
			Sultanpur Mor	Referral Hospital Amarpur 3.2 KM	Dense population
			Chiraiya Mor	Referral Hospital Amarpur 13.4 KM	Dense population, Over speed (SH) and Transportation of heavy vehicles
			Taraiya Mor	Referral Hospital Amarpur 12 KM	Dense population, High Speed
5	Belhar		Buchi Mor (Belhar-Katoriya)	CHC Belhar 1.8 KM	T Point, Sharp Turn and unauthorized parking
			Sangrampur Mor	CHC Belhar 3.6 KM	Dense population and Sharp Turn
			Jelebiya Mor	CHC Belhar 8.7 KM	Over Speed and Transportation of Heavy Vehicles
6	Chandan		Chandan police Station	CHC Chandan 1 KM	Dense population, Over Speed and Transportation of Heavy Vehicles
			Devasi Mor	CHC Chandan 11 KM	Sharp Turn
No. of Grey Spot : 20					

Table 10 : List of identified Black / Grey Spot at District
(Source: District Transport Department, Banka)

Sl. No.	Block	No. of Death in Road Accidents			Remarks
		2022	2021	2020	
1	Amarpur	1	0	3	
2	Banka	0	0	3	
3	Bounsi	0	1	0	
4	Belhar	1	0	2	
5	Barahat	0	2	1	
6	Chandan	0	1	5	
7	Dhuraiya	0	3	4	
8	Phullidumar	3	4	1	
9	Katoriya	1	0	2	
10	Rajoun	7	1	5	
11	Shambhuganj	0	0	0	
Total		**13**	**12**	**26**	

Table 11 : No. of Death in Road Accidents

(Source: Disaster Management Section, Banka)

DROWNING AND BOAT ACCIDENTS:

As there are numerous channels, rivers, ponds, and wells across the district, there are chances of drowning. Drowning is a state disaster notified by Bihar State government and thereby can be financed from the State Disaster Response Fund and the National Disaster Response Fund. Block wise drowning deaths of year 2020, 2021 and 2022 are given in table below:

Boats ply across the rivers, sometimes loaded beyond carrying capacity of the boats, and without mandatory safety equipment. This leads to perilous situation capable of manifesting as a boat accident leading to casualties.

Sl. No	Block	Drowning Death			Remarks
		2022	2021	2020	
1	Amarpur	3	1	4	
2	Banka	2	2	4	
3	Bounsi	1	1	4	
4	Belhar	0	4	2	
5	Barahat	1	0	2	
6	Chandan	0	0	1	
7	Dhuraiya	1	6	5	
8	Phullidumar	0	4	1	
9	Katoriya	0	0	0	
10	Rajoun	1	1	1	
11	Shambhuganj	0	4	7	
Total		**9**	**23**	**31**	

Table 12 : Drowning Death Report

(Source: Disaster Management Section, Banka)

STAMPEDE INCIDENTS

Banka district, in the recent past has not faced any major stampede incident related issues pertaining to fairs, festivals, religious events in temples/mosques, etc. But, a large congregation of people at Katoriya during *Shravani mela*, *Bounsi mela* at Mandar Parbat, *Teldiha mela*, *Chhath Puja*, etc. has potential for stampede incidents. The festive month of Shravan, when kanwarias take the route for offering holy water to the ***Devghar temple*** is also an event where district administration have to prepare for necessary arrangements for crowd management. ***54 km to Sultanganj Deoghar route falls*** under Banka district. In the Shravani mela 2022, almost 5 lakhs of Kanwariya crossed the said route on foot.

SNAKE BITE

The state of Bihar has 3rd largest number of snake bite death in India.

(Vide notification of the Disaster management department dated 24.03.2022, Snake bite was declared as a local disaster)

Mainly four types of venomous snakes are found in this region

(a) Common Krait (b) Spectacle Cobra (c) Russell Viper (d) Saw Scaled Viper

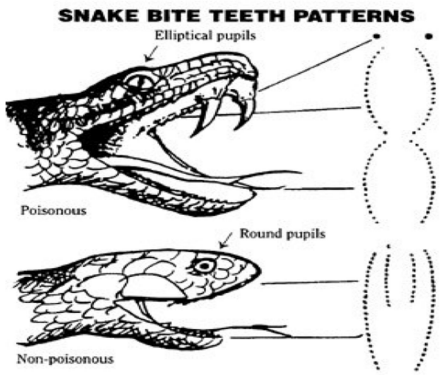


Figure 19 : Common venomous Snake in Bihar & Snakebite Teeth Patterns

Number of death due to snakebite in Banka district

Sl. No	Year	Number of snakebite cases	No. of death	Remark
1	2020	25	0	No. of death cases reported after injected Antivenom-7 injection
2	2021	14	0	
3	2022 (JAN TO AUG)	16	0	
Total		**55**	**0**	

Table 13 : Snakebite case report

GROUND WATER CONTAMINATIONS

According to the Public Health Engineering Department, Bihar the amount of fluoride in the ground water is dangerously high for 4,157 habitats of 98 blocks in 11 districts of Bihar. It causes *fluorosis,* affects children depending on the inappropriate nutrition in diet. If a child's diet is nutritious, the effect of fluorosis will be mild. In a malnourished child, the effect of fluorosis is severe*," (Source:https://thewire.in/rights/ground-report-bihar-water-flouride contamination)*

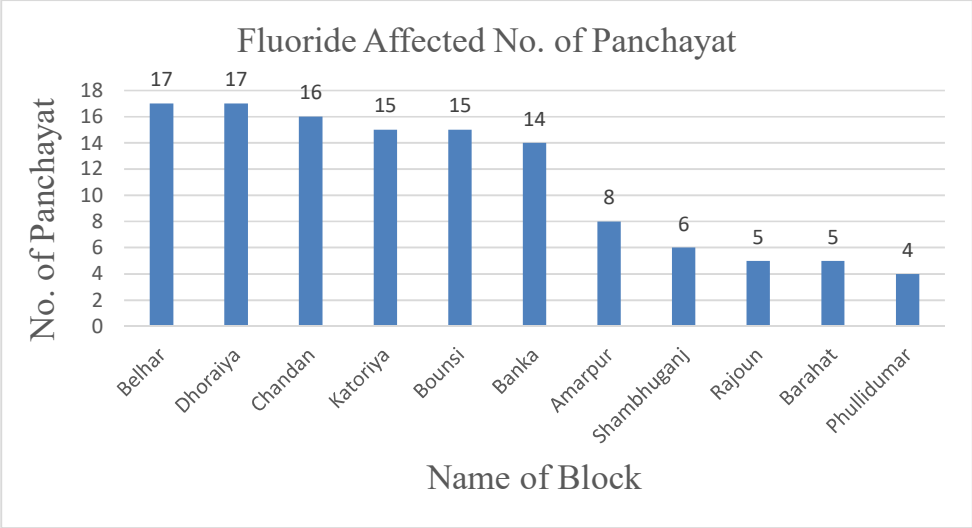


Figure 20 : Fluoride Affected No. of Panchayats

3.2 Vulnerability and Risk Analysis

Vulnerability is the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. Vulnerability indicates the degree to which a hazard can impact the people or area.

Physical Vulnerability

Physical vulnerability refers to the degree to which a building or infrastructure would undergo damage or destroyed in a hazardous environment caused by hazardous events. As the district is prone to earthquake, it is important to understand the physical vulnerability of the buildings to assess the potential risk to the community.

The district has more *pucca houses* (average 52%) compared to kuchcha and semi pucca houses. However, it needs detailed structural investigation to understand whether these pucca houses and commercial buildings follow engineering standards for zone IV potential earthquake events.

Socio- economic Vulnerability

Some key social indicators for social vulnerability include population, gender, age, literacy and caste and this has been analyzed for the district using the census 2011 data. The district has moderate population density (674 person per sq km) compared to the State average. The sex ratio shows there are less female compared to male (907 female per 1000 male). The population of less then 6 and greater than 60 age group constitutes about 28% of the total population of the district. As per Census2011, 96.5 % population of Banka district lives in rural areas. The total population living in rural areas is 1,963,546 and in urban areas is 71,217. The population of male and female is 1,067,140 and 967,623 respectively.

It is suggested that the district administration undertake measures to ensure livelihood security of the people. It can be observed from the demographic data in section 2.4 that a majority of the population is in the working age group (25-44), illiterate and marginal workers, thereby directly contributing to increased

Vulnerability to disruptions of livelihoods due to the multiple hazards that Banka district could face. With a majority of the people relying on primary (agriculture and allied sector) for their livelihood, it is important for the district administration to undertake efforts towards hazard prevention, mitigation and increasing capacities of community and the administration to respond and recover from disasters.

Environmental vulnerabilities

There are some pockets in the district particularly in Shambhuganj and Rajoun blocks, which has reported to have some waterlogging problems. The water logging problem is mainly due to the heavy siltation (silt being carried by the rivers), construction of roads and culvert blocking the passage of river.**Block wise vulnerability to hazards is presented in below table.**

Few blocks such as *Banka, Bounsi, and Katoriya* are vulnerable to **multiple hazards.**

Block	Drought	Lightning	Fire	Earthquake	Heat Wave	Cyclonic winds/ windstorm	Cold Wave	Flash Flood	Road/ Rail Accidents	Epidemics	Stampedes
Amarpur	√	√	√	√	√	√	√	√	√	√	
Banka	√	√	√	√	√	√	√	√	√	√	
Barahat	√	√		√	√	√	√			√	
Bounsi	√	√	√	√	√	√	√	√	√	√	√
Belhar	√	√		√	√	√	√	√		√	√
Chandan	√	√		√	√	√	√			√	√
Dhuraiya	√	√		√	√	√	√	√		√	√
Katoriya	√	√	√	√	√	√	√	√	√	√	√
Phullidumar	√	√		√	√	√	√			√	
Rajoun	√	√		√	√	√	√			√	
Shambhuganj	√	√		√	√	√	√	√		√	√

Table 14: Block wise Hazard Vulnerabilities

DROUGHT VULNERABILITY

Almost ***all blocks of the districts are vulnerable to drought hazards***. However, none of the blocks are highly vulnerable to drought.

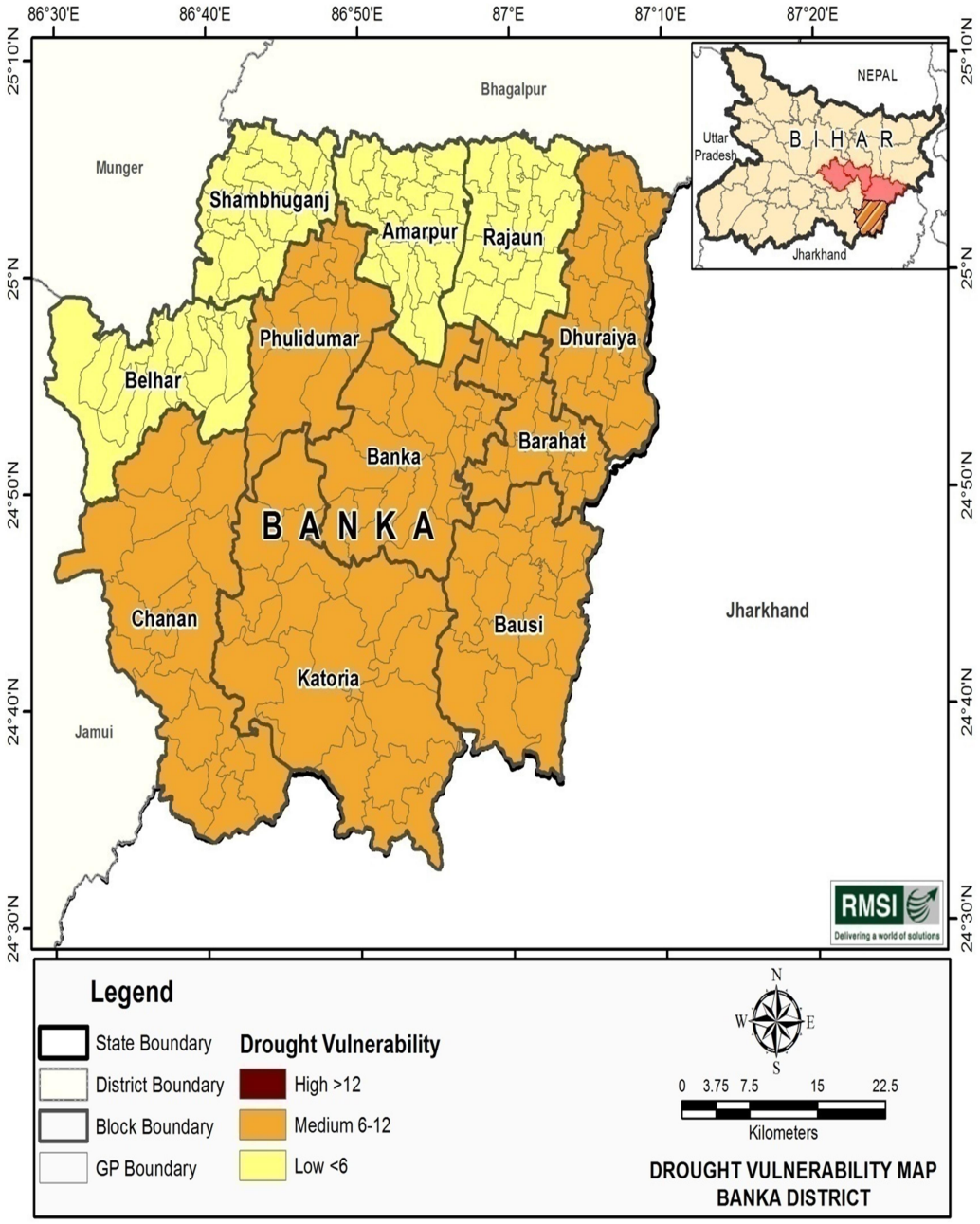


Figure 21: Drought vulnerability - Banka district

Drought Hazard (*Year wise*)	Affected Block	Crop	Irrigation system
2022-23	All Blocks	Kharif	Canal System Irrigation Division, Banka/ Bounsi and Bijikhorva, State Tubebell and Agriculture Feeder system
2019-20	All Blocks	Rabbi	
2018-19	Katoriya, Chandan, Barahat, Bounsi, Dhuraiya	Kharif	

Table 15 : Drought Report(Source: Disaster Agriculture Office, Banka)

FIRE VULNERABILITY

Katoriya, Bounsi, and Banka blocks are high vulnerable to fire hazard. But most of the blocks fall in medium vulnerability category. During Shravani and other melas, special preparatory arrangement is to be made to tackle fire situation in the concerned vulnerable blocks such as Katoriya and Bounsi.

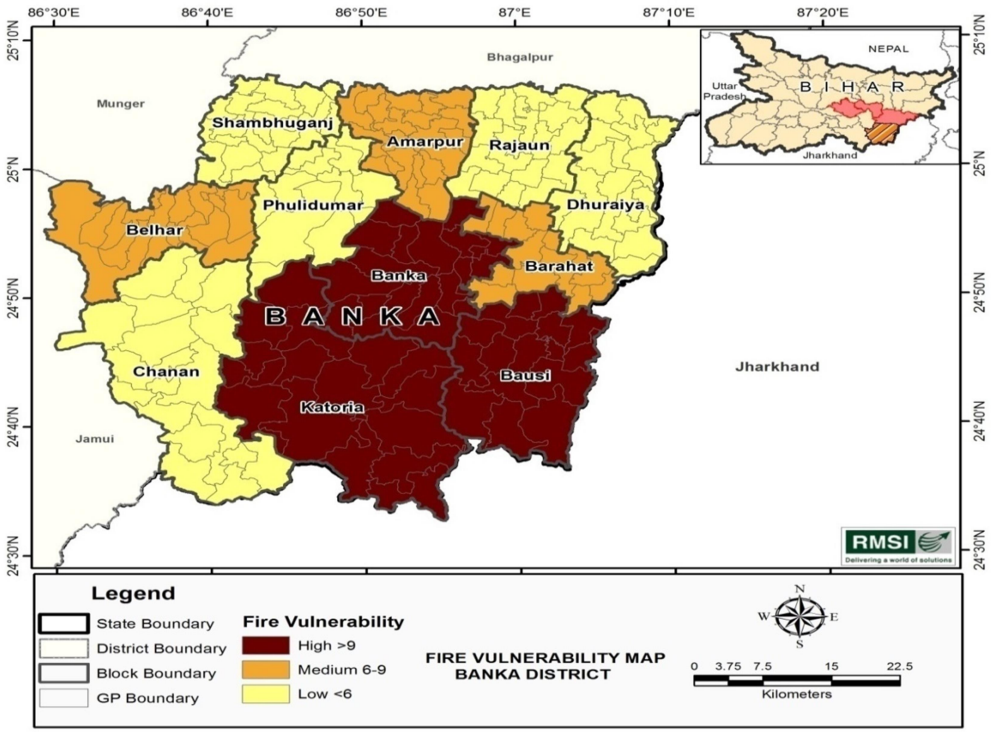


Figure 23: Fire Vulnerability map - Banka district

EARTHQUAKE VULNERABILITY

Seismologically, the entire Bihar state is vulnerable as the State has a history of moderate to severe earthquakes. Other factors such as poor building construction, increased demographic pressure, deteriorating environmental conditions, poor living conditions, unplanned urbanization in urban areas with

narrow lanes and crucial traffic congestion problems, etc. contribute to increased earthquake vulnerability. However, in general the construction quality of the residential buildings, particularly the traditional semi pucca houses and kuchcha houses do not follow engineering standards and are vulnerable to earthquake. Bihar State has recently taken proactive steps towards mitigation of earthquake hazards in many districts, provides training for engineers, and is carrying out field-based investigation with the support of concerned government agencies.

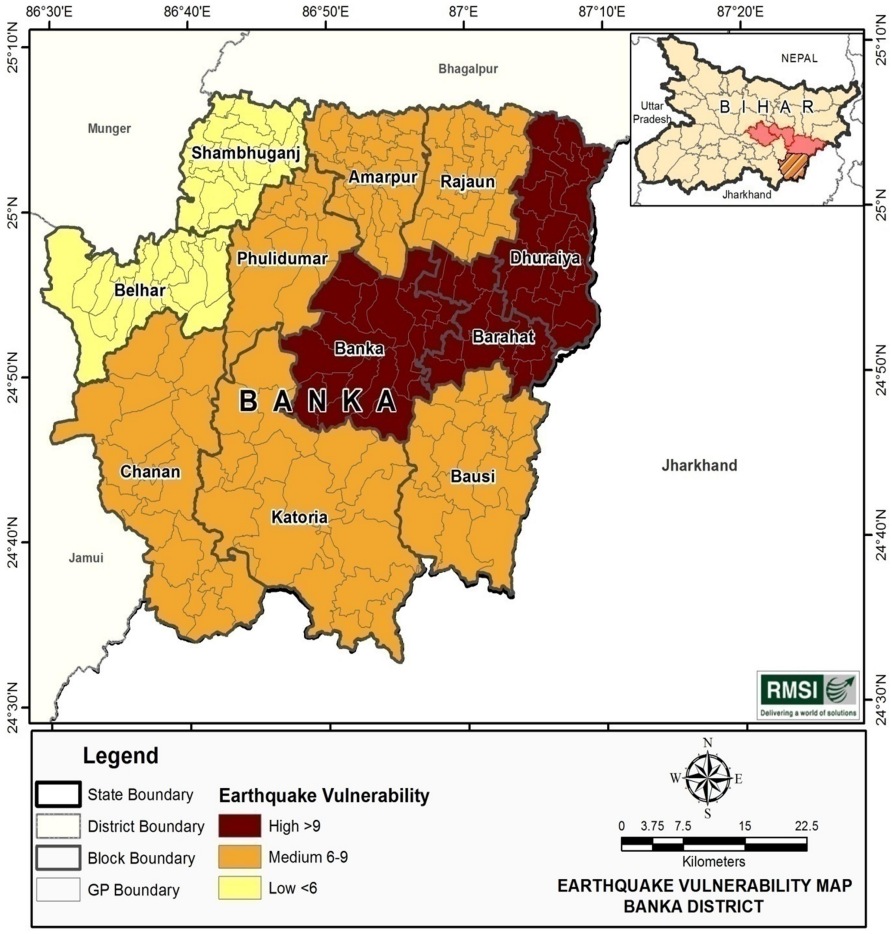


Figure 25: Earthquake vulnerability - Banka district

HEAT WAVE VULNERABILITY

Katoriya, Bounsi, Banka, Barahat, Dhuraiya, and Belhar blocks have medium vulnerability to heat waves hazards whereas *Chandan, Phullidumar, Shambhuganj, Amarpur, and Rajoun* blocks have low vulnerability in terms of heat waves hazards.

WINDSTORMS / CYCLONIC WIND VULNERABILITY

Most parts of the district except some small parts in the southwest of Chandan block are in high damage risk zone. Cyclonic winds in Bihar State are characterized by their devastating potential to damage structures, viz. houses; lifeline infrastructure-power and communication towers; hospitals; food storage facilities; roads, bridges and culverts; standing crops etc. Besides maize crop, large areas under wheat, mangoes, banana grown in the belt also suffer damage.

COLD WAVE VULNERABILITY

Katoriya, Dhuraiya, Barahat, and Banka blocks have high to medium susceptibility to cold waves whereas Rajoun, Amarpur, Phullidumar, Shambhuganj, Belhar and Chandan blocks have relatively lower vulnerability to cold waves.

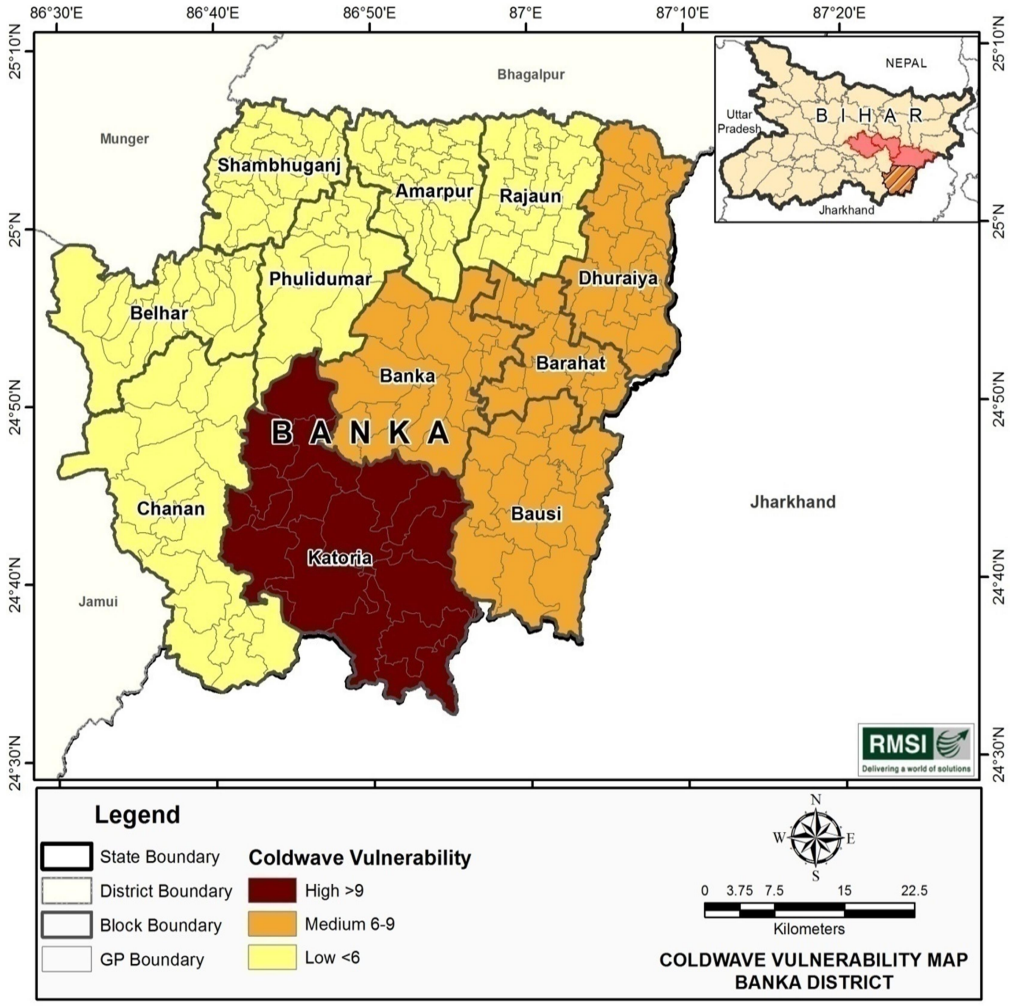


Figure 26: Cold wave vulnerability map - Banka district
(Source: RMSI Analysis based on field survey and district consultations)

FLOOD VULNERABILITY

Based on the flood hazard, the blocks vulnerable to flooding are represented in Figure.

