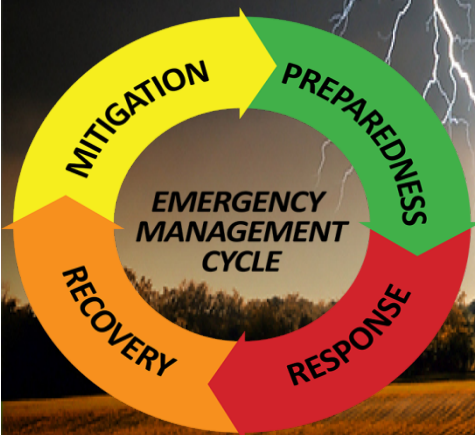




Government of Karnataka

Chikkaballapur District Disaster Management Plan 2019 - 20



**District Disaster Management Authority (DDMA)
Chikkaballapur**



Government of Karnataka

**Chikkaballapur District
Disaster Management Plan
2019 - 20**

**Prepared by
District Disaster Management Authority (DDMA)
Chikkaballapur**



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Preface

The District Disaster Management Plan is a key part of an emergency management. It will play a significant role to address the unexpected disasters that occur in the district effectively. The information available in DDMP is valuable in terms of its use during disaster. Based on the history of various disasters that occur in the district, the plan has been so designed. This plan has been prepared based on the guidelines provided by the National Disaster Management Authority (NDMA).

The District Disaster Management Plan developed involves some significant issues like Hazard, Risk and Vulnerability, Incident Response System (IRS) and the response mechanism in disaster management. The plan is mainly focused on drought mitigation and ground water conservation measures. We have started rejuvenation of Rivers, Kalyanis, Kere Kunte, open wells (Bavi) and also have constructed Multi-Arc Check Dams to improve Surface/Ground water. There are many projects in the pipeline project for Water Supply such as Yethinahole drinking water project, KC & HN Valley pipeline project to fill tanks and recharge ground water. Reserving the land for Hasiru Karnataka (Plantation), Green Fund for the plantation purpose, Rain water harvesting for Public/Private building are made compulsory to address drinking water crisis.

It outlines the action that needs to be taken