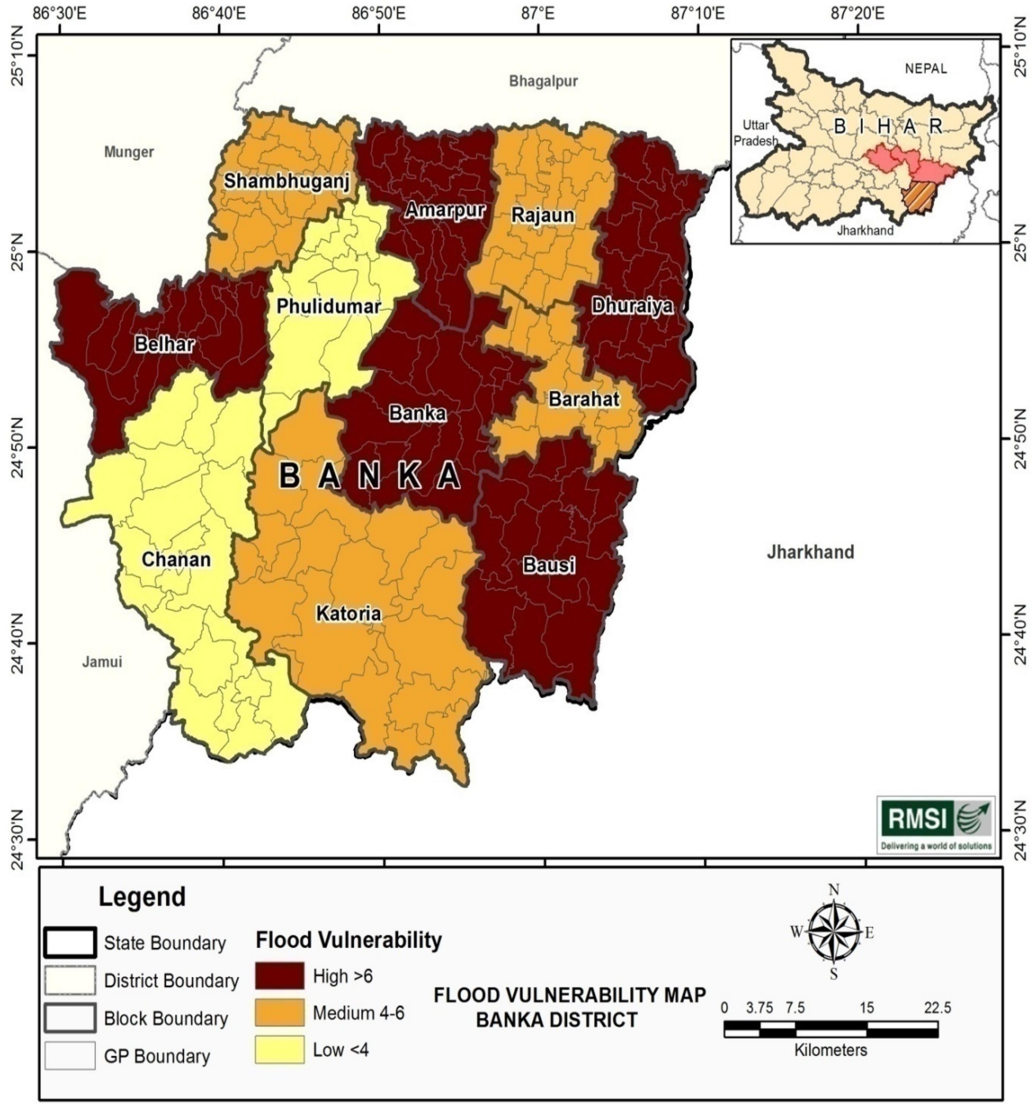


Figure 27: Flood vulnerability map - Banka district

The most vulnerable blocks include *Belhar, Dhuraiya, Bounsi, Amarpur, and Bank*. Medium vulnerable blocks are Shambhuganj, Rajoun, Barahat, and Katoriya blocks. Chandan and Phullidumar blocks are less vulnerable to floods.

ROAD ACCIDENTS VULNERABILITY

Katoriya, Bounsi, Banka, and Rajoun blocks have higher vulnerability to road accidents owing to heavy traffic movements and sharp turns. State highways in the districts pass through the inhabited areas. These stretches are having dense

trees and turnings, which reduce the visibility, leading to many accidents every year. These stretches need to be illuminated and trees should be pruned in order to reduce its proneness to road accidents. Accident-prone rail stretches should be manned to avert the accidents.

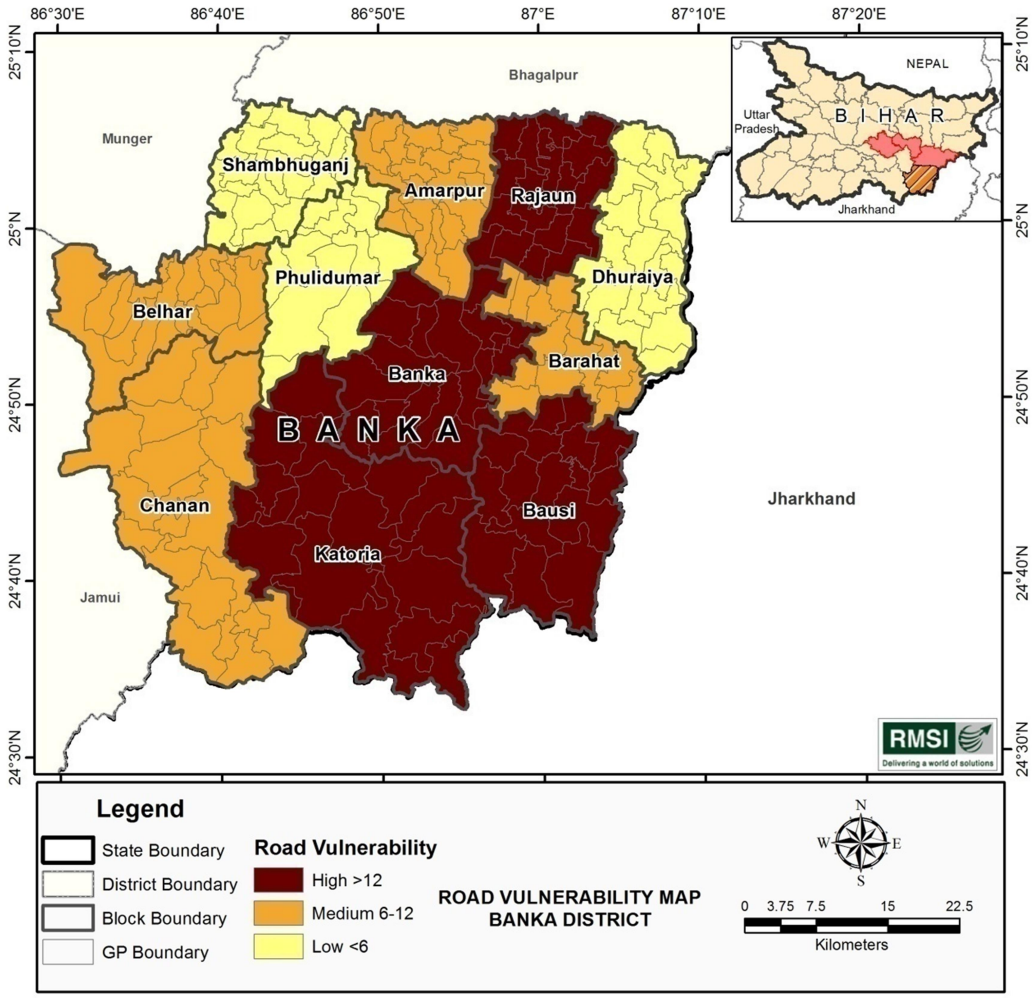


Figure 28: Road accident vulnerability map - Banka district

EPIDEMICS VULNERABILITY

Overall, the district is less vulnerable to any epidemic occurrences. However, during Shravani mela, some of the cases related to stomach, food poisoning, and other not so serious ailments have been reported.

Sl.No.	Financial Year	Vaccination Name	Dose	Remarks
1	2017-18	F.M.D-CP (April-May 17)	549000	
2		HS + BQ (Aug-Sept 17)	582000	

3		Mass Deworming Programme	Fenbendazole 1.5 gm 103500 Fenbendazole 150 mg 55500	
4		F.M.D-CP (Nov-17)	566000	
5		BRUCELLOSIS (Jan-Feb 18)	38700	
6		PRP-CP (Feb 18	155000	
7	2018-19	F.M.D-CP Round 1 (April-18)	601000	
8		HS + BQ (Jun-July 18)	601000	
9		F.M.D-CP Round 2 (Nov-Dec 18)	601000	
10		PRP-CP (Feb-19)	157900	
11	2019-20	BRUCELLOSIS (March-April 19)	35400	
12		F.M.D-CP Round 1 (April-May 19)	601000	
13		HS +BQ (July-19)	601000	
14		F.M.D-CP Round 2 (Nov-19)	601000	
15		PRP-CP (Feb-March-20)	387200	
16		BRUCELLOSIS (March-April 20)	35700	
17	2020-21	PRP-CP (March-21)	172000	
18	2021-22	HS + BQ (Oct-Nov 21)	701700	

Table 16 : Live Stock-1 Vaccination Report , (Source: Disaster Animal Husbandry Office , Banka)

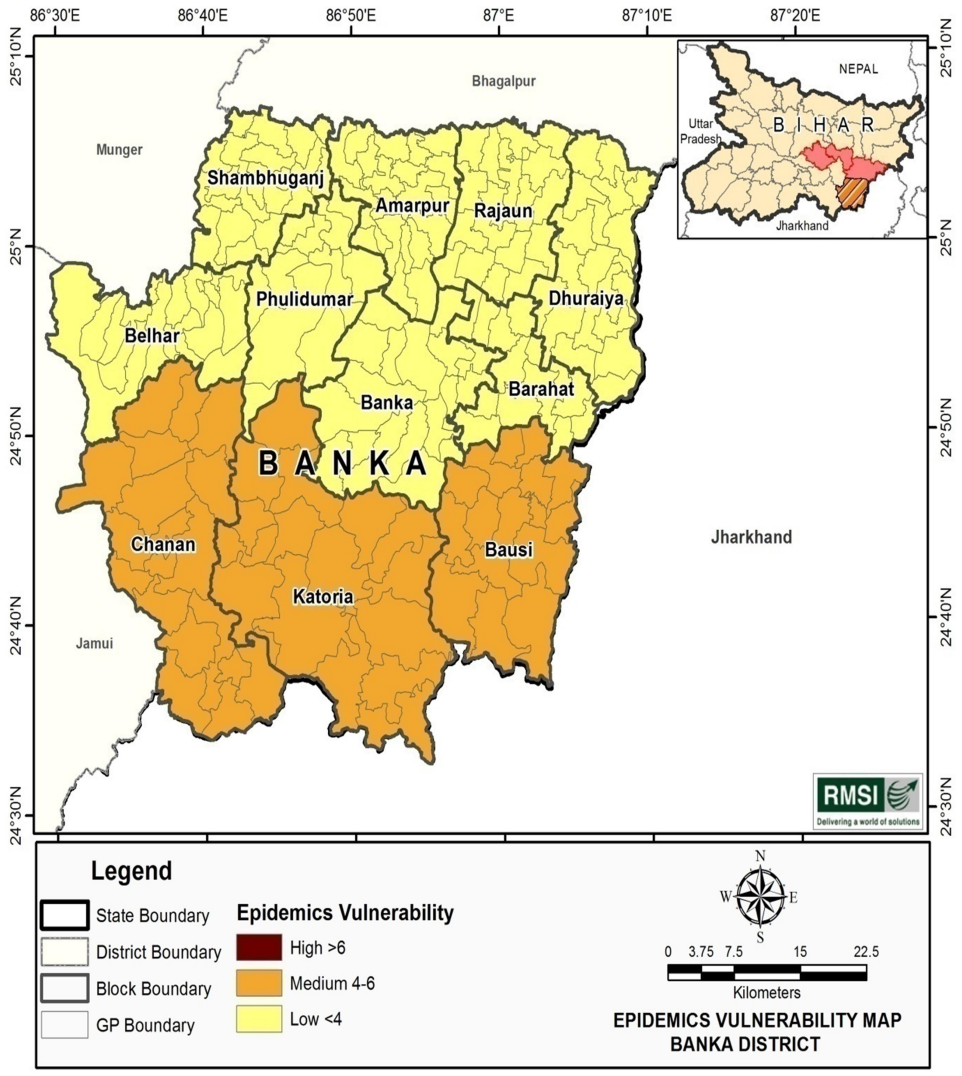


Figure 29: Epidemics vulnerability map - Banka district
(Source: RMSI Analysis based on field survey and district consultations)

RISK ANALYSIS

The risk analysis was carried out using the simplified technique. In this technique, the probability and impacts of hazards are utilized to derive a qualitative risk score. This approach is not an alternative option for a detailed HVRA and it is strongly recommended that the state should conduct a detailed risk and vulnerability study. Exposure of life, infrastructure and assets provide a direct indicator of risk and vulnerability of a region. Development indicators like degree of urbanization, industrialization, social indicators like population density, dependent population like infants, children, old people and physically challenged people can also be used for vulnerability analysis.

The blocks that are marked in red are highly vulnerable in terms of exposure and hazard and the light red are moderately vulnerable. It can be observed that

some of the blocks like *Shambhuganj, Rajoun, Bounsi, Katoriya, Belhar, Barahat and Dhuraiya* show high vulnerability to more than one hazard.

Table 17: Risk assessment matrix for Banka district

Block name	Earthquake			Flood			Drought			Cold wave			Epidemics			Heat wave			Fire			Road		
	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability	Probability	Impact	Vulnerability
Belhar	3	2	6	3	3	9	2	3	6	3	2	6	2	2	4	3	3	9	3	3	9	3	3	9
Shambhuganj	3	2	6	3	2	6	2	3	6	3	2	6	2	2	4	3	2	6	3	2	6	2	2	4
Amarpur	3	3	9	3	3	9	2	3	6	3	2	6	2	2	4	3	2	6	3	3	9	4	3	12
Rajaun	3	3	9	3	2	6	2	3	6	3	2	6	2	2	4	3	2	6	2	2	4	4	4	16
Phulidumar	3	3	9	2	2	4	3	4	12	3	2	6	2	2	4	3	2	6	3	2	6	2	2	4
Banka	3	4	12	3	3	9	3	4	12	4	2	8	2	2	4	3	3	9	4	4	16	5	3	15
Barahat	3	4	12	2	3	6	3	4	12	3	3	9	2	2	4	3	3	9	3	3	9	4	3	12
Dhuraiya	3	4	12	3	3	9	3	4	12	4	2	8	2	2	4	3	3	9	3	2	6	3	2	6
Chanan	3	3	9	2	2	4	3	4	12	3	2	6	3	2	6	3	2	6	3	2	6	3	3	9
Katoria	3	3	9	2	3	6	3	4	12	4	3	12	3	2	6	3	3	9	4	4	16	5	4	20
Bausi	3	3	9	3	3	9	3	4	12	4	2	8	3	2	6	3	3	9	4	4	16	5	4	20

Index to risk assessment matrix

High	>12
Medium	.6-12
Low	<6

3.3 Capacity Analysis

Capacity refers to the resources available with the district that can be used during disaster event for the safe living of the people in the district. The resources include human resource, skill, infrastructure and finance. In the present section, we have provided resource status of the key sectors, which are involved in pre, during and post disaster events. This gives insight for the district administration to manage resources during any disaster event or emergency and further requirement to increase capacity of the stakeholders to tackle disaster events. It is important to note that the demand of the key resources is directly related to the severity of disaster. In severe disaster situation, resources from other adjoining districts can be utilized in coordination with respective district administration. Further resources can be brought from the State level in order to handle severe disaster events.

Infrastructure	Quantity	Infrastructure	Quantity
Health		**Banks**	
Civil Hospital	01	Commercial Banks	57
Sub-Divisional Hospital	0	Cooperative Banks	08
Referral hospitals	03	**Police**	
PHC/ CHC	03	Police out posts	5
APHC & HSC	31 & 265	Police stations	16
Private Hospital	12	**Fire stations**	
Private Clinics	24	Fire stations	01
Ambulance Services (ALS-14 / BLS-14)	28	Fire sub-stations	0
Blood Banks	01	**Roads**	
RTPCR Lab	01	National highways	54 km
C.T. Scan Machine	01	State highways	169.25 km
PSA Plant-1000 LPM	01	1226	243,65 km
Veterinary Hospitals	30	Other roads	-
Education		**Others**	
Primary schools	1217	Petrol pumps	34
Middle schools	773	Kerosene depots	4
Senior secondary schools	203		1306
Higher Senior Secondary/ Colleges	73	LPG Centre	57
Private School	122	Nearest SDRF Battalion	Bhagalpur
Degree College	01	Nearest NDRF Battalion	Bihtia Patna
Affiliated College			

Table 18: Key resources available with district

BSDRN is a portal of resources aims essentially to serve as a state repository of database for emergency/disaster management and to assist the stakeholders/Administration at various levels in preparedness and emergency situation. Data available at appropriate scales to emergency response managers at all levels. Bihar State Disaster Resource Network is a web based platform for managing the inventory of equipment, skilled human resources and

critical supplies for emergency response. Primary focus of the portal is to enable the decision makers to find information on availability of equipment and human resources required to combat any emergency situation. This database also enables managers to assess the level of preparedness for specific disasters. Main objective of BSDRN is to build up a systematic inventory of equipment and skilled human resources so that disaster managers easily can find the location and details of the resources for immediate and effective response within Golden hour for minimizing deaths. SDRN will be accessible by the Emergency Officers, District Collectors, Relief Commissioners and other disaster managers at various levels of Government.

4 Institutional Arrangement

India has an integrated framework for risk-informed planning and decision making at the National, State, District and sub-district levels to help planners examine hazards and produce integrated, coordinated and synchronized plans. The Disaster Management Act 2005 provides for an effective institutional mechanism for drawing up and monitoring implementation of disaster management plan for prevention and mitigating effects of disasters and for taking a holistic, coordinated and prompt response to any disaster situation. Under Section 78 of the DM Act 2005, powers are conferred to the State Government for making rules to carry out the provisions of this Act and notify such rules in the official gazette. The basic responsibility of undertaking rescue, relief and rehabilitation measures in the event of natural disasters, as at present, is that of the State Governments concerned. The Central Government supplements the efforts of the States by providing financial and logistic support.

National Level: The overall coordination of disaster management vests with the Ministry of Home Affairs (MHA). The Cabinet Committee on Security (CCS) and National Crisis Management Committee (NCMC) are the key committees involved in top-level decision making with regard to disaster management. The National Disaster Management Authority (NDMA) is the lead agency for preparation of Disaster Management Plans and the execution of Disaster Management functions at national level.

State Level: According to the DM Act 2005, each state in India shall have its own institutional framework for disaster management. DM Act mandates each state government to take necessary steps for the preparation of state DM plans, integration of measures for prevention and mitigation of disasters in the state development plans, allocation of funds, and establish Early Warning System.

District Level: According to the DM Act 2005, the following are to be established at the district level:

- **District Disaster Management Authority**: Section 25 of the Disaster Management Act 2005, emphasized that every State Government shall establish a District Disaster Management Authority in each district. District Disaster Management Authority is functional in Banka district. Details given in section 4.1

- **District Emergency Operations Centre:** The DEOC is the central point of activities in a disaster situation in the district apart from its routine normal time activities. The EOC should have the flexibility to expand when demand increases and contract when the situation comes to normalcy. It is connected with SEOC in the upstream (which further connects to National EOC) and other EOC(s) in the downstream

including other field offices during emergencies. The DDMA is the prime agency responsible for issuing disaster warnings at district level. The DDMA issues warnings through the DEOC. Agencies responsible to issue the warnings should issue the warning before any disaster. However, disasters can also take place without any warning such as Earthquakes, flash floods & man-made disaster. The preparedness action plan is crucial in order to safeguard the lives and properties.

Other institutional arrangement that could be utilized for disaster management include:

- Local Self Government: Local Self Government includes Panchayati Raj Institutions (PRIs), Municipal bodies, District and Cantonment Boards and Town Planning Authorities, which control and manage civic services. These bodies prepare DM Plans in consonance with the guidelines of NDMA, SDMAs and DDMAs. This also ensures capacity building of their officers and employees for managing disasters, and to carry out relief, rehabilitation and reconstruction activities in the affected areas.
- Public-Private Partnerships: Development activities involve both private and public enterprises. To mitigate disasters and create better-prepared society for disasters and other hazards, strong public-private coordination is critical. In order to achieve community resilience and preparedness, public and private owners of critical infrastructures and key resources like manpower, technical expertise & equipment need to work together, before, during and after a disaster. The key issue is to recognize and embrace the public-private interfaces that can improve the ability of a community to manage the response and recovery phases of disaster management. There are several non-governmental organizations-international, national, and local, actively working in the district on various issues related to disaster management such as capacity building, preparedness, intervention, rehabilitation, etc. DDMP in this regard spells out clear role and responsibilities of both Public and Private Sector. Private sector must be involved closely into community development and organization of mock drills etc. Maintain a resource inventory indicating the capabilities in terms of human, equipment and infrastructure both in public and private sectors.[5]

[5] NDMA Guideline for DDMP

4.1 District Disaster Management Authority

Under section 25 of the DM Act 2005, every state government shall by notification in the official gazette, establish a district disaster management authority (DDMA) for every district in the State. The DDMA, Banka district shall consist of the following members, *not exceeding seven*, as prescribed by the state government, and unless the rules otherwise provide:

Members of the DDMA	Particulars
Chairperson	Collector or District Magistrate or Deputy Commissioner, ex officio
Co-Chairperson	Elected representative of the local authority, ex officio • In Tribal Areas, VI Schedule to the Constitution, the Chief Executive Member of the district council of autonomous district • Where Zila Parishad exists, the Chairperson of Zila Parishad
Chief Executive Officer of the district authority	The state government shall appoint an officer not below the rank of Additional Collector or Additional District Magistrate or Additional Deputy Commissioner, as the case may be, of the district to be the Chief Executive Officer of the District Authority, ex officio
Superintendent of Police of district	Ex officio
Chief Medical Officer of district	Ex officio
Two other district level officers	To be appointed by the state government
Chairperson of Zila Parishad	Co-Chairperson of District Authority

Table 19 : DDMAs Members Checkliss

According to the DM Act 2005, the District Authority shall meet as when necessary and at such time and place as the Chairperson may think fit. The Bihar DRR Roadmap lays down specific actions of the District Authority.

POWERS AND FUNCTIONS OF DISTRICT AUTHORITY

The District Authority shall act as the district planning; coordinating and implementing body for disaster management and take all measures for the purposes of disaster management in the district in accordance with the guidelines laid down by the National Authority and State Authority.

The following are the powers and functions of the District Authority (as per clause 30 of the DM Act 2005):

Preparedness and prevention phase:

i. Prepare District Disaster Management Plan (DDMP) including district response plan for the district
ii. Coordinate and monitor the implementation of the national policy, state policy, national plan, state plan and district plan
iii. Ensure that areas in the district vulnerable to disasters are identified and measures for the prevention of disasters, mitigation of efforts are undertaken by the departments of the Government at the district level as well as by the local authorities
iv. Ensure that the guidelines for prevention of disasters, mitigation of its effects, preparedness and response measures are followed by all departments of the government at district level and the local authorities in the district
v. Give directions to different authorities at the district level and local authorities for preparing, mitigating, responding to disaster events
vi. Lay down guidelines for disaster management plans by the department of Government at the district level and local authorities in the district
vii. Monitor the implementation of disaster management plans prepared by the Departments of the Government at district level
viii. Lay down guidelines for mainstreaming disaster risk reduction into the development plans and projects of the departments of the Government at the district level
ix. Monitor the implementation of measures in clause (viii)

The Nation Disaster Management Act 2005, Clause 41 specifies the function of local authorities in regards to Disaster Management. It enlists following functions:

1. Ensure that its officers and employees are trained for disaster management;
2. Ensure that the resources relating to DM are so maintained as to be readily available for use in the event of any threatening disaster situation or disaster;
3. Ensure all construction projects under it or within its jurisdiction conform to the standards and specifications laid down for prevention of disasters and mitigation by National Authority, State Authority and District Authority; and
4. Carry out relief, rehabilitation and

x. Review the state of capabilities for responding to any disaster or threatening disaster situation in the district and give directions to the relevant departments or authorities for upgradation as may be necessary
xi. Review preparedness measures and give directions to the concerned departments at district levels or other concerned authorities where necessary for bringing the preparedness measures to the levels required for responding effectively to any disaster or threatening disaster situation
xii. Organize and coordinate specialized training programmes for different levels of officers, employees and voluntary rescue workers in the district
xiii. Facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organizations

Mitigation phase:

i. Set-up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public
ii. Prepare, review and update district level response plans and guidelines
iii. Coordinate response to any threatening disaster situation or disaster
iv. Ensure that the departments of Government at the district level and the local authorities prepare their response plans in accordance with the district response plans
v. Lay down guidelines for, or give direction to, the concerned department of the government at the district level or nay other authorities within the local limits of the district to take measures to respond effectively to any threatening disaster situation or disaster
vi. Advise, assist, and coordinate the activities of the departments of the government at the district level, statutory bodies, and other governmental and non-governmental organizations in the district engaged in the disaster management
vii. Coordinate with, and give guidelines to, local authorities in the district to ensure that measures for the prevention or mitigation of threatening disaster situation or disaster in the district are carried out promptly and effectively
viii. Provide necessary technical assistance or give advice to the local authorities in the district for carrying out their functions
ix. Review development plans prepared by the departments of the government at the district level, statutory authorities or local authorities with a view to make necessary provisions therein for prevention of disaster or mitigation
x. Examine the construction in any area in the district and, if it is of the opinion that the standards for the prevention of disaster or mitigation laid down for such construction is not being or has not been followed, may

direct the concerned authority to take such action as may be necessary to secure compliance of such standards

xi. Identify buildings and places which could, in the event of any threatening disaster situation or disaster, be used as relief centers or camps and make arrangements for water supply and sanitation in such buildings or places

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

xiii. Provide information to the State Authority relating to different aspects of disaster management

xiv. Encourage the involvement of non-governmental organizations and voluntary social-welfare institutions working at the grassroots level in the district for disaster management

xv. Ensure communication systems are in order, and disaster management drills are carried out periodically

xvi. Perform such other functions as the State government or State Authority may assign to it or as it deems necessary for disaster management in the district

Clause 33 of the DM Act 2005 empowers the District Authority to give directions to any officer or any department at the district level or any local authority to take necessary measures for prevention or mitigation of a disaster or to effectively respond to it.

Response and recovery phase:

- 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 area
- Control and restrict the entry of any person into, his/her movement within and departure from, a vulnerable or affected area
- Remove debris, conduct search and carry out rescue operations
- Provide shelter, food, drinking water an essential provisions, healthcare and services
- Establish emergency communication systems in the affected area
- 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
- 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

4.2 Local Self Government - Panchayati Raj Institutions

The local self government or Panchayati Raj Institutions (PRIs) established under the 73rd and 74th amendment to the Constitution are statutory bodies with its members elected by the local people through democratic processes. The elected members of these institutions are accountable to the people of their respective wards, blocks, and Panchayat areas. Owing to its proximity to the community, universal coverage, and the capacity for social mobilization for community based management approaches, the PRIs are an important component of disaster risk management.

The roles and responsibilities of the PRI members are outlined below:

Preparedness and prevention

- Organizing awareness campaigns
- Promoting community education on disaster preparedness
- Community based preparedness plan and emergency response plans development
- Identifying resource gaps and opportunities for capacity development
- Establishing synergies with NGOs and CBOs
- Mainstreaming disaster risk reduction in development planning and in development projects
- Encouraging community to insure assets and livestock
- Formation of task forces and develop capacities for disaster response
- Development and implementation of local bye laws for disaster risk mitigation

Response

- Emergency communication through available resources
- Assisting in evacuation to temporary shelters and in the establishment and functioning of relief camps
- Supplementing rescue and relief operations, mainly coordinating with responding agencies
- Monitoring relief distribution and ensuring relief reaches the most needy

- Assisting in the safe disposal of carcasses and arranging safe drinking water and sanitation

Recovery and Mitigation

- Assist in damage and loss assessment
- Assisting in the formulation of rehabilitation and reconstruction plans
- Ensure reconstruction is risk informed and complying to local requirements for disaster resilient infrastructure
- Supervise and monitor long-term recovery and risk mitigation projects

TRAINING PROGRAM

In view to build the capacity of various stakeholders of Banka district following Training programme conducted by Bihar State Disaster Management Authority :

Sr. No.	Programme Name	No. of Participants
1.	Management of Animals in Emergencies Training of Veterinary Doctors	25
2.	Training of Livestock Assistant	06
3.	Training of PRI Memmbers on DRR	21
4.	Training of Master Trainers for Jeevika Didis Training	05
5.	Training of District Panchayat Officers	05
6.	Training of Engineers for construction Earthquake safe housing	32
7.	Training of Masons for construction Earthquake safe housing	631
8.	Training of Master Trainers for boatmen and boat owners training	5

The following training programmes are recommended for the gram Mukhiyas and ward members of the Panchayati Raj Institutions (Panchayats and the urban local bodies (ULBs)):

Table 20: Training plan for PRIs

Learning Unit	Key concepts	Training duration
Disaster, Development and Climate Change	• Examine critical linkages between development and disasters in the context of disaster risk management and climate change • To develop an understanding of how development models contribute to exacerbating disaster vulnerabilities and risk • Understanding vulnerabilities and capacities with specific focus on marginalization, gender, disability • To develop solutions towards development measures that could possibly pre-empt and mitigate disasters	4 sessions 1) DRR: a conceptual overview 2) DRR and CCA 3) Planning for DRR and CCA integration 4) Mainstreaming DRR/CCA in development planning
Role of PRIs in implementation of development programmes	• Roles and functions of PRIs in the implementation of development programmes at GP/ULB level	Sessions: 1) Overview of major national developmental programmes at village/ULB level 2) Role of PRIs in implementation of national development programmes
Hazard, Risk, Vulnerability and Capacity Assessment and Mainstreaming Disaster Risk Reduction/Climate Change Adaptation into Development Programmes	• Participative assessment of specific disaster risks • Exploring areas of integration of risk assessments to development programmes	Sessions: 1) HRVCA: What, Why and How? 2) HRVCA: in a real life situation in a village
Role of PRIs in Disaster Management and Community Based Disaster Risk Management (CBDRM) Planning	• Basic concepts and approaches to CBDRM planning at village/ward level • Role of PRIs in various phases of Disaster Risk Management (with specific focus on emergency preparedness and response)	Sessions: 1) Role of PRIs during various phases of DRM 2) CBDRM planning: What, Why and How?

The Mukhiyas and ward members trained will help in further training other Gram Panchayat members and members of ULBs thereby aiding in awareness generation and mainstreaming disaster risk reduction into development planning.

The District Authority will maintain a list of individuals who have undergone training and shall constantly strive to ensure all elected members of the PRIs are provided necessary training for mainstreaming disaster risk reduction in development programmes.

4.3 Community Based Organizations

Community based organizations (CBO) are an important part of disaster risk management. CBOs are public or private non-profit organizations that is representative of the community or of a significant segment of the community and is typically engaged in the satisfaction of emergent needs of the community. The CBOs include research based organizations, religious institutions, and professional associations. Their major contribution to the nation is in the development of marginalized communities especially in the backward areas. They provide flexibility of operations in the field especially in awareness building, community level preparedness and capacity building of communities. They offer specific advantages in various stages of disaster risk management, especially in relief activities including distribution of relief items, and in the long-term recovery post disasters.

The roles and responsibilities of CBOs in disaster risk management are outlined below:

Preparedness and Prevention

- Understanding disasters and their effects/ impacts on the community
- Assisting in the preparation of preparedness plans
- Assisting in the development and implementation of mitigation measures
- Assist the PRIs and the State in performing disaster risk and vulnerability analysis
- Ensuring resource assessment and mobilization of resources for disaster risk management
- Assist in proper implementation of CSR towards disaster risk management
- Assist in improving insurance penetration in the community

Response

- Assist in the search, rescue and evacuation measures
- Assist in the provision of shelter for disaster affected communities
- Assist in the provision of first aid and psychological first aid
- Assist in the distribution of relief items (food and non-food items including fodder)
- Assist in debris clearance
- Assist in the movement of injured to hospitals
- Assist in the safe disposal of carcasses and dead bodies

Recovery and Mitigation

- Assist in damage and loss assessment
- Assisting in the formulation of rehabilitation and reconstruction plans
- Ensure addressing community vulnerabilities is an important component of post disaster recovery plans
- Ensure the protection and uplifting of the most vulnerable, mainly women, children, aged and differentially abled post-disasters

4.4 District Emergency Operation Centre

The Standard Operating Procedure for Responding to Natural Disasters requires the district to set up a District Emergency Operation Centre (DEOC) and provide adequate manpower for manning them on 24*7 basis round the year and arrange training for the EOC staff on EOC operations. The District Emergency Operation Centre (DEOC) is the hub of activity in a disaster situation in the district. This is, however, not to underestimate its normal time activities. The DEOC should have the flexibility to expand when demand increases and contract when the situation comes to normalcy. The DEOC is connected with State EOC in the upstream (which further connects to National EOC) and other EOC(s) in the downstream including other field offices during emergencies.

The primary function of the DEOC is to assist the DDMA to implement the DDMP, which includes coordination, data collection, operation management, record keeping, public information and resource management.

For the effective management of resources, disaster supplies and other response activities, focal points or centers will have to be established. These points will have to be well networked starting from the State to the District and finally leading to the disaster site.

- Emergency Operations Centers at the State (SEOC/SEC) and the District (DEOC) and Incident Command Post (ICP) at the disaster site are the designated focal points that will coordinate overall activities and the flow of relief supplies from the State.
- The District Emergency Operations Centre (DEOC) will be maintained and run round the clock, which will expand to undertake and coordinate activities during a disaster. Once a warning or a First Information Report is received, the DEOC will become fully operational.
- During a disaster situation, the DEOC will be under direct command of the District Magistrate or the designated person by him as the Chief of Operations.

- During non-disaster times, the District Emergency Operations Centre stays operational through-out the year in preparedness mode, working during day time in order to take care of the extended preparedness activities of data management, staff awareness and training, which is essential for the smooth functioning of the DEOC during crisis situations and handling of emergency Toll Free Contact Lines. Other functions during non-disaster times are:
    - Serve as repository of DM plans
    - Maintain list of inventory along with contacts, important maps and satellite imagery, demographic data at block and lower levels
    - Other critical information that might be required during disaster response
- During an emergency, the DEOC will get upgraded and will have all emergency stakeholders operating it round the clock.

Disaster Emergency Response Force

The district is expected to create response capabilities from its existing resources by equipping and training at least one battalion equivalent force for effective management of disasters and necessary training arrangement aligned with disaster management skills in consultation with the National Disaster Response Force and State Disaster Response Force. The District Commandants, Home Guards will be in charge of the force at the district level.

Organizational Setup of DEOC

The organizational setup of DEOC is as mention below:

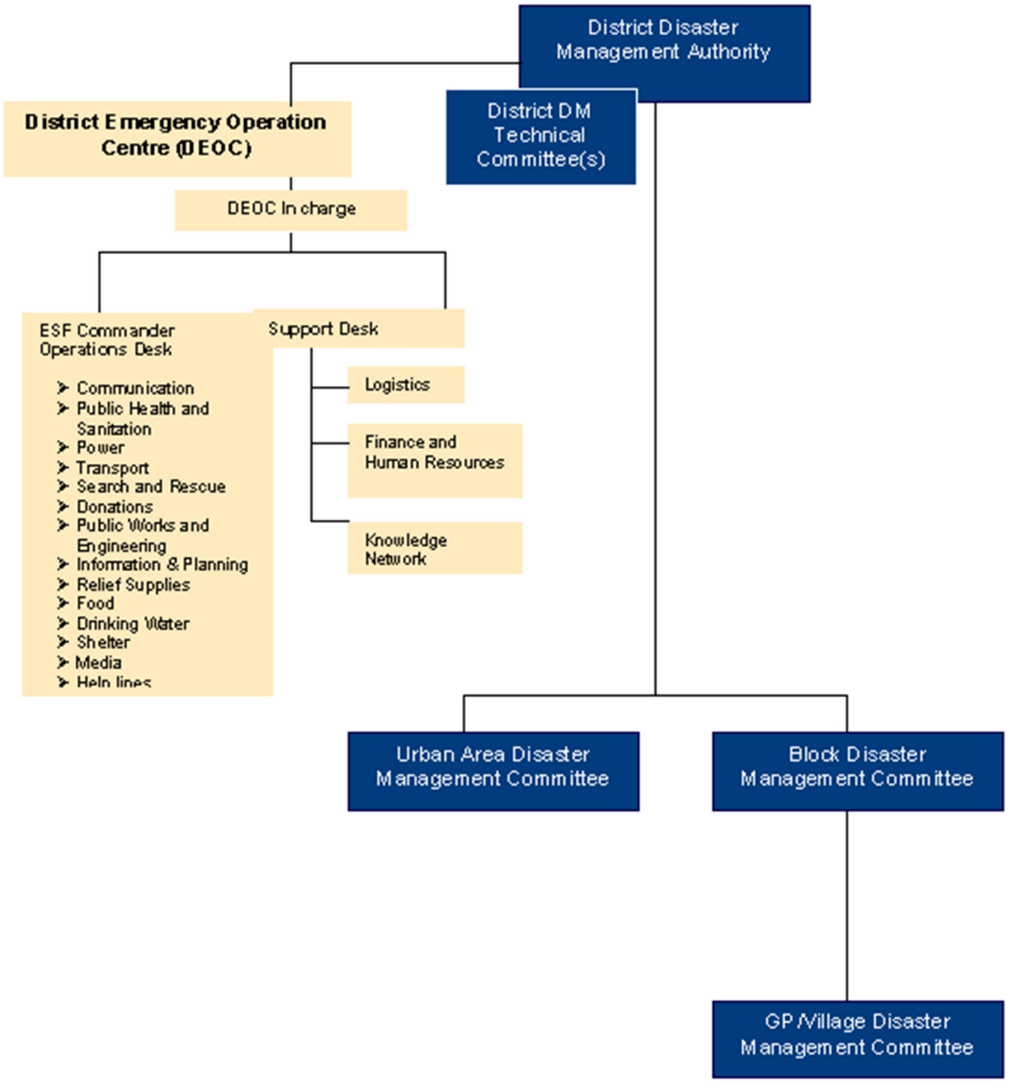


Figure 34: Proposed institutional arrangement of DEOC

Functions of DEOC

The DDMA is the prime agency responsible for issuing the disaster warning at the district level through the DEOC. Additionally, the local technical agencies authorized to issue warning will also communicate the same to the DEOC and State Emergency Operation Centre (SEC) for further actions. Agencies responsible to issue the warnings should issue the warning before any disaster. However, disasters can also take place without any warning such as Earthquakes, flash floods & man-made disaster. The preparedness action plan is crucial in order to safeguard the lives and properties.

During non-disaster time, the DDMA will ensure that the following activities are being carried out in coordination with the concern line departments:

Pre-Disaster Warnings and Alerts

The existing control rooms for flood relief and other disaster relief system can be used for disasters like wind storms with little or no modifications. Here the information desk of the Incident Command System (ICS) will play an important role. It should be ensured that the warning system is easy to operate, reaches a large number of people simultaneously and take little or no maintenance at all. If any electrical equipment is involved, power supply should be ensured and there should be provisions for backup supply. In addition, it should be checked at regular interval to ensure its working at the time of need. Often animals exhibit different kind of behavioral patterns prior to the onset of disasters like flood and earthquake. These patterns should be studied and integrated in the awareness program for communities.

For any information received on likelihood of disasters such as Floods, Droughts, Fire, Epidemics (Human/Animal), Industrial, etc DDMA should carry out the following activities:

- Activate the DEOC
- Based on early warning received, prepare initial information report with estimation of likely severity and scale of disaster.
- The ESF (Emergency Support Functions) will be asked to conduct a review of the preparedness level of the districts likely to be affected by the disaster, by calling a meeting of District DMCs (Disaster Management Committees).
- Prepare a team for deployment to assess damage and need.
- Inform respective departments to activate respective SOPs
- Inform the recognized national and international organizations.
- Provide appropriate warning to public.
- Coordinate with district authorities on dissemination of warning to public and if necessary, carry out evacuation.
- Request DDMA to be on standby for rescue and relief operations. If required, declare de-warning.

The NDMP specifies that the following officers shall be the Operations Section Chief (OSC) for corresponding incidents:

Incident	Operations Section Chief
Fire	District Fire Officer
Health related issue	District Chief Medical Officer
For other incidents	Police / Armed Forces

Table 21 : OSCs Checklist

The OSC shall coordinate with the Responsible Officer (the District Magistrate) in handling the DEOC.

The following points would help in an effective functioning of the DEOC:

1) Even with advancement in technology, coordination still remains a big challenge
2) The successful working of an EOC is in its effectiveness of disseminating information and to work as a medium for linkage for information flow between the state, district, blocks and Panchayat/ULBs
3) The EOC needs to be sustained and strengthened even during non-disaster times
4) It is extremely important to update databases and maps of basic life support services on regular basis (annually) at the EOC
5) Regular workshop for Additional District Magistrate and the District Magistrate for ensuring accountability to disaster management
6) GIS based decision support system would help the EOC in effective functioning

4.5 Coordination Mechanism

This section deals with the coordination required at district level for disaster risk management. The necessary meetings and steps to be initiated by the DDMA in pre-during and post crisis-situations are listed below:

PRE-CRISIS SITUATION COORDINATION

1. Quarterly meet of DDMA with district staff involved in disaster risk management to discuss proceedings, challenges and solutions
2. Half-yearly meet of DDMA, district staff involved in disaster risk management and CBO's to discuss disaster risk reduction measures and support required
3. Pre-monsoon meet of DDMA, officials, irrigation / agriculture department, dam maintenance for flood preparation
4. Pre-festival meet of DDMA, officials, police department, traffic police, and trustees of the temples, etc. for crowd management
5. Quarterly meet of DDMA with officials, police, hospitals, road department to identify pre-positioning of capacities and mitigation measures for reducing accidents
6. Pre-monsoon meet of DDMA, officials and health department for identifying potential hotspots for epidemics and for discussing mitigation measures

7. Pre-monsoon meet with concerned officers of NDRF/SDRF and Army for preparation and establishing norms for coordination during disaster events

DURING-CRISIS SITUATION COORDINATION

1. Mobilization of Incident Response System (IRS) for coordination for all incidences
2. Rapid Needs Assessment coordination with cluster agencies and inter-agency groups (such as Sphere India) for effective response during disaster events and convergence of relief and rescue operations

   The coordination mechanism is inherently dependent on the level of the unfolding disaster. The following section focuses on the levels of disasters, and the coordination that would be required with the nodal agencies for early warning of hazards:

The categorization of disaster situations into levels L0 to L3 is in the NDMP. The DM Act 2005 does not have any provision for notifying any disaster as a '*national calamity'* or a *'national disaster'*.

4.5.1.1 Level of Disasters

According to the National Disaster Management Plan (NDMP), disaster management and its planning must take into account the vulnerability of the disaster affected area and the capacity of the authorities to deal with the crisis situation. The NDMP categorizes disasters into the following four levels:

- Level L0: Period of normalcy, to be utilized for disaster risk reduction
- Level L1: The level of a disaster that can be managed within the capabilities and resources at the district level. However, the state authorities will remain in readiness to provide assistance if needed.
- Level L2: This signifies the disaster situations that require assistance and active mobilization of resources at the state level and deployment of state level agencies for disaster management. The central agencies must remain vigilant for immediate deployment if required by the state
- Level L3: This corresponds to a nearly catastrophic situation or a very large-scale disaster that overwhelms the State and District authorities.

POST-CRISIS SITUATION COORDINATION

1. DDMA meeting with officials for carrying out detailed post disaster needs assessments as per National Institute of Disaster Management's Post-Disaster Needs Assessment (PDNA) framework
2. DDMA meeting with government departments in the district for recovery planning post disaster event

3. DDMA meeting with NGOs, Private organizations in the district for coordination and convergence of efforts towards recovery of disaster affected communities
4. Quarterly meetings with government departments in the district for proceedings as per recovery plans identified

5 Prevention, Mitigation and Preparedness Measures

Disaster Prevention

Disaster prevention includes actions that reduce risk from natural or man-made disaster events. Prevention measures like building codes, floodplain management, storm water management, catchment area and management plan, etc. are required. These measures can be planned and implemented by Banka district, as a part of prevention and reducing disaster impacts. It is required to list and elaborate all types of measures.

Long term prevention and mitigation goals should be in place and these goals should be connected with measures that district has planned and implemented. These goals may include (but not limited to):

- Provide better early warning mechanisms for flood, cyclonic winds/strong winds, heat/cold waves
- Reduce the destruction and loss of life within buildings by monitoring construction practices and materials as per local bye-laws
- Provide for safer environments for transportation systems
- Reduce flooding in populated areas
- Ensure resilient water supply systems
- Reduce environmental degradation and restoration of livelihoods
- Reduce effects of the natural environment on the infrastructure
- Ensure resilient power systems for critical facilities such as government buildings, hospitals, etc.
- Ensure adequate manpower and materials are available for maintenance of critical facilities

Prevention

Activities and measures to avoid existing and new disaster risks.

While certain disaster risks cannot be eliminated, prevention aims at reducing vulnerability and exposure in such contexts where, as a result, the risk of disaster is removed. Prevention measures can also be taken during or after a hazardous event or disaster to prevent secondary hazards or their consequences, such as measures to prevent the contamination of water.

Mitigation

The lessening or minimizing of the adverse impacts of a hazardous event.

Mitigation measures include engineering techniques and hazard-resistant construction as well as improved environmental and social policies and public awareness.

Protection reduces or eliminates threat to people, property and the environment. Primarily focused on adversarial incidents, the protection of Critical Infrastructure and Key Resources (CIKR) is vital to local districts, national security, public health & safety and economic vitality. Protection includes

actions or measures taken to cover or shield assets from exposure, injury or destruction. Protective actions may occur before, during or after an incident and prevent, minimize or contain the impact of an incident.

Disaster Mitigation

Disaster mitigation is the effort undertaken before any untoward event to reduce loss of life and property by lessening the impact of disasters. For mitigation strategies to be effective we need to take actions now - before the next disaster - to reduce human and financial consequences later. It is important to know that disasters can happen at anytime and anyplace and if we are not prepared, the consequences can be fatal. Effective mitigation requires that we understand local risks, address the hard choices, and invest in long-term community well-being. Without mitigation actions, we jeopardize our safety, financial security and self-reliance.

Mitigation measures are described as the strategies and interventions to reduce both the effect of the hazard and the vulnerable conditions. Therefore, mitigation activities can be focused on the hazard itself or the elements exposed to the threat. Mitigation plan involves both structural and non-structural mitigation measures. Structural mitigation measures are the most traditional approach used to reduce disaster risk through proper engineering practices and physical construction to reduce or avoid possible impacts of hazards. Examples include designing electrical power systems and transportation infrastructure to withstand weather and earthquakes; sinking transmission lines for protection from cyclones and windstorms; and, building levees and dams to minimize floods. Other flood mitigation measures include: construction of floodways, spillways, hydraulic control structures, dykes, dams, control gates, drainage system improvements (including river-dredging) and flood detention basins. Non-structural mitigation measures are non-engineered activities that reduce the intensity of and vulnerability to hazards. Non-structural mitigation measures include such activities as land use planning and management; zoning ordinances and building codes; public education and training; and upstream and mountain reforestation. Numerous parties can implement non-structural mitigation measures: governmental authorities with the power to legislate and enforce building codes and zoning requirements; NGO's that initiate

Preparedness

The knowledge and capacities developed by governments, response and recovery organizations, communities and individuals to effectively anticipate, respond to and recover from the impacts of likely, imminent or current disasters.

Preparedness should be based on a sound analysis of disaster risks and good linkages with early warning systems, and includes such activities as contingency planning, the stockpiling of equipment and supplies, the development of arrangements for coordination, evacuation and public information, and associated training and field exercises.

neighborhood loss-prevention programs; and private sector enterprises that provide incentives for loss-reducing measures.

Mitigation plan is very important part of the disaster management plan. Most of the time natural disaster event occurs at random and without any prior notice. In this light, the mitigation plan intends to reduce the risks of disaster. Banka district is prone to many disasters.

Disaster Preparedness

DDMP of Banka is prepared after consultations with various stakeholders in the district. The experience gained on the basis of community consultations and field visits to the most vulnerable locations in the Blocks and GPs has helped incorporate ideas relevant to Banka district. This document also incorporates the best practices from different States in the country. Mainstreaming DRR concerns with the developmental works has also been suggested. To make DM plan more district specific, following institutions should take follow up actions:

DDMA

- Prepare a comprehensive contingency plan specific for each hazard in the district
- Prepare a detailed Hazard/Risk assessment incorporating all the relevant parameters
- Set up an EOC
- Ensure establishment of GP level task force/committee
- Periodic review of the DDMP and its annual updating as per district requirement
- Updating of data/information annually
- Form an advisory committee to ensure efficient discharge of its functions
- Ensure preparation of detailed Departmental DM Plan/SOPs in each Government department
- Prepare a checklist of resources available with all the District departments and local authorities
- Prepare a format for the deployment of initial assessment team
- Establish a District Disaster Response Force

EOC

- Prepare a list of all the nodal Emergency Support Functions(ESF) and resources available
- Establish a permanent seat for each ESF in the EOC hall for emergency situation
- Prepare a list of manpower and equipment
- Prepare a List of all the roads and important infrastructures
- Prepare a list of safe shelters

- Prepare a list of all the means of communication and broadcasting
- Prepare a list of means of information broadcasting agencies with full address and proper documentation ESF
- Prepare a checklist of resources, tools, etc. available
- Prepare a format for minimum standard of resources, materials, etc. required
- Prepare a module to conduct training and mock drills
- Prepare a list of all the important contact numbers with full addresses

GOVERNMENT DEPARTMENTS

- Prepare a Departmental DM Plan and SOPs
- Prepare a detailed Hazard/Risk assessment of the district considering all the relevant indicators
- Nominate the nodal officer for disaster management
- Prepare a format for collection of information and proper documentation
- Prepare a list of staffs with clearly defined roles and responsibilities
- Prepare a checklist of resources available within the department
- Prepare a list of the resources and materials required for effective functioning and procure these if there is a gap GP committee
- Nominate the members for each committee within 3 months of the release of DDMP
- Prepare a detail Hazard/Risk assessment.
- Clearly define the role and responsibility of each member
- Checklist of the resources available within the committee

The department specific functions during the various phases of disaster risk management are provided in section Table.

ROLE OF SHG

Self Help Groups are active in the district which have played important role in community capacity building on various issues related to disaster management, etc. Their roles are crucial for effective outreach to the communities and targeting actual beneficiaries in various phases of disaster management. Due to their proximity to the community, can act as a vital link between government and the community particularly during disaster. They are in a good position to understand the area and problems of the people and their flexibility in approach makes them more acceptable in the community.

OTHER STAKEHOLDER

Other stakeholders comprise public and private sectors including community, educational institutions, religious institutions, business establishments, traders, etc. which are also active in the district to supplement the efforts put in by the government and NGOs in various stages of disaster management.

The role of private sector in mitigation, prevention and preparedness is vital especially in industrial and chemical disasters. The formulation, maintenance and implementation of on-site and off-site plans for industries is of vital importance to ensuring a disaster resilient Banka district. Among private sectors, Media along with the Public Relation Officer who is an important part of the information desk in IRS can play an important role during disaster to provide important information as well as stop rumors. Hospitals in private sectors along with government hospitals can act as essential stakeholders due to their infrastructure and specialty.

The Indian Railways has a strong Disaster Management System in place, which can be looked upon as a model for the accident prevention in the district.

5.1 Disaster-wise functions of departments/agencies

The department specific functions for disaster management are tabulated in Table.

1. District Magistrate, Banka shall ensure that preparedness checklist is duly followed by each front line department and status of the same is discussed in monthly meetings
2. District Head of department of each frontline department shall ensure that the departments are prepared to meet the challenges of any emergency/ disaster by duly following the preparedness checklists
3. Nodal officers of each of the frontline departments shall ensure quarterly updation of District Disaster Management Resource Inventory (DDMRI) and submission of the same to District Revenue Officer, Banka
4. Adding to it any changes in the human resources of their department along with their updated contact numbers, if any
5. Adding to the equipment list, relevant resources for response activities from both the government and private sector
6. DRO shall ensure that the same has been updated and uploaded on website of District Administration on quarterly basis with the help of District Information Officer (DIO).
7. Nodal officers of each of the frontline departments shall also report to District Head of Department and/or District Magistrate, Banka about requisition of any relevant resource/equipment, not available with the Government and/or private sector, for disaster management activity
8. DDMA, Banka shall ensure the establishment of District Emergency Operation Centre, Banka with the following:
    a. Proper space for Planning and Logistics Section Chief and staff

b. Proper space for control room with adequate communication equipment including landline telephones, mobile phones, satellite phones, walkie-talkie, ham radio, computer/ laptop with printer facility, email facility, fax machine, television, etc.
c. Ensure power backup facilities along with availability of generator set
d. Ensure proper space for meeting, conference, media briefing along with LCD, computer and video conferencing facilities
e. Availability of vehicle at Emergency Operation Centre
f. Availability of District Disaster Management Resource Inventory, Banka and also of the neighboring districts (Jamui, Munger, Bhagalpur, Sahebganj, Godda), Disaster Management Resource Inventory of the state and also of critical national resources
g. Availability of Hazard Seasonality Map of Banka district
h. Availability of DDMP, Banka

Table 22: Main function of lead department during various phases of different disasters

Department / Agency	Prevention	Mitigation	Preparedness
Drought			
DDMA		Working on Disaster Risk Reduction and Planning Management.	
Dept of Water resources	Ensure proper functioning of all equipments. Ensuring filling of water ponds, lakes, storage tanks of PHED with canal water prior to the onset of summer.	• Ensure proper early warning mechanism in place for flood by monitoring water level of surface water bodies. Water Management: a. Conservation of floodwater in the branches of mainstreams and the network of rivulets b. Creation of Anicuts or check dams to hold water in the riverbeds and make it flow through the canals for irrigation purposes. c. revival of ahar, pynes and pond systems of the past and maintain the same d. Digging of recharge wells and water harvesting structures to conserve water through rain water harvesting and by developing the culture of roof water harvesting in each household.	• Ensure proper and timely inspection of conditions of bunds, siphons, regulators, embankments, inlet and outlets of lakes, drains/ nallah, channels and pump houses. • Ensure prompt repair of channels, if required. Prepare for the arrangements of clean drinking water for affected livestock and poultry. (PHED) • Ensure availability of ballies, and gunny bags/ECB. • Ensure provision of back up supplies for dewatering or other operations.

Department / Agency	Prevention	Mitigation	Preparedness
Dept of Agriculture	• Constitute a Crop Weather Watch Group at district level (as per 'A Model Manual or Drought Management', GoI) with representatives from Meteorological Department and concerned officers dealing with agricultural inputs, credit extension, etc to keep a close watch on the monsoon situation, extreme temperature, hail and wind storm • Ensure proper mechanism for fodder management	• Identify vulnerable areas prone to pest infestation, drought, flood and other hazards • Ensure awareness generation in farmers regarding proper fodder management, various plant diseases, alternate cropping practices in disaster-prone areas, crop insurance, provision of credit facilities, proper storage of seeds, etc. • Provide training to farmers in alternate cropping techniques, mixed cropping and other agricultural practices which minimize crop losses during future disasters • Ensure surveillance for pest infestation and crop diseases • Ensure availability of stock for immediate replacement of broken/non-functioning gadgets/equipment • Ensure availability of adequate stock of seeds and other agro inputs particularly for areas vulnerable to hazards Soil Management: a. The use of organic fertilizers b. Afforestation Crop Management: Use of cropping patterns that help in soil conservation as well as in getting better farm yield: a. Strip cultivation: b. Cover Cropping c. Crop rotation d. Alternate cropping	• Prepare Agriculture Contingency Plan • Identify source for procurement of fodder • Prepare trained and equipped team for assessment of damage to soil, crop and forest and impact on other agricultural activities • Prepare for establishment of public information booths, with appropriate and modern means of communication, to assist farmers in providing information regarding insurance, compensation, repair of agro equipment and restoring of agricultural activities at the earliest

Department / Agency	Prevention	Mitigation	Preparedness
Dept of Animal Husbandry & Dairying		• Stocktaking of livestock in the district disaggregated by large, small and poultry	• Arrange for fodder suppliers before impending drought season or floods • Ensuring cattle and poultry owners are aware of Do's and Don'ts with respect to handling livestock during drought events • Ensuring veterinary doctors and medicines are available for ready utilization during drought

Department/Agency	Prevention/Mitigation	Preparedness
Earthquake		
District Administration	• Ensure 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. • Policy decisions about construction of structures with due approval from specified authorities have to be taken.	• Awareness generation among the house owners about what details to look for or insist upon about the building, household fittings and equipment, in the houses they own or intend to purchase. • Computer based information dissemination about the area-wise nature of soil, the kind of construction appropriate in the area, the certifications about the house/flat one is about to buy
Urban Development Department/ Rural Development and Rural Works Departments	• The building codes etc have to be suitably formulated/ amended and appropriately detailed and legal implications properly stated. • Guidelines both for earthquake-resistant constructions as well as for retrofitting have to be formulated with specifications about site selection, foundation, construction, materials and workmanship making involvement	• Capacity building of Architects/ Engineers/ Builders and even masons for construction of earth quake resistant houses/structures
Building Construction Department and other works departments	• Empanelment of specialist architects, trained engineers and masons for building earthquake resistant structures. • Properly designed, engineered and constructed structures —residential, service or infrastructure — built on well tested soil for adapting to suitable adjustments in design	• Retrofitting in old structures so that short-comings in construction could be externally strengthened to a considerable extent to with- stand the convulsions caused by Earthquake • Training of masons and Civil Engineers for retrofitting and Rapid Visual Screening (RVS).

Department / Agency	Prevention	Mitigation	Preparedness
Fire Department	• The Certification of commercial buildings by Fire Dept and urban regulatory bodies both at the planning and completion stages.	• fire safety measures – • formulation, implementation and training of persons at all level in both urban & rural areas.	
DDMA	• Impart training to Architects/ Engineers/ Builders and masons in large number to build disaster resistant houses/structure	• At the community level, program and activities to bring home to them the do's & don'ts. • Awareness among the stakeholders about the need to build/rebuild earth quake resistant houses/structures and keeping safe neighbourhood.	

Department / Agency	Prevention	Mitigation	Preparedness
Flood			
Department of Water Resources / Flood Control Division	• multipurpose storage dams for flood prevention and sediment detention, administrative measures for restricting occupancy of flood zone • Converting the abandoned course of the river bed into reservoirs with proper intake and outlet channels so that, instead of allowing the flood water to flow down, the excess water gets accumulated in these reservoirs..	• The revival and maintenance of traditional practices of ahar, pynes and ponds system for diverting and storing flood water and making use of the same for multipurpose activities including irrigation, restoration of water tables etc. • conversion of rivulets and tributaries into reservoirs for storing flood water for a desired period and for later use • in suitably selected places large anti-flood sluices across the rivers are built then a controlled release of water will take place, a considerable level of water would be maintained in the tributaries as well • Storing Flood Water in reservoirs	

Department / Agency	Prevention	Mitigation	Preparedness
		• Channel Alterations with provisions for regular maintenance of the slopes in the channel, removing of debris and other obstructions, using natural vegetation for strengthening the sides of the channels and for using it as a source of promoting fisheries etc. • Watershed Management. • River bank plantation: (a) large trees with deep root systems in the upper reaches, (b) a good mix of trees, shrubs and ground cover that may bind middle reaches and (c) trees, shrubs and ground cover with matted root systems and flexible branches at the lower reaches. • Deepening of chaurs and mauns for intake of inundating water through natural 'dhars' and 'bahiyars'. • Exploring the possibility of setting up of hydroelectric power generating units of 5 to 10 MWs.	
Rural Development Department		• long term planning for key structures, sewerage system & human settlements are required to be done. For the human settlements in low lying areas small ponds at the four corners and middle of the settlements will be helpful in avoiding water logging in the area	

Department / Agency	Prevention	Mitigation	Preparedness
Cyclone			
DDMA		• Cyclone Shelters: Provision of cyclone shelters for poor and marginalized people to take refuge.	Creating awareness among the people for having properly anchored roofs in the houses where roofs are made of corrugated steel sheets etc.
Rural Development Department		• Fencing village with strong rooted tress that function like speed-breakers for the winds and protect the settlements.	
Indian Meteorology Department		• Ensuring proper mechanism for early warning to be in place	

Department / Agency	Prevention	Mitigation	Preparedness
Fire			
• Police • Fire Service Department • Departments of Health • Disaster Management Section	• wiring of houses and buildings properly insulated and fitted with cut-outs, fuses and fire alarms.	• making it mandatory to have emergency exit facility in high rise office buildings and apartments etc.	• placing easily operable fire extinguishers at proper places in high rise buildings. • providing cluster— based fire extinguishers

Department / Agency	Prevention	Mitigation	Preparedness
Chemical and Industrial Accidents			
Dept. of Labor Resources		• Legal liability Framework: holding the management responsible for the payment of huge compensation to affected parties or persons.	
Disaster Management Authority		• Inventory Mapping: by taking stock of the hazardous materials and processes involved so that	• Community Preparedness: people in the locality remain alert, advanced

Department / Agency	Prevention	Mitigation	Preparedness
		threats could be assessed and safety measures checked.	warning, and be advised by the government agencies.
ULBs		• Land use Planning: locating the hazardous industries in isolated place so that agriculture, human settlement, social and health infrastructure remain at a distance.	
Epidemics			
Health Department		• hospitalization, confinement of the patients and other containment measures • coordination with various departments for identifications of patients, vaccination of the vulnerable section of society • Enforcing situations that only properly trained personnel shall implement the measures and apply treatments.	
Municipal Corporation & Municipalities Nagar Parishad and Panchayat (ULBs)		• Sanitization • Sewage Management & treatment.	

Department / Agency	Prevention	Mitigation	Preparedness
Road Accidents			
Department of Transport , Traffic Police, Police and Fire Department		• Enforcing Legal Requirements consisting of a set of do's and don'ts for two wheelers, light and heavy vehicles • Providing directions for safe driving: – for the vehicle – for the driver, and – appropriate signs & signals along the road	

6 Capacity Building through Training & Awareness Generation

Key stakeholders in Banka district have various roles to play from community to district levels in terms of disaster management. Apart from the known stakeholders (Line departments, Communities are critical components to a successful, long-term, and sustainable disaster management plan. For a successful implementation of DDMP, participation of all concerned stakeholders is important. Without building capacity or raising awareness amongst stakeholders can be detrimental to the development of a successful and sustainable DDMP.

When undertaking disaster management planning assessments, it is important that the indigenous traditions; and methods and materials used for disaster management locally are considered and incorporated appropriately. Local residents are the first emergency responders to such incidents, particularly in remote areas and, thus, critical to the successful outcome. Capacity building intends to develop and strengthen skills, competencies and abilities of both government and non–government officials and communities to achieve their desired results pre, during and post disasters, as well as preventing hazardous events from becoming disasters.

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

The capacity building plan should cater to the differential capacity building needs based on the functional responsibilities assigned to the stakeholders. It should address -

- Institutional capacity building:
  - Government officials / policy makers,
  - Engineers, Architects, Masons, Doctors, Nurses, Teachers and other professionals,
  - State Police, Fire Services, State Disaster Response Force,
- Community capacity building and Community Based Disaster Management: It should focus on vulnerable groups – women, children, aged persons, female headed households and disabled persons.
- Knowledge Management, networking and sharing: Community registries to collate basic contact information for persons with disabilities
- Training of Trainers: Civil Defense/Home Guards/Volunteers
- Disaster Management Education:
  - Schools,
  - Colleges- medical, Engineering.

- Skill up gradation and follow up training programmes,
- Inventory of trained professionals, engineers, architects and masons, medical professionals, rescue specialists, etc.

Training modules, fulfilling the specific requirements of the State / District, should be designed and implemented in consultation with BSDMA. Capacity building requirement at all levels in institutional hierarchy as well as community should be addressed adequately. Training and capacity building program should be integrated with the monitoring and evaluation system for effective revision of the program.

The following table shows an analysis of the key stakeholders identified (Table 22).

Table 23: List of key stakeholders in District

Key Stakeholders	
District level Line Departments	
1. Agriculture Department	11. Panchayati Raj Institutions Department
2. Animal Husbandry and Fisheries Department	12. PHED Department
3. Civil Supplies	13. Planning and Development Department
4. Education Department	14. Police Department
5. Fire Department	15. Rural Development Department
6. Flood Control	16. Rural Works
7. Food Corporation Department	17. Social Welfare
8. Health Department	18. Statistics Department
9. Information and Public Relation Department	19. Transport Department
10. Minor Irrigation	
Other Stakeholders	
1. Academic Institutions	8. Inter Agency Groups
2. Architects, Engineers, Diploma Holders and Masons	9. Local and International Media
3. Artisans, Craftsmen Groups	10. Local NGOs, International NGOs, UN Agencies, Red Cross, National NGOs
4. Business Groups and Private sectors including corporate, industry, SMEs, traders and market associations	11. SHG, Women, Farmers, JEEVIKA Groups
5. Dalit and Tribal Associations	12. Transporters (Train, Road and Ferries)
6. Ex-Servicemen and Retired Professionals Associations	13. Youth Groups
7. Health Associations (Medical Association, Chemist and Druggist Association, RVC, Nurses)	

Training, tests and exercises are essential to ensure Government officials, emergency response personnel and the public are operationally ready. As part of

the emergency management training Curriculum, it shall be ensured that personnel with emergency responsibilities complete emergency management courses as prescribed from time-to-time by the National / State/ District Authority.

Training program should include all stakeholders including – community, home guard, NSS, NCC, NYKS, Schools and colleges, Civil society, CBOs, corporate entities, SDRF, Fire Service, Media, Police etc.

S. No.	Activity	Responsibility
1	Training to Home Guard personnel in various phases of disaster management including search and rescue	BSDMA
2	*Mukhyamantri* School Safety Plan Safe Saturday and Safe Thursday Programme in Government and Private School.	District Education Dept.
3	Training to educational and training institutions personnel in various phases of disaster management	BSDMA
4	Training to civil society, Jeevika CBOs and corporate entities in various phases of disaster management	BSDMA
5	Training to fire and emergency services personnel in various phases of disaster management	Fire Service Dept.
6	Training to police and traffic personnel in various phases of disaster management	Police Dept.; PTS, BSDMA
7	Training to State Disaster Response Force (SDRF) Teams in various phases of disaster management	NIDM; NDRF; BSDMA
8	Training to media personnel in various phases of disaster management	NIDM; Information Dept.; BSDMA
9	Training to govt. officials in various phases of disaster management	NIDM; BSDMA
10	Training to engineers, architects, structural engineers, builders and masons in various phases of disaster management	Hazard Safety Cell of PWD; NIDM; BSDMA

Table 24: Preparedness training and capacity building of key stakeholders

6.1 Institutional Capacity Building

District Administration is of prime importance in the development of a disaster resilient Banka and Bihar. Training and capacity development of the district administration staff and the officers of the Bihar Administrative Services is important as they play a prime role in the management and reduction of

disaster risks. A paradigm shift in disaster risk management from a response centric approach to a proactive approach focusing on disaster risk reduction and arresting disaster risk even before it materializes can only be achieved if the most important members of India's administration – the district administration are proactive in their duties and responsibilities. It is important for these members to understand the following:

- The intricate relationship between development and disasters
- Potential risks of disasters and climate variability that could impact their district/jurisdiction
- Mainstreaming disaster risk reduction into development planning
- The state and district level disaster management plans
- Incident command system/incident response system
- Emergency response, including search and rescue, first aid
- Norms of disaster relief (including NDRF/SDRF norms)
- Documentation of disaster damages and losses
- Post disaster reconstruction, and recovery including Build Back Better

It is important that the training is provided to the following concerned staff members:

1. DDMA staff
2. DEOC staff
3. BAS Officers
4. Circle and Block Development Officers
5. Village level Officers (Agriculture, Rozgar sevak, etc.)
6. Frontline workers (Aanganwadi, ANM sevikas, etc.)

The DDMA is responsible to perform the Training Needs Assessment in coordination with the BSDMA and ensure all concerned staff of district administration are trained.

6.2 Community including CBOs and PRIs/ULBs

Capacity Development at community level has to be largely self-oriented such as swimming, firmly thatching of roofs, handling injuries and first aid, handling people (and injured people) in debris, saving people from downing and other such activities. Thus the requirement is to develop capacities built around oneself and simple technologies based equipment such as plying motorized boats, debris removal, usage of fire extinguishers, first aid, handling dog/snake bites, driving two and four wheelers, setting up of tents, operating basic communication equipment, etc.

Training for such skills will be essential for

- Thana level citizen communities
- Gram Panchayat and *Gram Kutchehri*

- Community level volunteers (Gram Raksha Dal)
- State and District Apada Prabandhan Kendra
- Local CBOs and NGOs
- ULBs

Specific training plan for PRIs is mentioned in Table 9

6.3 Professionals

BSDMA have prepared training modules for Professionals (Engineers, Architects, etc.). The training modules can be accessed on BSDMA website[6]. Other training needs are to be assessed according to district requirements and request sent to BSDMA to arrange for trainings.

6.4 Awareness Generation

The involvement of the community and their participation in mitigation, prevention and preparedness measures are an important component of any success in disaster risk management. Community participation and involvement will depend on the awareness of community members regarding the nature and potential impacts of hazards, the vulnerabilities and the extent of risk.

The State Disaster Management Plan notes:

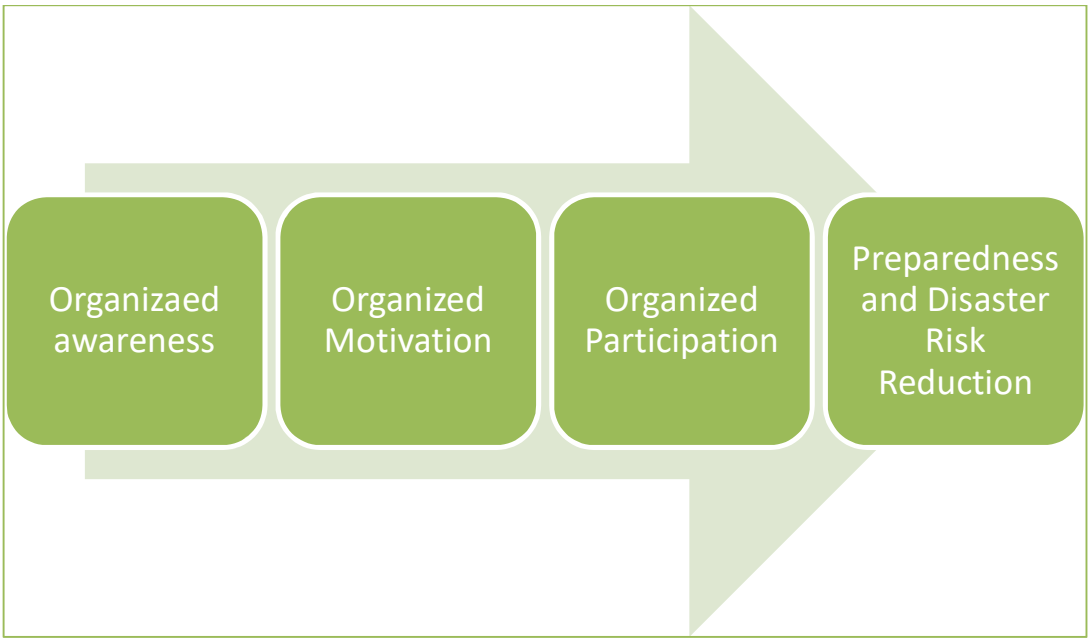


Figure 35: Awareness and DRR relationship

At a community level, the following modes of awareness generation could be attempted:

[6] http://bsdma.org/Training-Workshops.aspx?id=1

1. Campaign mode through local NGOs, CBOs, and in gram sabha focusing on hazards, impacts etc.
2. Demonstration mode through puppet shows, street plays, etc.
3. Learning mode through small group meetings, focus group discussions, self-help group meetings Aanganwadi, ASHA workers, community leaders, PACs, PRIs, structured meeting of teachers, etc.

Awareness generation is required to be followed up with capacity building measures for converting the organized awareness into disaster risk reduction outcomes. The capacity building at community level would therefore have to encompass multi-mode engagements including visuals, dos and don'ts at community, family, and individual levels.

At institutional level, awareness generation can be attempted by visits to disaster-affected sites within and outside the state. Focusing on direct interaction with the communities, and victims in particular, the Gram Panchayats, local CBOs, NGOs, BDOs are to be trained about the possible impacts of disaster events on people to motivate their empathetic engagement in disaster risk reduction efforts.

Sl. No.	Task	Activities	Responsibility
1	Information	Advertisement, hording, booklets, leaflets, banners, shake-table, demonstration, folk dancing and music, street play, and exhibition, TV Spot and Radio spot, Audio-visual and documentary	Information and Public Relation Department (IPRD); District Disaster Management Authority; BSDMA;
2	Education	School campaign	Education Department; BSDMA;
3	Communication	Planning and Design; Execution and Dissemination	District Administration ; All line Departments; Local Bodies; BSDMA;

Table 25: Awareness generation activities and responsibilities

7 Response Planning

Disaster response planning requires coordinated and concerted efforts from all the concerned stakeholders from state to community levels. It provides rapid and disciplined incident assessment to ensure a quickly scalable, adaptable and flexible response. It broadly follows the National and State guidelines for response, which defines basic roles and responsibilities for incident response across all levels of the government and non-government sectors. It requires materials and logistics management, carrying out search and rescue operations, providing relief and shelter, providing sanitation and health needs, close coordination between line departments, quick communication and reporting, etc.

Before taking up response activities, the District Magistrate (RO/IC as per IRS) will hold a meeting to take stock of the situation, availability and mobilization of resources for listing out the various tasks and to provide proper briefing to the responders. *The Incident Action Plan* will be drawn and put into action based on the situation assessment. The DM / RO will nominate Operation Section Commander (OSC) based on nature and severity of incident and rest will follow as per IRS/IRT and other procedural guidelines issued by the state.

Goals of response planning:

- To alleviate suffering of the people (and livestock, animals) affected by the hazard
- Meet basic human needs
- Address the needs of the vulnerable groups such as people with disabilities, senior citizens, pregnant women, children, Female headed households, etc.
- Quick restoration of Essential Services in the district
- Support community for faster recovery

7.1 District Disaster Response Plan

"Disaster response is a three-legged race against time. It requires the co-ordination of efforts, actions and strategies of concerned functionaries at state, district and the community level. Three important functionaries in the disaster response are the existing government machinery, non-governmental organizations, and the affected community. There are three main important activities in disaster response: planning, mobilization and operationalization.

When a disaster event occurs, and is notified as a disaster event, the Incident Command System (ICS) (also known as Incident Response System (IRS)) is operationalized. Disaster response requires management of materials and logistics, carrying out search and rescue operations, providing shelter and relief,

caring for health and sanitation, communicating to a host of stakeholders, documenting and reporting. All these functions require involvement of highly specialized resource and institutions. There are three main functionaries such as the government machinery, the non-government organization and the affected communities. It also requires coordinated and concerted efforts of these functionaries at the state, district, block & community levels. Response structure mainly involves three sets of activities: planning, mobilization & operationalization.

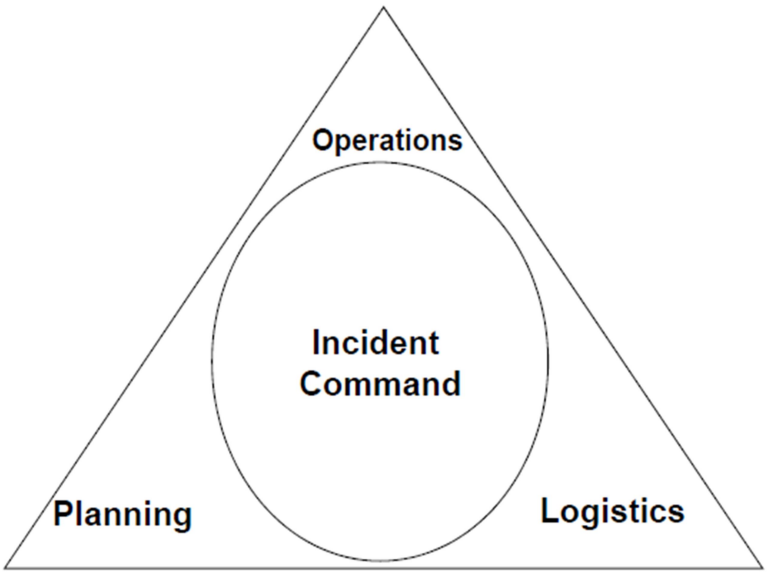


Figure 36: Disaster Response Structure

Incident Response System (IRS) formulated by the National Disaster Management Authority is a system of management by objectives through IAP (Incident Action Plan). It takes care of any expanding incident through an organizational structure of command staff, sections, branches, divisions, groups, units, resources and span of control. Through Unified Command (UC), it allows all agencies having jurisdictional or functional responsibilities to jointly develop incident objectives and strategies. IRS requires that every emergency response involving multiple area or multiple agencies include the four functions.

IRS establishes lines of supervisory authority and formal reporting relationships. There is complete unity of command as each position and person within the system has a designated supervisor. Direction and supervision follows established organizational lines at all times.

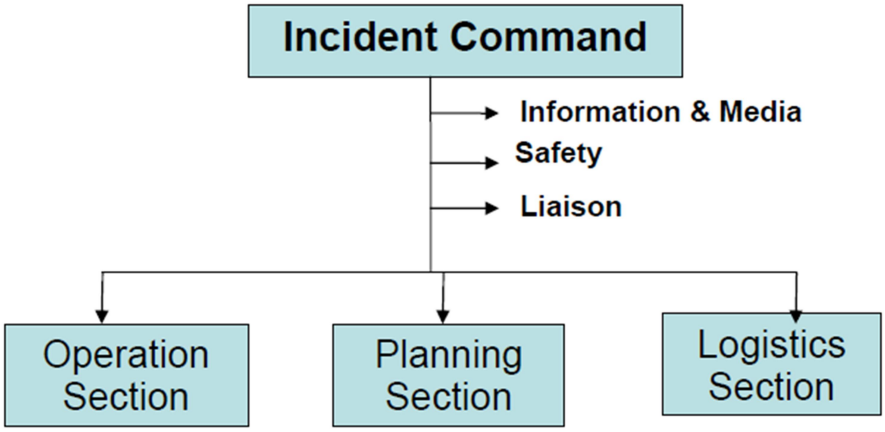


Figure 37: Incident command structure

The Incident Commander's responsibility is the overall management of the incident. On most incidents, a single Incident Commander carries out the command activity. The Incident Commander is selected by qualifications and experience.

Further details pertaining to the functioning of the various emergency response functions under the IRS are provided in section.

Disaster level functional responsibilities during the disaster response are structured below:

Table 26: Indicative structure of emergency functions and respective leads in district

S. No.	Emergency Management Functions/Tasks	Function/ Task Lead	Support Function officer/ agencies
1	Direction, Control, and Coordination	District Magistrate	SP, Additional Collector, Circle Officer
2	Information Collection, Analysis and Damage Survey	District Magistrate	SP, Additional Collector, Circle Officer Exec. Engineer
3	Communication	DIO	Mobile Operators, TV, Radio, Police, Forest, Fire
4	Alert and Warning	Additional Collector	EOC, DIO (District Information Officer)
5	Transport (ESF, Evacuation, Relief supply)	DTO	DSO, SP / DM SFC.
6	SAR (Search and Rescue)	SP, Civil Defense, SDRF, NDRF	Fire, Civil Defense, Home Guards, SDRF (when magnitude of any disaster is beyond coping capabilities of these response agencies; NDRF may be requisitioned for search & rescue operations)
7	Emergency Public Information	DDC	EOC/Police/Transport/Forest

S. No.	Emergency Management Functions/Tasks	Function/ Task Lead	Support Function officer/ agencies
8	Law and Order / Public Protection	SP	Dy. SP, Home Guards Commandant, NGOs, Para-military and Armed Forces
9	Public Works	Exec. Engineer, PWD	Irrigation, Ex. Engr., Panchayat, NGOs, Water Supply Board, Municipalities, Home Guards, Police
10	Mass Care/Emergency Assistance / Shelters	Dist. Education Officer	School Principals, Teachers, Health, PHC, State Transport, Water Supply, DTO, Circle officer, TDO
11	Health and Medical Services, psycho social care	Chief District Health Officer (CDHO)	Supt. Govt. Hospital, Municipality, PHCs, CHCS, Red Cross, Fire Brigade, Civil Defense, R&B, NGOs, Doctors, TDO, Circle officer
12	Animal Health & Welfare	Dy. Director Animal Husbandry	Veterinary Inspector, NGOs
13	Water Supply and Sanitation	Ex. Eng. Water Works	Dy. Ex. Engr., Circle officer, TDO, Health, Dy. Engineer
14	Power	Supt. Engr. Electricity board	Ex. Engr., Dy. Engr. Technical, EB, Transport
15	Resource Management (Including food and relief supplies and other logistic support)	DDO	DTO, DSO, Private & Public sector, Municipal Water Supply Board, Circle officer, Dist. Supply Circle officer

The Disaster Response shall cover State, District, Block and Gram Panchayat/ULB and shall consist of the following main stakeholders:

(i) Crisis Management Group

Headed by the Chief Secretary, with Development Commissioner and Principal Secretaries/Secretaries of concerned department as members, it may also be supported by professionals and special invitees depending on the nature of crisis and requirement for its management

(ii) Incident Management Team (IMT)

The IMT shall be constituted in the DMD (Bihar) with representatives of other line departments. It may also be supported by professionals and experts as the case may be required. The IMT will function under the guidance of the Crisis Management Group/Chief Secretary and shall be the ultimate authority to direct operations and monitor development and allocate responsibilities. The IMT shall be led by the Incident Commander (Chief Secretary/ Principal Secretary, DMD. It shall have the power to raise resources and support as per the

requirement to manage the unfolding disaster. The IMT will function from the SEOC.

- In the case of a level-1 disaster, the District Magistrate shall be the Incident Commander and shall constitute the Incident Management Team. The IMT will function from the DEOC as the control room and the centre of operations
- In the case of a level-2 disaster, the Principal Secretary, DMD shall be Incident Commander and the SEOC shall be the control room and the centre of operations
- In the event of a level-3 disaster, the Chief Secretary shall be the Incident Commander and the Crisis Management Group /State Executive Committee members shall be part of the IMT. The SEOC shall be the control room and the centre of operations

The following are the common steps for IMT:

1) Assemble at EOC, take stock of the situation
2) Inform higher authorities and decide upon a line of action (Planning)
3) In case of L3 disaster, the first decision would be for the supervision – whether the Divisional Commissioner shall be supervising the operations or there is a requirement from the state. The second decision would be whether an onsite EOC shall be set up or District EOC shall be control room for response operations.
4) Mobilize and dispatch emergency support groups for search and rescue
5) Plan and strategize response
6) Organize support and resources – material and human
7) Constitute Operations Management Team and assign responsibilities
8) Organize damage assessment
9) Brief higher authorities and media about the event in detail
10) Monitor relief distribution, shelter and health related issues
11) Coordinate required measures
12) Plan for evacuation (if required) and rehabilitation
13) Document all proceedings, decisions and events

(iii) Emergency Support Groups

Fourteen emergency functions and well trained teams to carry out each function are suggested by the BSDMA. These teams are called the Emergency Support Groups. Emergency Support Functions (ESF) constitute the backbone of Disaster Response Plan and consist of groups of persons groomed to provide specific assistance in a

dedicated manner and with missionary zeal. They shall respond to all possible requirements to mitigate the hazard. The ESFs shall assess damage and take measures to repair the damages and control the situation. Each ESF shall have a set of supporting departments, a set of functions in emergencies and in normal times. The following are the ESFs:

1) Communication

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Dept of Science & Technology 2) BSNL & other services providers 3) AIR/Television 4) Satellite phones 5) Mobile phones 6) SW/Ham Radio 7) Police wireless	• To restore communication • To provide emergency communication linking EOCs, IMT • To provide communication to communities • To ensure communication facilities to support State and District • To coordinate temporary communication requirements	• To update hardware and software in communication technologies • Repair & maintenance of EWS & communication equipments • Periodic checking of communication system among disaster related setups • Provide training at Gram Panchayat EOC in communication technologies

2) Search & Rescue

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Home Dept 2) Fire Dept 3) Civil Defense 4) NDRF 5) SDRF 6) BMP/Police 7) Army 8) Navy 9) Air Force	• To check the evacuation tools & equipment • To work out evacuation Plan • To establish linkages and coordination with camp office • To carry drinking water and packed food, emergency medicine etc. for the victims • To prioritize evacuation of children, women, old, disabled etc. • To avoid overloading	• Repair and maintenance of evacuation tools and equipments • Maintain fitness exercises • Prepare teams of search and rescue operators at the district & Panchayat level • To maintain a list of trained manpower and to ensure their availability in the eventuality of any hazards

3) Relief & Shelter

(The checklist for relief camps is provided in section Error! Reference source not found. in the annexure)

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Food & Civil Supplies Dept 2) State Food Corporation 3) Associations and Clubs 4) Building construction Dept 5) Corporate bodies 6) Voluntary organizations	• To carry cooked dry, fast food materials in properly packaged form for immediate distribution • To organize the supply of drinking water • To setup Shelter camps, Kitchen camps, mobilize volunteers for cooking, serving, washing, etc. • To organize supply of food grains and vegetables • To line up teams of local youths to carry those rescued to relief and shelter camps • To maintain records of names, villages, Panchayat, blocks to which the victims belong • To setup bathrooms and latrines • To take special care of children, women, old and disabled, especially those separated from families • To setup disaster relief center to receive, collect, sort out and distribute relief materials • To organize proper supply chain to reach the victims and ensure last mile connectivity	• Create awareness and organize a system of saving food grains on household basis for emergency needs • Groom officers to maintain stock of fast food like chura & sattu for at least three days at the block level

4) Health & Sanitation

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Health dept 2) Government and private hospitals 3) Red Cross Society 4) Indian Medical Association 5) Voluntary bodies	• To check the equipment and stock of medicines • To form teams of medical personnel • To organize first aid providing team and to ensure scalability in case of L2 & L3 disasters • To organize mobile medical van to attend to emergency needs • To carry medical camp setting facilities	• Checking, replacement and maintenance of medical kits/ medicines • To keep updated first aid kits and to ensure sufficient quantities of the same for ready utilization in case of emergencies

Supporting Dept.	Emergency Functions	Normal Time Functions
	• To establish trauma counseling desks • To carry our Psychological First Aid • To keep a watch for the possibilities for any epidemic outbreaks • To include locally available medical staff in health check up exercises • To keep a record of patients treated • To visit shelter camps and ensure proper sanitation and to make proper arrangements for the same	• To enlist block wise doctors available with phone numbers and specialization • Train young boys and girls at the Block, Panchayat and Community level in providing First Aid • Training young boys and girls in helping and carrying seriously injured

5) Livestock shelter & fodder

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Animal Husbandry & Fisheries Dept 2) Veterinary college & hospital	• To set up cattle camps at safe and appropriate locations • To vaccinate animals if not previously vaccinated • To organize safe disposal of garbage • To mobilize mobile veterinary team locally	• Vaccination camps for livestock at Gram Panchayat level • To line up suppliers of fodder bricks during emergencies • To enlist district wise veterinary doctors available with phone numbers • To maintain stock of medicines needed in case of emergencies

6) Drinking water & supplies

Supporting Dept.	Emergency Functions	Normal Time Functions
1) PHED 2) Civil supplies 3) Mineral water manufacturers 4) Corporate bodies 5) Donor agencies 6) Local NGOs	• To identify the sources to provide drinking water and restore supply if affected • Restoration of wells • Installation of hand pumps • Provision of chlorine tablets • To distribute mineral water bottles during emergency relief	• Installation of hazard resilient hand pumps in identified areas of shelter • Ensuring supply of water bottles during emergencies through contract with suppliers/ corporate • Raising of platform of

Supporting Dept.	Emergency Functions	Normal Time Functions
		wells and hand pumps • Encouraging community and households to keep water purifiers (tablets) handy for use in emergency situations

7) Power

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Energy Dept 2) Electricity board 3) Dept of non-conventional energy 4) Gen-set suppliers	• To carry repair and maintenance kits for gen-set, etc. • To check electricity supply line and restore supply • To organize power supply to hospitals, shelter camps, kitchens camps, onsite EOC, etc. • To organize alternate sources of electricity • To carry gen-sets, diesel, petrol, spare batteries, etc. • To carry candles, matchboxes, solar lamps, petromax, etc.	• Interaction with Electricity board for keeping updated about generation, and supply situation • Interaction with non-conventional energy dept to gather information about possible sources of electricity in emergency situation • To enlist suppliers of gen-sets • Maintaining stock of solar lamps, petromax, candles, torches, etc. with spare battery chargers • To promote community/households to make store candles, torches, etc in case of emergencies

8) Transport

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Transport Dept 2) Transport Agencies 3) Air Force 4) Boat Owners 5) Ambulance service providers	• To know loading and unloading points nearest to incident sites • To coordinate the transport requirements of emergency support forces	• To keep updated list of transport facility providers • To enlist the ambulance service providers with phone numbers

Supporting Dept.	Emergency Functions	Normal Time Functions
	• To arrange transportation of relief and rescue materials • To coordinate and provide transport facilities to all support agencies • To regulate movement of traffic onsite • To organize transportation of sick and wounded	• To plan for alternative roadmap of vulnerable areas in the district • To enlist contact nos. of helicopter service providers • To enlist boat owners with phone number and number of boats

9) Public works

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Public works dept 2) Road construction dept 3) Pul Nirman Nigam	• To restore road connectivity • To construct temporary bridges where required • To organize repairing of health centers, schools, important buildings • To undertake supervision and surveillance of construction works done	• Storing of equipment and materials required in emergencies • Enlisting the construction companies for support in the case of emergencies • Make arrangements for borrowing equipment/ manpower/material if required

10) Removal & Clearances

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Home Guard 2) Municipalities /PHED 3) Scout and guides 4) NCC 5) NYK	• To organize volunteers for removal of dead bodies –humans and livestock • To organize local force for clearing debris of building, bridges, road, etc. for reconstruction • To organize local force for chopping and removing dangerous trees especially post cyclonic storm events • To organize safe disposal/ burial/ burning of dead bodies	• Ensuring availability of equipment such as gas cutters, cranes, in order • Enlisting truck owners with phone numbers • Enlisting workers in municipalities and grooming them to work as a team • To ensure regular interaction with such teams to facilitate timely response during emergencies

11) Information Dissemination & Helpline

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Dept of Information & Public Relations 2) Scouts and Guides 3) Media 4) Colleges and Universities	• To gather correct information from authorities onsite • To keep list of persons rescued with full details about each person • To update list of missing persons • To update number of dead bodies and their locations • To keep a track of positioning of teams & ESFs • To make use of public address system • To keep 5 -6 scouts around to provide escort services • To schedule work in short shift duration	• To get orientation and training to handling people in trauma • To develop a comprehensive understanding of psychology, public relations, mass communication for ensuring effective handling of distress situations

12) Damage Assessment

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Disaster Management Dept 2) Dept of Agriculture 3) Rural Development Dept 4) Urban Development Dept 5) Public Works Dept 6) Dept of Animal Husbandry & Fisheries	• To have the format of the damage assessment • The following information to be collected: • Affected, Block, Panchayat, Population, Human lives lost, Livestock lives lost, Resources damaged, Infrastructure damaged (roads, bridges, schools, hospitals, govt. buildings, electric supply, water supply), crops, orchards • Synthesized assessment	• Developing tools & techniques for Rapid Damage Assessment • Identification of Training Needs for manpower for performing Damage Assessment

13) Donation Management

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Disaster Management Department 2) Dept of Supplies 3) State Warehousing Corporation 4) Cooperative dept	• To set up donation camp onsite • To create three centers: Fund, Relief, Services • To carry receipts, stamps, etc. for cash/cheque/drafts • To identify storage centre for	• Providing orientation in human resource and materials management to NGOs work • Train them in material handling, packing and

Supporting Dept.	Emergency Functions	Normal Time Functions
	receiving relief materials for storing, packing, proper distribution of the same • To keep records of supplies sent, with whom and when • To post volunteers required and take care of their basic needs : Food, rest, etc.	distribution

14) Media

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Dept of Information & Public Relations 2) Disaster Management Dept	• Organize media briefings by senior officer in charge • Provide graphic and statistical details to the extent possible • Organize visit to shelter, relief, and various activity camps • Organize briefings on daily basis preferably in evening	• Development of pamphlets, literature for disaster awareness • Educating people about Do's and Don'ts during disasters

15) Law and Order

Supporting Dept.	Emergency Functions	Normal Time Functions
1) Dept of Home 2) District Administration	• Posting of Police, Home Guards, Civil Defense forces in strategic places • Deputing a Magistrate to keep vigil and give necessary orders	

(iv) Emergency Operation Centre

(v) Block/Anchal emergency Support Centre

Depending on the level of disasters (further details in section 0), the following actions are recommended for incidence response:

INCIDENCE RESPONSE FOR LEVEL -1 DISASTER

In L1 level disaster DDMA shall be the prime institution and District Magistrate the Incident Commander. DEOC shall become the Command Centre and Block/Anchal shall become on site centre to manage the operations.

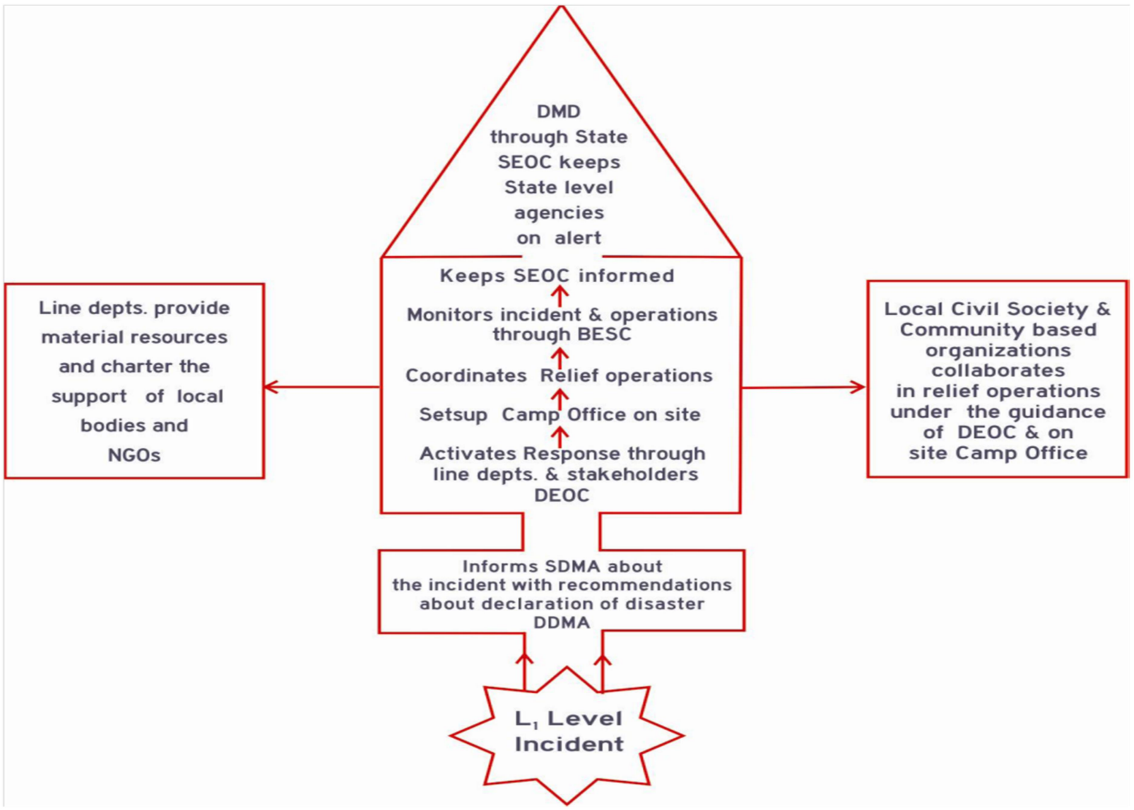


Figure 38: L1-Disaster Response

MANAGEMENT OF LEVEL 2 AND LEVEL 3 DISASTER

In case of L2 level incident the response shall emanate at the state level. The main respondents shall be: DMD, SEOC, DMD & SDRF & NDRF. In this case DMD shall be overall in-charge but Chief Secretary /as chief of SEC/Principal Secretary, DMD shall manage the operations. The Centre level agencies shall be in readiness to respond.

Key Indicators for decision making of level 2 and level 3 Disaster

- Large-scale devastation of life, property, and infrastructure
- Break down of response machinery of district administration
- Large scale displacement and relocation of the people
- Threatening health risks, etc.

Authority for declaration of L2 disaster: State relief commissioner on request of DDMA or directly on advice of State agencies and BSDMA can declare a particular disaster as State level disaster.

Key Actions for Level 2 Disaster

- Request Divisional Commissioner and Relief Commissioner to activate Divisional resources and mechanisms

- Request BSDMA and Relief Commissioner at State level for activation of State resources and mechanism
- Prepare for receiving Divisional and State level agencies (resources), their quick briefing, plan of actions if possible and support for their deployment
- Enable additional capacity of EOC to support State level resources in coordination
- Seek cooperation of neighboring district as per existing contingency plans and understanding
- Develop strategies for response and recovery in coordination with State authorities and other agencies
- After dealing with immediate action plan, make quick assessment of resources further needed for medium and long term intervention from the State and make requisitions for the same.
- Request for formation of Armed Forces, if required, in near vicinity for SOS mobilization to support civil authorities.
- Request for activation of SDRF and other Para military capacities, if required, at State level.

Assistance for L3 disaster: On request from State Government/ BSDMA, the Central Government/ NDMA can provide technical and resource support when the damages due to disaster exceed the coping capacity of the affected State.

Support from India Armed Forces

Indian Armed Forces are well equipped to handle any kind of disaster management operations. Their expertise and experience in handling such situation will help in support minimize the damage to life, property, infrastructure, and environment. The services of the armed forces can be taken in the quickest possible time as they are strategically located throughout the country.

- The district magistrate (response officer) may ask support from the armed forces as and when there is requirement for handing the disaster situation in the district.
- The armed forces shall work under the civil administration in the affected area and the commanding officer of the operating unit will share the situation report with the EOC and DDMA.
- The armed forces will work in close coordination with the EOC in the district.

- The commanding officer of the operating unit will share the situation report (Sitrep) with the responsible officer.
- If there is no armed force unit present in the district, then the responsible officer may ask the divisional commissioner to communicate with the commanding officer of the armed force unit in that area and ask for his assistance.

- Additionally, the armed forces will support in search and rescue operations; in providing shelter, food, medical aid and critical logistics; in restoring and establishing critical infrastructure needs in an emergency situation; etc.

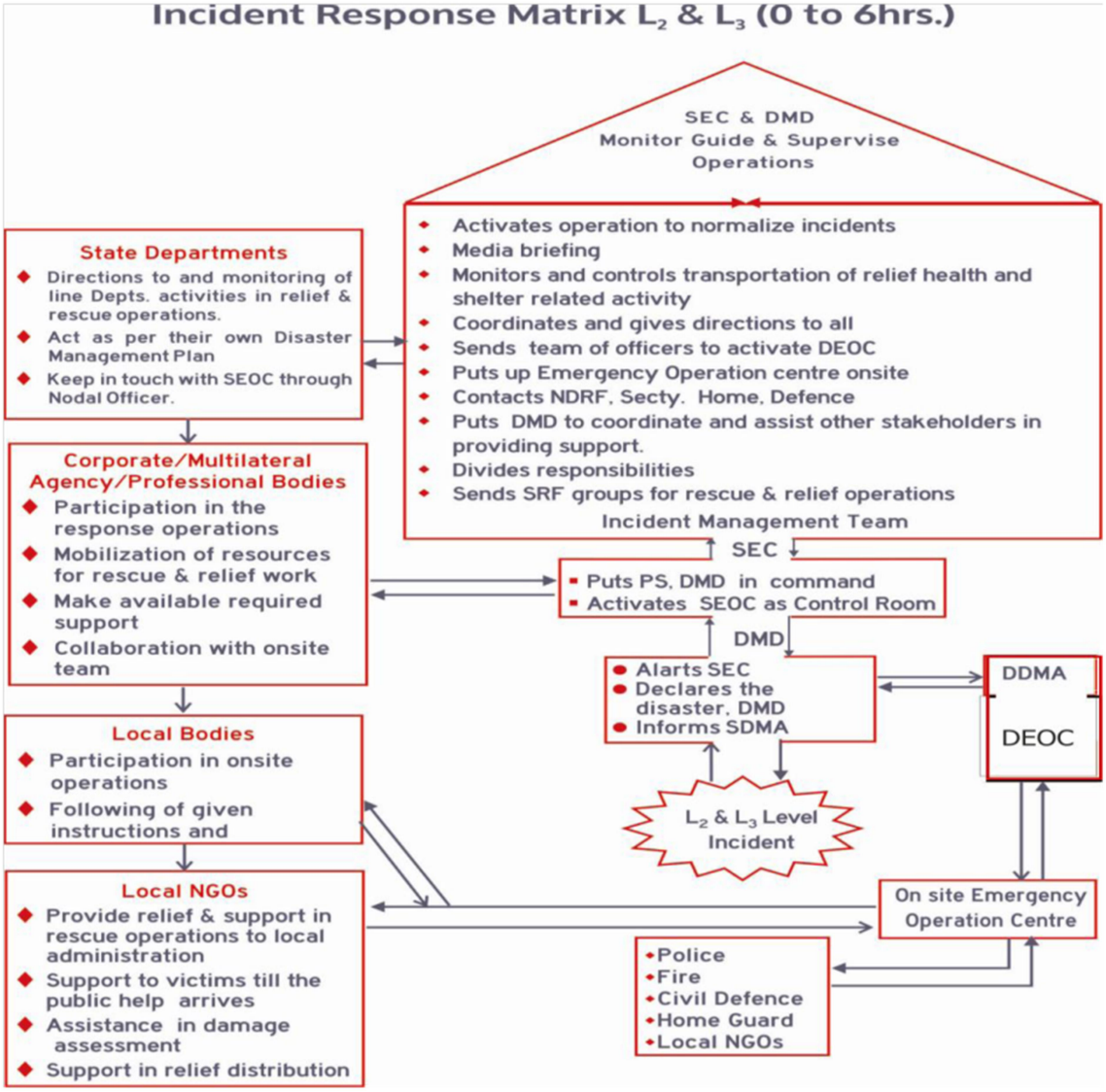


Figure 39: L2 & L3 Disaster response (0-6 hours)

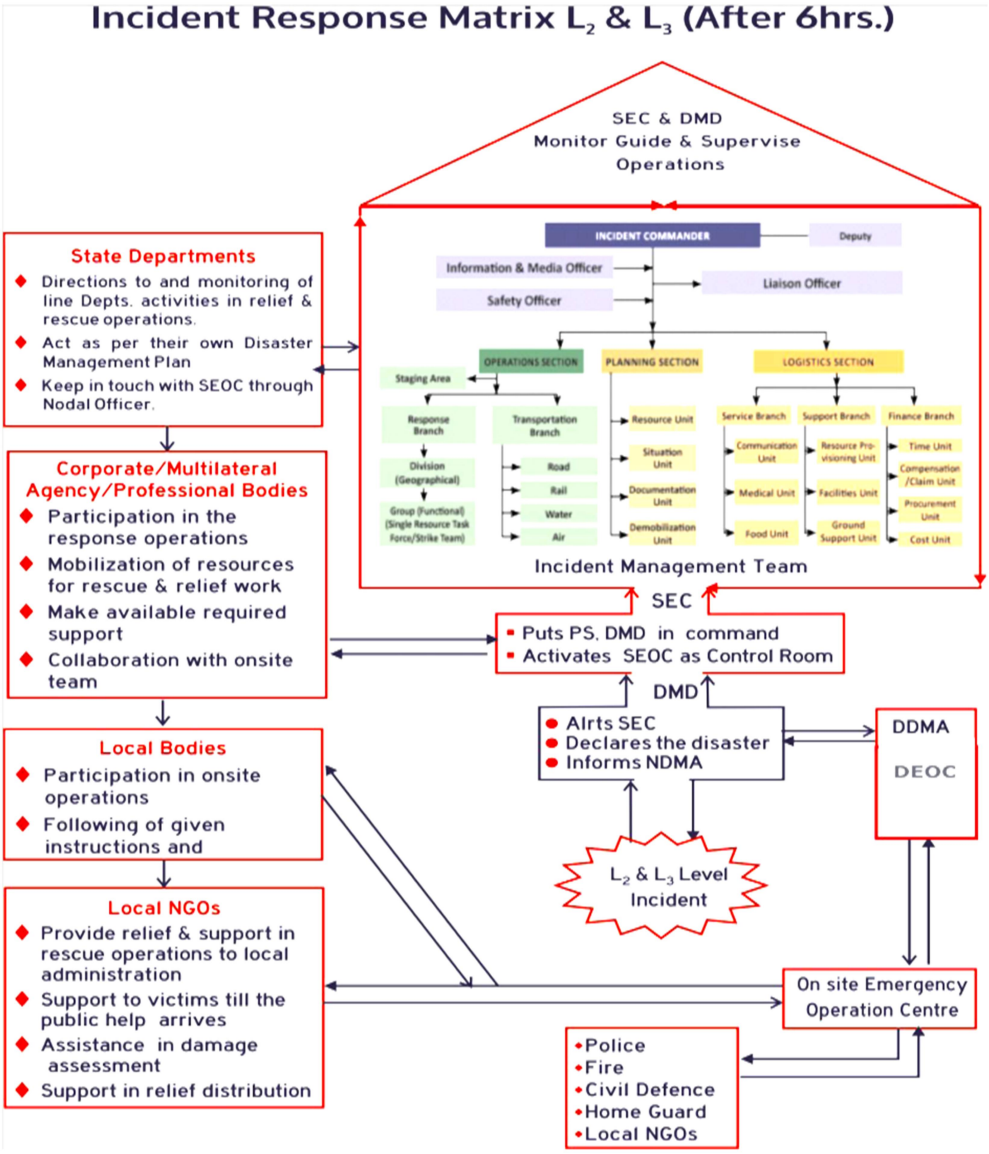


Figure 40: L2 & L3 Disaster response - after 6 hours

7.2 Communication and disaster alerts

There will be the trigger mechanisms that can be set up, depending on the warning signals mentioned below:

Warning Signal Available

The national disaster management plan has designated specific agencies to monitor onset of different natural disasters, set up adequate early warning system (EWS), and disseminate necessary warnings/alerts regarding any impending hazards, for all those hazards where early warning and monitoring is possible with currently available technologies and methods. The specific agencies notified are:

Table 27: Central Agencies designated for natural hazard specific early warnings

Hazard	Notified Central Agencies for natural hazard specific early warnings
Drought	Ministry of Agriculture and Farmers Welfare (MOAFW)
Earthquake	India Meteorological Department (IMD)
Floods	Central Water Commission (CWC)
Epidemics	Ministry of Health and Family Welfare (MOHFW)
Cyclone	India Meteorological Department (IMD)

In such cases, where the central agencies generate early warnings for impending hazards, it is important for the blocks/Gram Panchayats and villages in the district to receive the alerts and act accordingly. Arrangements need to be in place to ensure prompt receipt of these signals and actions thereon. The flow of such information and early warnings is provided in Figure. After the State Govt. receives such warning/advisory, the State Emergency Operations Centre (SEOC) will communicate it to the District Emergency Operations Centre (DEOC) urgently. The DEOC will communicate such warning to the departments at the district level.

The information flow in such cases will be as follows:-

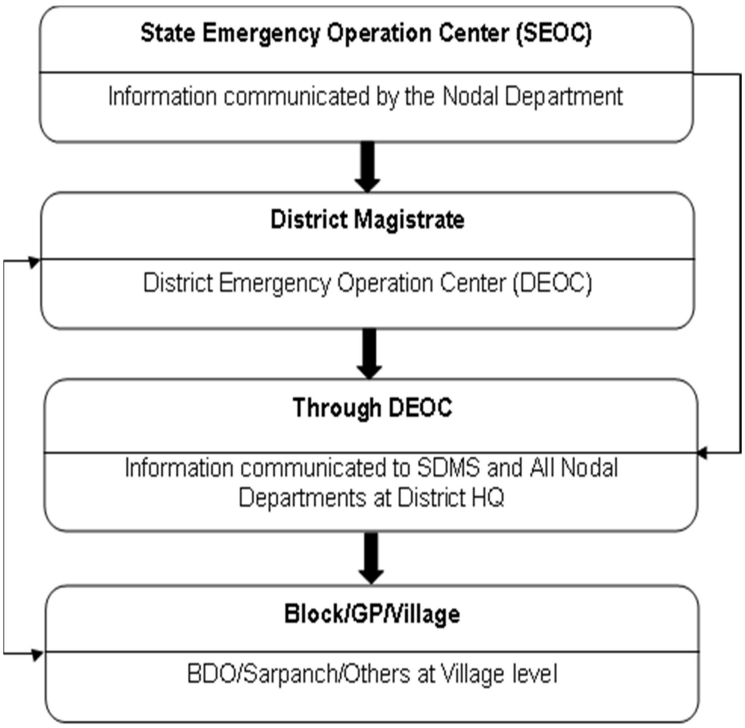


Figure 41: With warning information flow from top-down

Without Early Warning Signal

When a disaster occurs without any early warning, in that case the information starts from the place of incident through government agency or otherwise and the institutional mechanism in such cases will be as follows (Figure):-

1. The concerned village will report to the Panchayat, block, police station/SDM/DM and the information will be sent to the Deputy Commissioner.
2. DDMA will assess the information and assess the disaster to be of the level L0, L1, L2 or L3.
3. DEOC will be activated and if required the SEOC will be kept at alert if assistance needed; otherwise information of the incident will be passed on to SEOC.
4. DDMA will convene the meeting of DEOC and plan the management of the disaster as Incident Response Plan.
5. The respective Incident response teams will be rushed to the site for effective management.

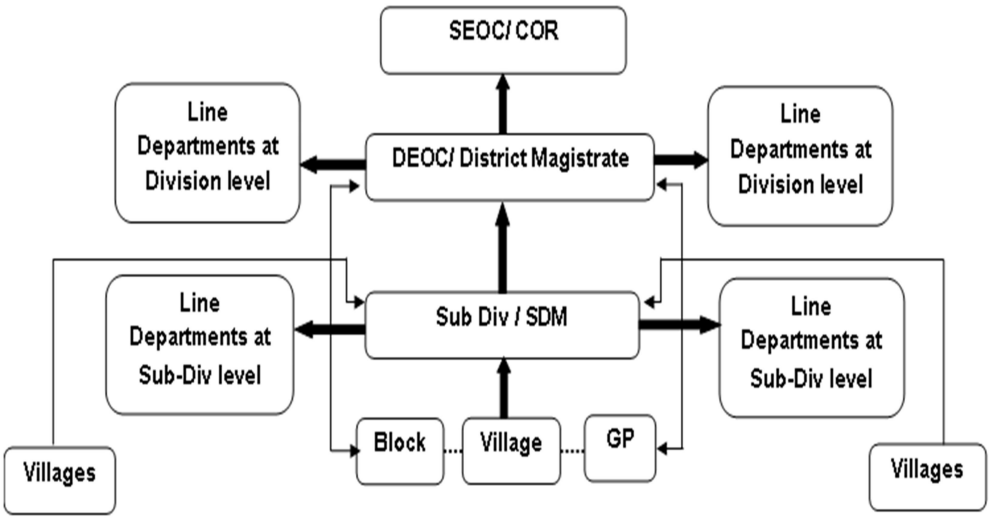


Figure 42: Without warning information flow from bottom-up

Activities post receipt of warnings

The disaster response structure will be activated on the receipt of a disaster warning or on the occurrence of a disaster by the competent authority. The occurrence of a disaster may be reported by the concerned monitoring authority to the Commissioner of Relief/BSDMA by the fastest means. The BSDMA/State Executive Committee (SEC) will activate all departments for emergency response including the SEOC, DEOC, police personnel and Emergency Response Centers (ERC). In addition, they will issue instructions to include the following details:

1. Exact quantum of resources (in terms of manpower, equipments and essential items from key departments/stakeholders) that is required.
2. The type of assistance to be provided
3. The time limit within which assistance is needed
4. Details of other Task/Response Forces through which coordination should take place
5. The SEOC, ERCs and other control rooms at the State level as well as district control rooms should be activated with full strength.

   Flood, drought, strong winds/cyclone forecasting is generally the responsibility of the Indian Meteorological Department (IMD). IMD is the nodal agency for providing warning services for such disaster occurrences. Bordering districts of Nepal also provide warnings with respect to rainfall and water discharge from the dams there
6. After getting information from IMD, warning dissemination is a responsibility of State Government. The Disaster Management Department, Govt. of Bihar is responsible for disseminating such warnings to the public and line departments.
7. On receiving an initial warning, the responsible officer shall disseminate the warning to all line departments, the district administration and DG Police. Warning messages are transmitted though wireless to all districts and Blocks. District Magistrates are provided with satellite phones and a Ham radio to maintain effective communication, even if terrestrial and cell phone communication fails
8. The state EOC and control rooms of the other line departments at the State level as well as district level also get the warnings. The control rooms are activated on receiving the warnings.

Important aspects for warning

The following aspects may be considered for dissemination of warning:

- All warning systems and equipment are maintained in good working condition and should be checked regularly
- Only the designated agencies/officers can issue the warning.
- Communities in disaster prone areas should be made aware of the warning systems
- Alternate warning systems must be kept in readiness in case of technical failure (e.g., power failure)
- Multiple warning systems should be used to ensure the maximum spread.
- Warnings should, to the extent possible, be clear about the severity, the time frame, area that may get affected.

- Warning statements should be conveyed in a simple, direct and non-technical language, and incorporate day-to-day usage patterns.
- Do's and don'ts should be clearly spelt out to the community to ensure appropriate responses.
- Warning statements should not evoke curiosity or panic behavior. This should be in a professional language devoid of emotions.
- Rumor control mechanisms should be activated.
- All relevant agencies and organizations should be alerted.
- Once a warning is issued, it should be followed-up by subsequent warnings in order to keep the people informed of the latest situations.

8 Reconstruction, Rehabilitation and Recovery

Recovery and rehabilitation is one of the most vital aspects in post-disaster event. "Short-term recovery" will return the vital life support systems to minimum operating standards while "long term rehabilitation" will continue till complete redevelopment of the area takes place. Rehabilitation and reconstruction comes under recovery phase immediately after relief and rescue operation of the disaster. This post-disaster phase continues until the life of the affected people comes to normal. This phase mainly covers damage assessment, disposal of debris, disbursement of assistance for houses, formulation of assistance packages, monitoring and review, cases of non-starters, rejected cases, non-occupancy of houses, relocation, town planning and development plans, awareness and capacity building, housing insurance, grievance redressal and social rehabilitation etc.

Post-disaster reconstruction and rehabilitation should pay attention to the following activities for speedy recovery in disaster hit areas. The contribution of both government as well as affected people is significant to deal with all the issues properly.

- Damage assessment
- Disposal of debris
- Disbursement of assistance for houses
- Formulation of assistance packages
- Monitoring and review
- Cases of non-starters, rejected cases, non-occupancy of houses
- Relocation
- Town planning and development plans
- Reconstruction as Housing Replacement Policy
- Awareness and capacity building
- Housing insurance
- Grievance redressal

Administrative Relief

The district is responsible for responding to any natural calamity, through the issue of essential commodities, group assistance to the affected people, damage assessment and administrating appropriate rehabilitation and restoration measures.

The district level relief committee consisting of official and non-official members including the local legislators and the members of parliament review the relief measures.

When a disaster manifests, the entire machinery of the district, including the officers of technical and other departments, swings into action and maintains almost continuous contact with each village in the disaster threatened area.

Restoration of basic infrastructure

Based on the degree of damage to the existing structures of houses and other infrastructure, the victim will be issued funds for carrying out the restoration activity. The PWD will be the nodal agency and also the housing board will take care of the reconstruction plans. Adherence to the zoning laws and other necessary precautions depending on the type and degree of disaster will ensured while the infrastructure is being restored.

Reconstruction of damaged buildings/social infrastructure

Reconstruction of damaged buildings will be addressed and supported through the advance tools like Insurance, Short-term Loans, and by any other important means, which are affordable.

Houses should be reconstructed in the disaster-hit areas according to the following instructions:

- Owner Driven Reconstruction
- Public Private Partnership Program (PPPP)
- Under the PPPP, the houses are reconstructed by the NGOs for the beneficiaries to be registered in the joint names of the husband and wife.
- All the houses should be insured.
- Financial, technical and material assistance provided by the government.
- The designs for seismic reconstruction of houses provided by the government.
- The material assistance provided through material banks at subsidized rates.
- Design of model houses provided to the public to choose from with an option to have one's own design.

Restoration of livelihoods

Restoration of livelihoods in post-disaster phase is an important component of post-disaster recovery. It is expected that the vulnerabilities existing pre-disasters are reduced in the post disaster recovery efforts. Centrally Sponsored Schemes, targeted CSR interventions, and convergence of multi-agency efforts towards a focused long term rehabilitation and sustainable livelihood will help reduce vulnerability of Banka residents to future disasters.

Psycho-social interventions

Specific emphasis on the psycho social needs of the affected community members, including women and children will help in the inclusion of Build Back Better in post-disaster recovery. Psycho social interventions do not only mean the provision of therapeutic mental health related interventions post disaster events. It involves a thorough understanding of the various disaster impacts and provision of support across the spectrum of impacts. An example of a psychosocial intervention post disaster is "Sukhi Baliraja Initiative (SBI)" in Maharashtra (Vidarbha region that is prone to droughts and farmers distress). The SBI focuses on developing a holistic strategy to reduce drought affected

farmer distress through various thematic interventions that includes: sustainable agriculture, soil and water conservation, community development, promotion of farmer producer groups and collective farming techniques, and mental and physical health initiatives.

8.1 Damage Assessment

A detailed assessment of damages caused by the disaster event is essential before commencing rehabilitation and reconstruction activities.

Post disaster damage and loss assessment involves the estimation of the value of destruction of physical, durable assets and of the value of the disaster induced disruption of production flows in all affected sectors of economic and social activity, and their subsequent aggregation to ascertain total disaster effects and impacts. The damage and loss assessment needs to be conducted in a bottom-up approach to obtain a fully representative and valid estimation of total disaster effects and impacts.

The objective of the damage assessment is to determine the precise nature and extent of damage so that relief and recovery measures can be undertaken by the district administration. The following components are to be included in the damage assessments:

(a) Nature of calamity
(b) Data and time of occurrence
(c) Affected area (number and name of affected revenue circles)
(d) Name and number of villages affected
(e) Total crop area affected (in hectares)
(f) Total population affected (disaggregated by age, gender)
(g) Human lives lost (disaggregated by age, gender)
(h) Number of persons missing (disaggregated by age, gender)
(i) Animals affected (disaggregated by big, small, and poultry)
(j) Animals washed away (disaggregated by big, small, and poultry)
(k) Total number of houses damaged (fully and partially)
(l) Infrastructure damage (embankments, roads, culverts/bridges, others)
(m) Relief measures undertaken in brief (number and location of relief camps along with inmates disaggregated by age, gender)
(n) Relief distributed

Table 28: Post disaster damage assessment methodology and responsibility - Banka district

Components	Description – methodology	Responsible agencies
(a) Nature of calamity (b) Data and time of occurrence (c) Affected area (number and name of affected revenue circles) (d) Name and number of villages affected (e) Total crop area affected (in hectares) (f) Total population affected (disaggregated by age, gender) (g) Human lives lost (disaggregated by age, gender) (h) Number of persons missing (disaggregated by age, gender) (i) Animals affected (disaggregated by big, small, and poultry) (j) Animals washed away (disaggregated by big, small, and poultry) (k) Total number of houses damaged (fully and partially) (l) Infrastructure damage (embankments, roads, culverts/bridges, public buildings, water supply lines, electricity supply lines, public utilities, others) (m) Relief measures undertaken in brief (number and location of relief camps along with inmates disaggregated by age,	Tools for damage assessment: (a) Arial survey (b) Photographs, video graph of affected area (c) Satellite imagery (d) Field reports (e) TV/Press coverage (f) Visual inspection checklist: a. Camera b. Laptop c. Notebook d. GIS Map e. GPS	• Circle officer for field inspection and village level information including human lives lost, affected, number of houses damaged • Respective departments (Agriculture department for crop area affected, Energy department for electricity supply, PWD department for roads, embankments, etc., Dept of agriculture husbandry and fisheries for livestock details, Disaster Management Department for Relief)

Components	Description – methodology	Responsible agencies
gender) (n) Relief distributed		

8.2 Relief to the victims

According to notification no.17/2015/1973 (new Mandar letter 2015-2020), disaster relief can be provided by the government to the victims of the following disaster events:
National notified disasters:

1. Avalanche
2. Cloudburst
3. Cold wave
4. Cyclone
5. Drought
6. Earthquake
7. Fire
8. Flood
9. Hailstorm
10. Landslide
11. Tsunami
12. Pest attack

State notified disaster (Local disasters)

1. Lightning
2. Heat wave
3. Unseasonal or excess rainfall
4. Boat tragedies
5. Drowning (rivers, ponds, ditches)
6. Human induced group accidents such as road accidents, airplane accidents, rail accidents, gas leakages

The items and norms of assistance from the State Disaster Response Fund (SDRF) and the National Disaster Response Fund (NDRF) the above-mentioned disasters are provided in letter 1418 in the annexure.

8.3 Restoration of basic infrastructures and repair/ reconstruction of life line buildings

Details of restoration of basic infrastructure and repair/reconstruction of lifeline buildings are mentioned under the Emergency Support functions in section7.1.

9 Budget and Financial resources

The following are the budgetary and financial provisions for preparing and executing the DDMP:

- District Disaster Response and Mitigation Fund
  According to the DM Act 2005, 48 (1) (b) and (d), the state government shall establish for the purposes of the DM Act, the District Disaster Response Fund and the District Disaster Mitigation Fund. Under 48 (2) (iii), the state government shall ensure that the funds are available to the District Authority
- Emergency procurement and accounting
  According to the DM Act 2005, 50 (a) and (b), during disaster situation or disaster, if the District Authority is satisfied that immediate procurement of provisions or materials or the immediate application of resources are necessary for rescue or relief, it may authorize the concerned department or authority to make the emergency procurement and the standard procedure requiring inviting of tenders shall be deemed to be waived. A certificate of utilization of provisions or materials by the controlling officer authorized by National, State or District Authority shall be deemed to be a valid document or voucher for the purpose of accounting of emergency, procurement of such provisions or materials
- Allocation of funds by Ministries and Departments
  According to the DM Act 2005, 49 (1) and (2),every Ministry or Department of the Government of India shall make provisions in its annual budget for funds for the purposes of carrying out activities and programmes set out in its disaster management plan and such provisions shall, mutatis mutandis, apply to the departments if the Government of the State.

9.1 Schemes and programmes supporting DRR

The national disaster mitigation fund (NDMF) has not been set up in India as the purpose of mitigation is being served by existing Centrally Sponsored Schemes (CSS) such as Pradhan Mantri Krishi Sinchai Yojana, Krishonnati Yojana, National Mission on Sustainable Agriculture, MGNREGA, Major Irrigation Projects, Namami Gange- National Ganga Plan, River Basin Management, National River Conservation plan, Water Resource Management. Further, the Ministry of Finance through the Office Memorandum F.No 55(5)/PF-II/2011 dated 6th September 2016 provides the guidelines for Flexi Funds within Centrally Sponsored Schemes to provide flexibility to states to meet local needs and for undertaking mitigation/ restorative activities in case of natural calamities.

The Government of India has approved various schemes to strengthen the existing institutions, improve response mechanisms, build capacities and mitigate the impact of disasters. The following are the schemes and funding pattern at national level:

- State Disaster Response Fund – with focus on relief/aid to disaster affected families and communities, the norms for relief are provided in the annexure (letter 1418).
- Capacity Building for Disaster Response for building capacity within administrative machinery for better handling of disaster response and for preparation of District and State level Disaster Management plans. The guidelines of the Capacity Building for Disaster Response is provided in the annexure (Letter no: 23(32) FCD/2010 dated 05.10.2010)
- Revamping of Fire Services – grant to Urban Local Bodies for revamping of fire services within their respective jurisdiction (Letter no. 12(2) FCD/2010 dated 23.09.2010)
- Plan Schemes:
  - Strengthening of Fire and Emergency Services with an objective to transform fire services into a multi-hazard response force capable of acting as first responders in all types of emergency situations
  - Revamping of Civil Defense Setup to revitalize Civil Defense setup in the nation to play a significant role in disaster management and assist the police in internal security and law and order situations
- Non-Plan Schemes:
  - Financial Assistance to Administrative Training Institutes and other Training Institutes in States/UTs
- Externally Aided Schemes:
  - GoI-UNDP Disaster Risk Reduction Programme for building community resilience in disaster preparedness and mitigation measures
  - GoI-USAID Disaster Management Support Project for reducing vulnerabilities to disaster and build capacity of key institutions in India
  - National Cyclone Risk Mitigation Project to upgrade cyclone risk mitigation, preparedness and response
- Schemes in Pipeline:
  - National Emergency Communication Plan for improving communication between NEOC, NDRF and NDMA
  - School Safety Programme to promote a culture of safety in schools

- National Earthquake Risk Mitigation Project to reduce loss to life and property caused by earthquakes
- National Landslide Risk Mitigation Project to strengthen structural and non-structural landslide mitigation efforts
- National Flood Risk Mitigation Project to mitigate consequences of floods by improving capacity for effective preparedness, promptness in response and to assess risk and vulnerabilities associated with floods

9.2 Other Options

MEMBER OF PARLIAMENT LOCAL AREA DEVELOPMENT SCHEME (MPLADS)

District authority may also pool the MPLADS funds for the works permissible in theguidelines. Each Member of Parliamentgets of Rs. 5 crores funds for the development ofessential functions in his/her own constituency. The projects are identified bythe MPs and are implemented by the district authority. Moreover, the allocated fundcould be clubbed with existing flagship programs and other developmental projects like MNREGA, etc.

MPLADS works can also be implemented in the areas affected by the natural disaster. Lok Sabha MPs from non-affected States can also recommendpermissible work in the affected areas up to maximum of Rs.10 lakh per annum.In case of severe disaster, an MP can recommend work up to RS.50 lakh for the affected district.

ASPIRATIONAL DISTRICT – NITI AYOG

Banka is an aspirational district under the 'Transformation of Aspirational Districts' programme of Niti Ayog aimed to improve the socio-economic status of the district. The core principles of the programme are – Convergence (of central and state schemes), Collaboration (among citizens, functionaries of the district, state and central government) and Competition among districts. Agriculture and water resources related projects could be promoted under this programme.

RISK INSURANCE AND MICRO-INSURANCE

Mitigation, preparedness, responding to disasters are important steps in disaster risk management. But given the nature of the calamity to possibly overwhelm any preparedness measures, risk insurance becomes a potent mechanism to account for residual risk. Two major schemes available towards risk insurance are:

1. Pradhan Mantri Suraksha Bima Yojana – a personal accident insurance scheme that offers protection against death or disability due to accidents

available at a premium of Rs. 12/- per annum with a total coverage of Rs.2,00,000/-

2. Pradhan Mantri Jeevan Jyoti Bima Yojana – Life insurance scheme at a premium of Rs. 330/- per annum with a total coverage of Rs.2,00,000/-

Other schemes such as livestock insurance scheme, earthquake and flood insurance for property can be promoted in consultation with state and central governments. Micro-insurance schemes can be promoted through existing networks such as Bandhan, Cashpor, Ujjivan, CDOT, Saija to suit local requirements.

MUTUAL AID

Mutual aid agreements can be promoted to lend assistance and emergency response across intra-jurisdictional boundaries. Banka district shares boundaries with districts in neighboring state of Jharkhand. Few parts of Banka can be reached quicker from Jharkhand especially during disaster (such as flood) events. Banka district can have mutual aid agreements with neighboring districts in Bihar and Jharkhand for effective disaster response especially at the golden hour (immediately post disaster event) for alleviating the sufferings of the disaster affected community.

CORPORATE SOCIAL RESPONSIBILITY (CSR)

Under section 135 of the Companies Act, it is mandatory for every company above the specified threshold of turnover or net worth or net profit, to spend at least 2% of the average net profits earned during the three immediately preceding financial years on CSR activities. Currently the following focus areas are notified under section 135 of the Companies Act, 2013 and Companies (Corporate Social Responsibility Policy) Rules 2014:

- Eradicating hunger, poverty and malnutrition, promoting preventive healthcare and sanitation and making available safe drinking water
- Promoting education, special education, and employment enhancing vocation skills especially among children, women, elderly, and differently-abled, and livelihood enhancement projects
- Promoting gender equality, empowering women, setting up homes and hostels for women and orphans, setting up old age homes, day care centers, and other facilities for senior citizens, focusing on socially and economically backward groups
- Reducing child mortality, and improving maternal health by providing good hospital facilities and low cost medicines
- Providing with hospital and dispensary facilities with more focus on clean and good sanitation with focus on combating HIV, AIDS, malaria and other diseases

- Ensuring environmental sustainability, ecological balance, protection of flora & fauna, animal welfare, agro forestry, conservation of natural resources, and maintaining quality of soil, air and water
- Employment enhancing vocational skills
- Protection of natural heritage, art & culture, including restoration of buildings and sites of historical importance, and works of art, setting up public libraries, promotion and development of traditional arts and handicrafts
- Measures for the benefit of armed veterans, war widows and their dependents
- Training to promote rural sports, nationally recognized sports, sports and Olympic sports
- Contribution to the PM Relief fund or any other fund set up by the central government for socio-economic development and relief & welfare of the scheduled castes, scheduled tribes, other backward classes, minorities and women
- Contributions or funds provided to technology incubators located within academic institutions, which are approved by the Central Government
- Rural development projects
- Slum area development

*The above list is not exhaustive

These funds could effectively be utilized to reduce vulnerabilities and increase capacities for disaster risk conscious rural and urban slum development. District administration can promote specific focus areas and invite CSR and individual donations for the cause as promoted by various districts.

10Monitoring, Evaluation and Update of DDMP

The District Disaster Management Plan (DDMP) provides a framework and direction to the government agencies for all phases of disaster management cycle, which must be reviewed and revised periodically Plan maintenance is a dynamic process of updating the plan on a periodic basis. The backbone of maintaining the plan is carrying out mock drills and updating the plan based on lessons learnt thereof. This is a method of identifying the gaps and putting in place a system to fill the same. Regular updating of stakeholder details, contact numbers and resource inventory is another inherent and essential function of plan maintenance.

It is recommended that a special committee under the District Collector is constituted with designated nodal officers for maintenance, evaluation and update of the DDMP. Vulnerabilities are dynamic, and with a increasing frequency of high magnitude disaster events, the DDMPs would require focused maintenance and upkeep in order to remain relevant and as an operational framework. A special committee for DDMP monitoring, evaluation and update would also help in mainstreaming disaster risk reduction into development plans.

10.1 Guidelines for monitoring and evaluation of the plan

- According to the DM Act 2005 31(2), the district disaster management plan shall be prepared by the District Authority after consultation with local authorities.
- According to clause 31 (4) and (7), the district plan shall be reviewed time to time (at least annually) and implemented (or issue such instructions to different departments of Government in the district for the implementation)
- The local authority shall ensure that disaster management drills and rehearsals are conducted periodically
- While updating the plan, the following aspects need to be considered:
  - Critical analysis of the outcome of exercises & mock drills as part of plan testing.
  - Incorporation of lessons learnt in the updated plan as a result of recommendations received from different stakeholders and as a result of mock drill exercises conducted.
  - Regular updating of the resource inventory and key infrastructure available in the district, and their updating on the State Disaster Resource Network.
- The plan testing should preferably be organized on the first Thursday in the months of April and October every year.
- The main objectives of the plan testing are to:

- Determine the feasibility and compatibility of back up facilities and procedures
- Identity areas in the plan that need modification
- Identify training needs of key stakeholders
- Assess the ability of the organization/department to respond to disaster threats.

- All departments that have specific roles and responsibilities in the DDMP must have a system to ensure that all Officers of their departments who have a specific role to play are fully conversant with their responsibilities/tasks
- Debriefing and evacuation mock drills:
  - After the mock exercise, debriefing and evaluation is very important. It is of critical importance that insights are collected from participants and used to modify the plan.
  - Debriefing is very effective as it is carried out immediately after the exercise. It also includes documentation in terms of recommendations and improvements of the plan.
  - The lessons learned from the mock exercise are likely to be similar to those from real events. The only difference is that exercises are controlled events, specifically designed to test procedures and they can be repeated until sound/workable arrangements are in place.
- Review/update Plan: The Disaster Preparedness and Response Plan should be reviewed and updated regularly, based on inputs as under:
  - Drills and Rehearsals
  - Recommendations from all Depts. in their Annual DM Report
  - Lessons learnt from Disasters in other Districts, States and countries
  - Directions from BSDMA, DMD, Ministry of Home Affairs, NDMA, Government, etc.
- BSDMA and all other concerned Depts. should encourage formal and informal interactions with various stakeholders at different levels to learn and document their experiences, so that such experiences can contribute constructively towards updating of the DDMP and for further improving the capacity and capability to deal with future Disasters.
  - The interactions with key respondents such as Fire personnel, the SDRF, NDRF, the army, NEOC, officials and Local Authorities of neighboring districts is of prime importance to develop amicable and coordinated efforts during the golden hour as well as in mitigation, preparedness and recovery.

- The Plan can be updated online in Banka's official webpage (https://banka.nic.in/) and views or comments can be sought from the public for improvements and updated on a periodic basis.

11. Standard Operation Procedure

Drought

The DDMA should monitor all the indicators of drought on the ground. collect data on rainfall on a daily basis, important water storages in the district and monitor the progress of sowing operations. The DDMA should also monitor all local information related to demand for relief employment, prices of food grains and the availability of fodder. Capital on the declaration of drought following procedure is to be implemented.

1. Implementation of Contingency Crop scheme

Sl. No.	Crop Name	Suitable variety	Seed rate (Kg/ ha)	Duration (Day)	Yield (qt. / ha)	Sowing period
1	Maruwa	BR-700, L-352, RSU-45, VL-348, 149, GPU-28,67,85, RAU-8 BM-2, A-404	10-12	90-96 short day 100-115 long day	15-20 short 20-25 long	June-July
2	Sawa	BL-207, RAU-3, RAU-9	8-10	80-85 short day 85-90 long day	12-15 short 15-18 long	June-July
3	Kodo	JK-3,41,65,67,155,439, GPUK, Polly Niwas No-1	8-10	85-90 short day 100-115 long day	12-15 short 15-18 long	June-July
4	China	MS-4872, MS-4884, BR-7, GPUP-21, RNAU-145, A-151	8-10	60-70 short day 70-85 long day	12-15 short 15-18 long	June-July
5	Kakoon	RAU-2, ARJUN, SIA-326, 2593,3085, BG-1,PS-4	8-10	75-80 short day 80-85 long day	12-15 short 15-18 long	June-July

Table 29: Crops to be adopted in case of lack of rainfall drought condition

2. Support to farmers, diesel input subsidy, Seed subsidy, DBT, Fertilizer subsidy
3. Relief employment to be provided ; For example- MGNREGA
4. Reservoir management
5. Repair and augmentation of existing water supply schemes
6. Special measures and schemes for areas with drinking water scarcity
7. Construction of bore-wells
8. Ensuring food security by measures such as PDS,PM- Gareeb kalyan yojana, ICDS-THR, Midday meal, Community kitchen
9. Gratuitous Assistance to affected farmers via DBT
10. Measures for ensuring Fodder Supply

11. Involvement of Panchayati Raj Institutions
12. Involvement of Non-Government Organizations (NGOs) and Civil Society Organizations (CSOs)
13. Coordination with Media for information dissemination

Sl.No.	Crop Name	Suitable variety	Duration (Day)	Yield (qt. / ha)	Sowing period
1	Maize	Suwan, Devaki, Diyara, Composit & reasional variety	75-90	10-20	Aug to 15 sep.
2	Urad	Navin	80-90	10-12	Aug to sep.
3	Arhar	Abhya, Sharad, Pusa-9, UPAS-120, icpl-332	135-250	12-20	Mid Aug to sep.
4	Kulthi	DB-7, CO-1, BR-5, BR-10, S-67, S=26	90-100	20-22	Aug to sep
5	Toriya	Panchali, Bjawamo, RAUTS-17, PT-303	80-105	8-12	15-30 sep.
6	Chara Crop	Jwar, Makka Dinanath grass etc.	-	-	Aug to sep

Table 30: Crop adopt in heavy rainfall / after flood condition

Lightning

Basic procedure after occurrence after lightning incident

1. Help the Person When It Is Safe - If you are at risk from ongoing lightning, wait until danger has passed or move to a safer place, if possible.

2. Begin CPR- It is safe to touch the person. The body does not retain an electrical charge.

If the person is not conscious, does not have a pulse, and does not appear to be breathing normally, use an automated external defibrillator (AED), if one is on hand, or:

- For a child, start CPR for children.
- For an adult, start adult CPR.

Do not remove burned clothing unless necessary.

3. **Treat for Shock, if Necessary-** Lay the victim down with head slightly lower than torso and legs.

4. **Follow Up actions-** The emergency medical team will assess the person's condition.

- At the hospital, the person will be examined for internal or neurological injuries and burns.

5. Compensation/ Ex-gratia payment to be ensured concerned CO should submit report related to death of person / animal and report it immediately to DDMA.

6. After a lightning incident CO should visit the reported area. CO, SHO along with Civil Surgeon should be liable for post-mortem report.

7. Concerned BDO will provide death certificate.

Sl.No	Checklist
1	Application form.
2	Death certificate of the decedent
3	FIR Report
4	Post-Mortem Report
5	Inspection report of Karmachari
6	Inspection report of Circle Inspector
7	Family list as issued by CO.
8	Affidavit of Family members.
9	Banka details of the applicant

Table 31 : Documents required along with application for ex-gratia payment

Heat Wave

S. No.	Lead Agency	Response Actions
1	DDMA	District heat wave risk assessment to identify hotspots
		Disseminate heat wave forecast to agencies and public
		EOC/ control room coordinates heat wave response
		Review heat wave preparedness in district
2	Health and Family Welfare	Review heat wave medical preparedness and response
		Activate control room of H&FW department for heat wave
		Medical response preparedness for heat stroke cases
3	Urban Local Bodies	Review city and ward preparedness and response to heat wave
		Heat wave alert dissemination
		Create drinking water and bathing facility at public places
		Water tanker facility
		Response measures

4	Panchayati Raj	Review heat wave preparedness and response of Panchayati Raj department
		Schedule cooking timing for rural areas during summer
		Provision water tanker facility
		Create drinking water facility at public places
		Heat wave preparedness for animals
5	Animal Husbandry	Medical preparedness for heat wave for animals
6	Police	Heat wave response plan for traffic police
7	Labor	Heat wave response plan for laborers

Table 32 : List of lead agencies and response actions for heat wave at district level

Flash Flood

1. Activate the help line and District Emergency Operation Centre- so that information about the flood, its location and intensity can be disseminated and to facilitate channel of communication, redress any grievances from citizens.
2. Evacuation - Evacuation of the vulnerable population from affected area should be the main focus. Use of SDRF, local trained personnel, divers / swimmers should be done for the same when necessary.
3. Role of power/ electricity department- Proper assessment of power transmission lines should be done. In submerged area power supply is to be isolated in order to remove any chance of electrocution, leakage, short circuit. Emergency services however can be maintained after physical assessment of the transmission and distribution system.
4. Role of road and construction department- Proper assessment of the amount of damage to road network should be done. Alternate route and roads, if feasible, should be made operational so that the affected area remains connected to the mainstream.
5. Relief & Compensation to be implement
   Co-Ordinate - CO, SDO
   Concerned Line Department
6. Epidemic Control Measure to be initiated
   Debris Disposal
   Sanitization drive
   Health Camp

Snakebite

A. Procedure to be followed at the community or village level

1. Check history of snakebite and look for obvious evidence of a bite (fang puncture marks, bleeding, swelling of the bitten part etc.). However, in Krait bite no local marks may be seen. It can be noted by magnifying lens as a pin head bleeding spot with surrounding rash.
2. Reassure the patient as around 70% of all snakebites are from non-venomous species.
3. Immobilize the limb in the same way as a fractured limb. Use bandages or cloth to hold the splints (wooden stick), **but do NOT block the blood supply or apply pressure**. Ideally the patient should lie in the recovery position (prone, on the left side) with his/her airway protected to minimize the risk of aspiration of vomitus.
4. Nil by mouth till victim reaches a medical health facility.
5. Traditional remedies have NO PROVEN benefit in treating snakebite.
6. Shift the victim to the nearest health facility (PHC or hospital) immediately.
7. Arrange transport of the patient to medical care as quickly, safely and passively as possible by vehicle ambulance (toll free no. 102/108/etc.), boat, bicycle, motorbike, stretcher etc.
8. Victim must not run or drive himself to reach a Health facility. Motorbike Ambulance may be a feasible alternative for rural India.
9. If possible PHC medical officer can accompany with patient to know the progress and management and facilitate resuscitation on the way.
10. Inform the doctor of any symptoms such as progress of swelling, ptosis or new symptoms that manifest on the way to hospital.
11. Remove shoes, rings, watches, jewelry and tight clothing from the bitten area as they can act as a tourniquet when swelling occurs.
12. Leave the blisters undisturbed.

Rail Accident

.Passenger train derailment:

Derailment can take place at any place in the district along the main rail line.

1. It is important for the observer to immediately inform the nearest Railway Station.

2. The Station Master of the nearest railway station to inform the Railway Divisional Controller (DRM-Malda) and District Emergency Operation Centre (DEOC) about the accident location as well as the extent of damage.

The District Emergency Operation Centre (DEOC) will:

1. Alert all hospitals and doctors of affected blocks and ask them to proceed to the scene of accident for rendering medical help.
2. Take charge of dead bodies for post-mortem and necessary legal procedures.
3. Arrange to provide police protection at the accident site.

Rail Authority will ensure:

1. The train on either side should be stopped at least one station prior to the accident site, so that the track is kept free for the Accident relief train to reach the accident area.
2. The Accident relief train should be given priority clearance to reach the accident site for rescue operation.
3. In addition to the gas cutters in the Accident relief train, the Station Master should be asked to keep a list of the gas cutters who can be called up on short notice.
4. Initiate rescue operation and shift injured persons to nearest hospitals for immediate medical attention. Temporary morgue arrangements should be made for keeping the dead.
5. The information of train accident should be relayed to all the stations where the train was to pass through and a "call centre" telephone number should be arranged so that information can be given to the passenger's next of kin about the accident.
6. On hearing about the derailment the Station Master should set up a call receiving centre. The telephone numbers as designated should be flashed on the Television Sets i.e. by using the Doordarshan as well as the other private Channels and the radio.

Building Collapse

Rescue guidelines for building collapse are as under:

1. Rescuers must assess the nature of the scene and the pattern of the collapse before entering onto a pile of rubble to ensure their own safety and that of those potentially buried in it.

2. Gather as much information as is possible at the onset of the incident. Concentrate preliminary efforts on areas where people were last seen or known to be. It is suggested that a "Command" person be designated to interview those that may have escaped the collapse, were eyewitnesses, or were in the building and rescued early in the effort. Obtain a list of the people normally in the building, if one is available.
3. After ensuring rescuer safety and minimal movement of the debris, send small organized teams to the top of the pile and systematically search the surface in specific grids. Use barricade tape and markers to visually demonstrate the areas that have been searched and those that could potentially contain victims. Concentrate efforts on those areas that are believed to be the last known locations of people, when the collapse occurred.
4. Activate District Disaster Management Plan to have full-fledged rescue operation. This type of rescue is manpower intensive and may require large numbers of extrication and medical personnel. The rescue operation may call for specialized equipment like cranes / earth moving equipment and gas cutting and concrete cutting equipment.
5. Once it is confirmed there is nobody trapped below is alive, continue to remove debris carefully and vertically, searching each "void" or entrance to a "void" as it becomes available to the rescuer. People have continually and historically been found alive many hours and days into the rescue. Have command, media relations, and logistics oficers plan for a multiple day operation when people are still suspected of being missing and their bodies have not been recovered.
6. Help from external agencies like Army or other professional bodies should be mobilized at shortest possible notice to ensure saving of human life.
7. Great care must be taken when a person is located, either dead or alive, to ensure that additional collapse doesn't occur in the area of their entrapment. Rescuers should use their hands and small tools to remove the remaining debris surrounding a person. The victim's condition may dictate the speed with which rescue efforts progress. Consideration should be given to early application of Military Anti- Shock Trousers for viable persons that have "crushing" injuries.

Epidemic

The Civil Surgeon is the overall in charge of prevention and control of outbreak of any epidemic in the district in addition to his normal duties. District program manager health, District Malaria Officer, District TB Officer

and other health officials, as assigned by Civil Surgeon will assist him in the above task.

On detection of outbreak of any epidemic in the district, the administration should investigate the root cause of the epidemic and initiate the action to mitigate the same as follows:

1. The people affected should be immediately shifted to hospitals for medical attention and kept isolated to prevent spread of disease.
2. Additional medical help/ medicines may be mobilized from neighboring districts.
3. Vaccination should be given to all unaffected persons and the general public should be educated about the precautionary steps to be taken against the prevailing epidemic.
4. Steps should be taken to de-contaminate the source of epidemic like water bodies (lake, wells etc.).
5. There should be proper temporary morgue arrangement for safe preservation and disposal of corpses of persons died of epidemic.
6. Clean up drive should be taken in the affected area .
7. Depending on prevailing situations, the administration should take action to close all the road side eateries/ food stalls and advise them to destroy all stale food. Strict control should be exercised on the licensed restaurants.
8. Decision may be taken to close down all schools, colleges and other places of mass congregation like cinema halls etc.

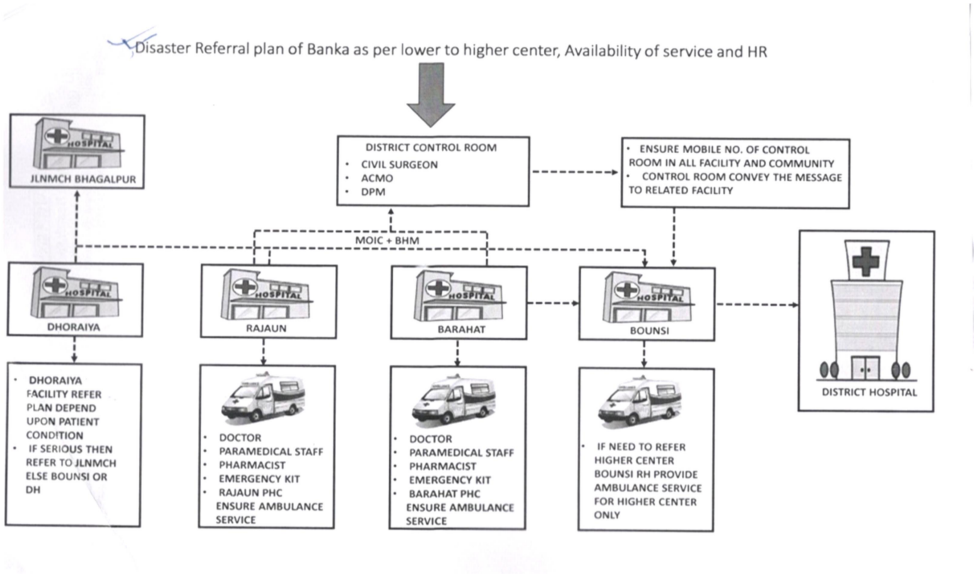


Figure 43: Disaster referral plan for health department

Cattle Disease

Cattle epidemic like foot and mouth disease is highly contagious and may affect large cattle population. Hence effective emergency planning is required to control such an event.

1. On getting intimation, send a team of veterinary doctors and experts to the affected area for investigation and assessment of the situation.
2. Stop sale of milk and meat from all outlets. Instruct people to dispose of unused stock of milk & meat at home.
3. On investigation by the expert team, following may be considered:
4. Quarantining of the affected animals.
5. Making arrangement for treating the affected animals.
6. Vaccinating them, if applicable to the disease.
7. Implementation of virus spread control program.
8. Elimination of affected livestock.
9. Disposal of carcasses.

Food Poisoning

Food poisoning is a probable phenomenon in religious or social functions where there is mass feeding of people by setting up of temporary or make shift community kitchens. This problem is mainly due to use of sub-standard materials and the unhygienic conditions in which the food is prepared.

On receipt of the information of the food poisoning in the district, the district Administration should take following actions to instill confidence in the people

1. Rush the food inspectors to the place of food poisoning for collection of sample and sealing of the kitchen.
2. Identify the source of food poisoning and destroy the remaining stock of the contaminated food.
3. Rush the affected persons to nearest hospitals for first aid / medical treatment.
4. Additional medical / Para-medical personnel and additional stock of essential medicines may be mobilized from various hospitals to meet the increased demand.

5. Proper information should be passed on to general public using various means of communication to prevent spread of rumors, which may result in panic situation.
6. Take preventive measures to avoid re-occurrence of such food poisoning in future.
7. There should be proper control over quality control (by way of sampling / analysis or by tasting) of food samples before they are fed to masses.

12 Annexure

12.1 Important Contact Numbers

IMPORTANT HELPLINE NUMBERS

Department	Helpline Number
District Emergency Opreation Center, Banka	06424-223001/223002/223004

CONTACT NUMBERS OF OFFICIALS IN DM OFFICE

S. No	Designation	Name	Office	Residence	Mobile No	Fax. No
1	District Magistrate	Anshul Kumar	06424-222304	06424-222303	9473191387	06424-222289
2	S.P	Dr. Satyaprakash	06424-222306	06424-222305	9431800004	06424-222306(R)
3	Additional District Magistrate	Madhav kumar Singh	-	-	9473191388	-
4	Civil Surgeon	Dr. Ravindra Nath	-	-	9470003073	-
5	In charge – Disaster Management	Shaligram Shah	-	-	8210438679	-
6	District Agriculture Officer	Vishnudev Ranjan	-	-	9110016828	-
7	Manager, State Food Corporation	Satendra Kumar	-	-	9431410973	
8	District Informatics Officer	Abhay Kumar Choudhary	-	-	9430456152	-
9	District Nazarat Officer-SDC	Ajay Kumar	-	-	7427833321	
10	District Commandant Officer (Fire)	Harendra Kumar Singh	-	-	8804602951	-
11	Indian Red Cross Society	-	-	-	-	-
12	District Fire Brigade Officer	Kapil Paswan	-	-	8804602951	-
13	District IT Manager	Pramod kumar Coudhary	-	-	9431692498	-
14	District Animal Husbandry officer	Rana Digvijay Singh	-	-	9973823999	-
15	Executive Engineer PHED Banka	Rajeev Ranjan	-	-	8544428587	-

S. No	Designation	Name	Office	Residence	Mobile No	Fax. No
16	Executive Engineer, Irrigation, Banka	Sanjeev Kumar	-	-	9199427686	-
17	DPM. D.H.S	Prabhat kumar Raju	-	-	9473191868	-
18	ROF, Banka	-	-	-	6201541738	
19	ROF, Bounsi	-	-	-	6201541738	
20	ROF, Katoriya	-	-	-	8936090583	

CONTACT NUMBERS OF POLICE OFFICIALS IN THE DISTRICT

S.No	Name	Designation	Contact No.	Email ID
1	Manglesh Kumar Singh	D.S.P (H.Q)	6203573274	-
2	Dinesh Chandra Shrivastav	SDPO, Banka	9431800030	-
3	Prem Chandra Singh	SDPO, Belhar	8544428215	-
4	Sunil Kumar	S.H.O, Amarpur	9431822634	-
5	Shambhu Yadav	S.H.O, Banka	9431822635	-
6	Rajesh Kumar	S.H.O, Belhar	9431822626	-
7	Shankar Dayal Prabhakar	S.H.O, Barahat	9431822632	-
8	Arvind Kumar Rai	S.H.O, Bounsi	9431822631	-
9	Md. Naseem Khan	S.H.O, Chandan	9431822625	-
10	Maheshwar Rai	S.H.O, Dhuraiya	8409606700	-
11	Alok Kumar	S.H.O, Phullidumar	9431822627	-
12	Manoj Kumar Singh	S.H.O, Rajoun	9431822629	-
13	Niraj Kumar Tiwary	S.H.O, Katoriya	9431822628	-
14	Pankaj Kumar Raut	S.H.O, Shambhuganj	9431822633	
15	Murlidhar Sah	S.H.O Jaipur	9006327561	
16	Manish Kumar	S.H.O Suiya	9798889669	
17	Jitendra Kumar	S.H.O Anandpur O.P.	9304957959	
18	Devendra Rai	S.H.O Khesar O.P.	9006448230	
19	Anil Kumar Sao	S.H.O Panjwara	9264165006	

S.No	Name	Designation	Contact No.	Email ID
20	Mantu Kumar	S.H.O Bandhua Kurava	7903804334	
21	Deepak Kumar Passwan	S.H.O Nawada O.P	9155180706	
22	Mantu Kumar	S.H.O Dhankund	8789580499	
23	Rajendra Kumar Choudhary	S.H.O SC / ST Police St.	9534246808	
24	Harendra Chauhan	S.H.O Traffic	9431645913	
25	Sweta Kumari	S.H.O Mahila Police	7970790734	
26	America Rao	Police Inspector, Bounsi	7004065418	
27	Vakil Prasad Yadav	Police Inspector, Rajoun	9939636166	
28	Subodh Kumar Rao	Police Inspector, Banka	6200937244	
29	Anil Kumar	Police Inspector, Katoriya	7050507725	

CONTACT NUMBUER OF COS / BDOS :

SI. NO.	Officer	Contact No.	
		Mobile	Email
1	CO, Amarpur	8544412433	coamarpur14@gmail.com
2	CO, Banka	8539953854	cobanka88@gmail.com
3	CO, Belhar	8434651524	cobelharbanka@gmail.com
4	CO, Barahat	9572635258	cobarahat88@gmail.co
5	CO, Bounsi	8544412437	cobnkbounsi@gmail.com
6	CO, Chandan	8544412438	co.chandan.banka@gmail.com
7	CO, Dhuraiya	9508877512	codhuraiyabanka@gmail.com
8	CO, Phullidumar	6287562293	co.phullidumar@gmail.com
9	CO, Katoriya	8544412440	cokatoriya@gmail.com
10	CO, Rajoun	9162676983	corajoun@gmail.com
11	CO, Shambhuganj	9934489916	coshambu@gmail.com
12	BDO, Amarpur	8757582216	bdo.ama-ba-bih@nic.in
13	BDO, Banka	9798621720	bdo.ban-ba-bih@nic.in
14	BDO, Belhar	9905226782	bdo.bel-ba-bih@nic.in
15	BDO, Barahat	9473322126	bdo.bar-ba-bih@nic.in
16	BDO, Bounsi	7061251872	bdo.bau-ba-bih@nic.in
17	BDO, Chandan	7991101426	bdo.cha-ba-bih@nic.in
18	BDO, Dhuraiya	7488895862	bdo.dho-ba-bih@nic.in

19	BDO, Phullidumar	9431818293	bdo.phu-ba-bih@nic.in
20	BDO, Katoriya	9431818290	bdo.kat-ba-bih@nic.in
21	BDO, Rajoun	9905751179	bdo.raj-ba-bih@nic.in
22	BDO, Shambhuganj	9771730710	bdo.sha-ba-bih@nic.in

BOATS/MOTORBOATS/NETS (MAHAJALS)/TENTS :

Resources Mapping		
Sl. No.	**Name of Resources**	**Quantity (Allotted in Blocks)**
1	Computer	3
2	Generator (RR 03 KVA)	0
3	Government Boat	02
4	Private Boat	14
5	Inflatable Motor Boat	02 (Odhani Dam)
6	F.R.P Motor Boat	04 (Odhani Dam)
7	Inflatable lighting system	0
8	Tent	0
9	Polythene sheet	300 pcs
10	Life Jacket	70 (Odhani Dam)
11	Life buoy ring	02 (Odhani Dam)
12	GPS System	0
13	Floating Mask (With all Accessories)	0
Source: District Disaster Management Section, Banka		

Table 33 : Resources Mapping

BLOCK WISE DETAILS OF HELIPADS :

BLOCK WISE DETAILS OF HELIPADS			
S. No.	**BLOCK**	**LOCATION**	**REMARK**
1	Amarpur	0	As per Recommendation of District Administration temporary helipad made during special occasion /program.
2	Banka	0	
3	Belhar	0	
4	Barahat	0	
5	Bounsi	0	
6	Chandan	0	
7	Dhuraiya	0	
8	Phullidumar	0	

9	Katoriya	0
10	Rajoun	0
11	Shambhuganj	0

Table 34 : Block Wise Details of Helipads

BLOCK WISE DETAILS OF SAFE SHELTERS FOR TEMPORARY RELIEF :

Sl. No.	NAME OF PANCHAYAT	RELIEF CENTERS
BLOCK: AMARPUR		
1	DUBOUNI	KAJHIYA SAMUDAYIK BHAWAN
2	TAARDIH	PRATHMIK VIDYALAY TAARDIH
3	MADACHAK	PRATHMIK VIDYALAY PURANCHAK
4	GORGAMA	PRATHMIK VIDYALAY GORGAMA
5	KHANJARPUR	PRATHMIK VIDYALAY KHANJARPUR
BLOCK: BANKA		
1	KARMA	PANCHAYAT BHAWAN BHATKUNDI
2	RAINIYA JOGADIH	PANCHAYAT BHAWAN JOGADIHA
3	TELIYA	PANCHAYAT BHAWAN TELIYA
4	KJHIYA	PANCHAYAT BHAWAN KJHIYA
5	LAKNAUDIH	PRATHMIK VIDYALAY BHAGWANPUR
6	LAKRIKOLA	PANCHAYAT BHAWAN MAHESHDIH
7	DHADA	PANCHAYAT BHAWAN DHADA
8	DASHINI KATELI	PRONAT MADH VIDYALAY DUDHIYATARI
9	LODHAM	PANCHAYAT BHAWAN BALIYAMARA
10	CHATRPAAL	PRONAT MADH VIDYALAY LOHASINA
11	DOMUHAAN	PRONAT MADH VIDYALAY DOMUHAAN
12	NAGAR PANCHAYAT BANKA	DAYAT PRASHIKSHAN SANSTHAN
13		R.M.K. INTER SCHOOL
14		ALPASANKHYAK CHATRAVAAS
15		UTKRAMIT MADH VIDYALAY SAIJPUR
16		P.V.S. COLLAGE BANKA

Sl. No.	NAME OF PANCHAYAT	RELIEF CENTERS
17		JANNAYAK KAPURI CHATRAVAAS LAKHMIPUR
BLOCK: BELHAR		
1	DUMARIYA	PANCHAYAT BHAWAN DUMARIYA
BLOCK: BOUNSI		
1	ZABRA	M.V. ANGAROOBAZDA
2	BABHANGAMA	M.V. BABHANGAMA
3	BALUAATARI	U.V. BALUAATARI
4	AMARBADTH	P.V. AMARBADTH
5	NAGARI	U.V. NAGARI
6	SHINDESHWARI	M.V. SHINDESHWARI
7	BAHICHA	P.V. BAHICHA
8	UPERNIMA	P.V. UPERNIMA
9	HETH NEEMA	UTKRAMIT M.V. CHAKNEEMA
10	MAHARANA	M.V. MAHARANA
11	SIMARIYA	P.V. SIMARIYA
12	DURGAPUR	U.M.V. DURGAPUR
13	ASNAHA	U.M.V. HARNA
14	ITHARI	U.M.V. HARNA
15	FAGA	U.M.V. FAGA
16	PRATAPPUR	U.M.V. FAGA
17	NARCHATARI	P.V. GAHARAZOR
18	BELTIKARI	U.M.V. BELTIKARI
19	BABUPUR	U.M.V. DUMRIYA
20	BENA MOHANPUR	P.V.BENA MOHANPUR
21	DHUA	M.V. DHUA
22	MUBARAKPUR	M.V. UPARKERI
23	DEVA KERI	
24	GHORELA KERI	
25	KHARAOUNI	P.V. KHARAOUNI

Sl. No.	NAME OF PANCHAYAT	RELIEF CENTERS
26	SIKANDARPUR	M.V. SHOBHPATHAR
27	SARUA	
28	GOKULA NARENA BALTHIRIYA	M.V. GOKULA BAZAAR
29	SANGA	M.V. SHOBHAPATHAR
BLOCK : BARAHAT		
1	PANJWARA	U.V. PANJWARA
2	SABALPUR	M.V. CHANDADIH
3		M.V. SABALPUR
BLOCK : CHANDAN		
1	CHANDAN	U.V. CHANDAN
2	HARKHAR	HARKHAR SARKARI DHARMSHALA
3	SUIYA	JANSUVIDHA KENDRA SUIYA
BLOCK : PHULLIDUMAR		
1	UTARI KOJHI	M.V. PANDAVCHAK
2	SAADPUR	M.V. TELIYA
3	VANVARSHA	M.V. SAMTA
BLOCK : DHORIYA		
1	KATHVANGAON	PANCHAYAT BHAWAN KATHVANGAON
2	KARDIHA	PANCHAYAT BHAWAN KARDIHA
3	MAKETA	M.V. MAKETA
4	BATSAAR	U.V. BATSAAR
5	KURMA	M.V. KURMA
6	BELAAY	M.V. BELAAY
7	PAIR	M.V. PAIR
8	AHERO	M.V. AHERO
9	LAUNGAIN	M.V. LAUNGAIN
10	MAHILA VISHANPUR	PANCHAYAT BHAWAN MAHILA VISHANPUR
BLOCK : RAJOUN		
1	NAWADA GOPALPUR	M.V. NAWADA GOPALPUR

Sl. No.	NAME OF PANCHAYAT	RELIEF CENTERS
2	CHAKOLIYA	U.V. MANJHGAI
3	KETHA	M.V. BHAGWANPUR
4	CHAKAHMIDA	
5	DAMODARPUR	P.V. BHAGWANPUR P.V. DAMODARPUR
6	DARPA	U.V. MANJHGAI
7	RAJPUR	
8	RUPSA	
9	BHAGWANPUR	M.V. BHAGWANPUR
10	AHMDAHA	PANCHAYAT BHAWAN SINGNAN
11	RAMPUR	
12	SINGNAN	U.V. SINGNAN
13	MOHANPUR	P.V. SUBHKHA
BLOCK : SHAMBHUGANJ		
1	KURMA	KURMA HIGH SCHOOL
2	CHATRAHAAR	PANCHAYAT SARKAR BHAWAN
3	BAIDPUR	PANCHAYAT BHAWAN BAIDPUR
4	GULNI KUSHA	KHAJURI PAHAAR
5	KARSOP	U.V. SHAMBHUGANJ
6		S.S.P.S. COLLAGE SHAMBHUGANJ
7		R.A. INTER COLLAGE SHAMBHUGANJ
8		PRATAPPUR HIGH SCHOOL SHAMBHUGANJ

Table 35: Details of safe shelters for temporary relief

BLOCK WISE DETAILS OF FUNCTIONAL TUBE-WELLS :

S. No.	Name of Block	No. of Panchayat	No. of T/Well					No. of Choked T/Wells				
			No of H/T	No. of G.P.T III & II	No. of D/T II	No. of D/T III	Total No.	No of H/T	No. of G.P.T III & II	No. of D/T II	No. of D/T III	Total No.
1	Banka	16	764	416	755	518	2453	125	75	87	82	369
2	Barahat	15	652	372	492	508	2024	185	96	62	130	473
3	Amarpur	19	1557	1029	115	112	2813	512	85	18	38	653
4	Shambhuganj	19	1463	1250	75	72	2860	575	282	22	15	894
5	Dhuraiya	20	1151	1576	12	21	2760	418	95	8	15	536
6	Rajoun	18	1360	1130	17	0	2507	685	245	0	0	930
7	Belhar	18	749	338	488	747	2322	345	29	93	88	555
8	Chandan	17	0	0	882	1253	2135	0	0	145	185	330
9	Phullidumar	11	409	410	342	271	1432	115	63	63	62	303
10	Katoriya	16	0	0	762	1320	2082	0	0	165	265	430
11	Bounsi	16	110	29	985	1131	2255	65	12	75	102	254
Total		185	8215	6550	4925	5953	25643	3025	982	738	982	5727

Source: Public Health Engineering Division, Banka

Table 36: List of functional tube-wells in the district:

BLOCK WISE DETAILS OF POND AND STATE TUBE WELL :

S. No	BLOCK	POND	AREA (Acre.)	TUBE WELL
1	Banka	28	96.52	0
2	Barahat	87	278.41	0
3	Amarpur	127	419.53	1
4	Shambhuganj	67	108.85	6
5	Dhuraiya	144	248	3
6	Rajoun	131	299.91	1
7	Belhar	29	58.47	0

8	Chandan	60	150.66	0
9	Phullidumar	43	1259.72	0
10	Katoriya	36	175.35	0
11	Bounsi	94	317.02	0
Source: Department of Fisheries and Minor Irrigation, Banka				

Table 37: List of Ponds and Tubewells

DETAILS OF RIVERS / TRIBUTRIES :

S. No	MAIN RIVER	TRIBUTRIES RIVER	Remarks
1	Chandan River	Kurar River, Odhni River,	All Rivers are Seasonal
2	Badua River	Bilashi River, Belharna River	
3	Gerua River	Sukhaniya River, Chir River, Dakai River	
Source: Flood Control Division, Bounsi			

Table 38: List of rivers/ Tributries in the district:

RESOURCES AVAILABLE IN FIRE STATION BANKA :

Resources in Fire Station in Banka				
S. No.	**Name of Fire Station**	**Contact**	**Vehicles and Pumps**	**Human Resource**
1	Banka	District Fire Office, Banka District Fire Officer +91 9097737876	District Fire Office, Banka Water tender-03 Water Mist Technology-01+06= 07	District Fire Officer – 1 Fire Man – 04 Head Driver – 01 Driver – 10 Home Guard (Driver & Fire Man)- 19 **Total - 35**
2	Police station/Block office	Head Quarter (06424-223896) Barahat P.S. (9110021029) Phullidumar P.S. (8507004816) Amarpur P.S. (7808365126) Bounsi Block Office	Barahat P.S.-1 Phullidumar P.S.-1 Amarpur P.S.-1 Bounsi Block Office-1 Katoriya Block Office-1 Dhuraiya Block Office-1	

Resources in Fire Station in Banka				
S. No.	Name of Fire Station	Contact	Vehicles and Pumps	Human Resource
		(9142360317) Katoriya Block Office (6205843152) Dhuraiya Block Office (620681435)		
Source: District Fire office, Banka				

Table 39: List of fire stations and resources at Banka district :

TRAINED DRIVERS/ BOATMAN :

LIST OF TRAINED DRIVER/ SWIMER/MOTER BOAT AND BOAT DRIVER						
S No.	NAME	POST	VILLAGE	POST OFFICE	TRAINING YEAR	CONTACT
1	Kamdev kumar	Motor Boat Driver	kokari Tari	kakwara	2021	7461966147
2	Kamal das	Motor Boat Driver	Gadhbha tari, Chatrapal	kakwara	2021	6200209796
3	Arvind Yadav	Assitant Driver	kokari Tari, Chatrapal	Kakwara	2021	7261873299
4	Narayan Kapari	Jetti Manager	Haripur Garbatra	Godda	2021	7488341972
5	Chotu Kumar	Assitant Driver	kokari Tari, Chatrapal	Kakwara	2021	9199018150
6	Shyamdeo Kumar	Trained Diver	Kokari Tari Chatrapal	Kakwara	2021	6299268370
7	Ghanshyam Kumar	Trained Diver	Kokari Tari, Chatrapal	Kakwara	2021	6200209796
8	Shivajee Ray	Trained Diver	Gadbhara Tari, Lodham	Baliyamara	2021	9006462334
9	Sandip Kumar	Trained Diver	Gadbhara Tari, Lodham	Baliyamara	2021	9142827209
10	Ashok Kumar Yadav	Diver/Swimmer	Lodham	Baliyamara	2021	9471622777
11	Anant Kr Singh	Diver/Swimmer	Ajadnagar	Sabalpur	2021	8051830820
12	Ranvir Kr	Diver/Swimmer	Bara, Taraiya	Oriya	2021	7462082600
13	Md. Babbar	Diver/Swimmer	Arkadha	Oriya	2021	6299874589

			Tarapur			
14	Vijay Kumar Mandal	Diver/Swimmer	Chandan	Chandan	2021	6201903980
15	Md. Firoz	Diver/Swimmer	Nandgola	Batsaar	2021	8340268345
16	Ajay Lal Mandal	Diver/Swimmer	Rata	Phullidumar	2021	9771530675
17	Bharamdeo Yadav	Diver/Swimmer	Tilwari	Maniya	2021	9199144152
18	Suman Kumar	Diver/Swimmer	Rajoun	Navtoliya	2021	8789305916
19	Prashant Kr Amar	Diver/Swimmer	Ballikitta	Koshalpur	2021	7765890750
20	Vijay Mandal	Diver/Swimmer	Maaldih	Maaldih	2021	9661317193

Table 40: List of trained divers/swimmers/motor boat and boat driver :

STORED MATERIAL UNDER FLOOD CONTROL DIVISION :

Sl. NO.	Name of Materials	Quantity	Places where Material Available	Concern Officer In charge and contact No.
1	EC Bag	360000 Nos	Godown of Flood Control Division, Bounsi	Arun Kumar I.D. No.- 4436 Executive Engineer Flood Control Division, Bounsi Contact No. 7463889346
2	N.C	18701 Nos		
3	Geo Bag	1000 Nos		
4	Mega Geo Bag	0		
5	B.A Wire	0		
6	P.P Rope Gabion	0		
7	Bolder	0		
Source: Flood Control Division, Bounsi				

Table 41: Stored material under flood control division - Banka district :

EXECUTIVE OFFICER NAGAR PANCHAYAT AMARPUR :

Resource Mapping			
Department Name : Executive Officer Nagar Panchayat Amarpur			
Sl. No.	Resource & Equipment	Place	Remarks
1	water stand post	Amarpur	
2	Equipment like JCB -1	Amarpur	

3	Tractor-2	Amarpur	
4	Tipper-3	Amarpur	
5	Fogging Machine Available	Amarpur	

Table 42: Resources and Equipment in Amarpur Block:

13 CHECK-LIST FOR RELIEF CAMP :

1) Tent Camps

- The layout of the site shall meet the following specifications:
- Three-four hectares of land per 1,000 people
- Ten meters-wide roads
- Minimum distance of 2 meters between the edge of the roads and tents
- Minimum distance of 8 meters between tents
- Minimum floor area of 3 square meters per person

2) For proper water distribution, campsites shall have:

- Tanks with a minimum capacity of 200 liters
- Minimum capacity per capita 15 liters/day
- Maximum distance between two tanks should not exceed 100 meters

3) Solid waste disposal containers shall be:

- Waterproof
- Insect-proof
- Rodent-proof
- Waste should be covered tightly with a plastic or metallic lid
- Waste should be incinerated or buried

4) Solid waste units shall have a capacity of 1 liter per 4-8 tents or 50-100 liters per 25-50 people

5) Excreta and liquid waste shall be disposed of in bore-holed or deep trench latrines built according to the following specifications:

- At a distance of 30-50 meters from tents\
- 1 seat/10 persons
- Modified soakage pits for wastewater to be made by replacing layers of earth and small pebbles with layers of straw, grass or small twigs. The straw needs to be removed on a daily basis and burnt

6) A bench for washing shall be:

- 3 meters in length
- Double-sided
- 2 per 100 persons

7) Buildings: Buildings to accommodate victims during relief shall have:

- Minimum floor area of 35 sq. meter per person
- Minimum air space of 10 sq. meter per person
- Minimum air circulation of 30 cubic meter per person per hour
- Separate washing blocks for men and women

8) Washing Facilities:

- 1 hand basin per 10 persons
- Wash bench of 4-5 meter per 100 persons
- 1 shower per 50 persons in temperate climates or 1 shower per 30 persons in hot climates

9) Toilet accommodation in buildings housing displaced persons shall meet these requirements:

- 1 seat per 25 women
- 1 seat and 1 urinal per 35 men
- Maximum distance from building should be 50 meters
- Plastic or metal refuse containers with closed lids with 50-100 liter capacity per 25-50 persons

10) Latrines

Depending on the type and duration of the disaster, different types of excreta disposal measures need to be taken in the camps. People must be discouraged from open defecation. The area must be adequately lighted and the approach road must be clearly demarcated. The most suitable types of latrines are:

- Shallow trench latrines
- Deep-trench latrines
- Pit privies
- Borehole latrines
- Septic privies
- Urinals
- Mobile latrines
- Community latrines

Attempts shall be made to provide community latrines with water, so that cleaning is practical

There shall be separate blocks for men and women

- At least five seats per 100 persons
- Must be 1.5 km away, and downhill from any water source
- The bottom of the latrine shall be at least 15 m above the groundwater table In the presence of limestone formations and fissured rocks, additional precautions are necessary to protect sources of water supply.

- The site shall be dry, well drained and above flood level.
- The surroundings should be cleared of all vegetation, waste and debris.

11) Laundry

In temporary encampments, people shall be expected to wash their clothes in plastic or iron tubs.

One washing stand for every 100 persons is recommended

Proper drainage and soap traps shall be provided for the wastewater

Following standards shall be maintained for food & water supply:

1. Food

- For the Marooned
- Only non-perishable, ready to eat and long- lasting food items should be included.
- Food shall be packed in small packets for individual use.
- Airdropping shall be done from minimum heights with ropes and hooks, to ensure minimum damage to supplies.
- Supplies shall be dropped from stationary and not moving helicopters.
- Food shall be tagged first and then distributed

2. Storage

- If possible, food shall be kept in a shade in a dry and cool place.
- Food shall be kept covered at all times.
- It should be stored in plastic bags and kept in airtight containers.
- Salt and spices shall be stored in their original packing
- To prevent looting, guards shall be posted at warehouses and supply depots.
- Damaged stocks shall be stored separately to protect the remaining stock from odor and damage.
- Maintain food stock register and report to appropriate authorities.
- Prompt transport schedules and delivery of perishable food stocks to the needy at the earliest need to be maintained.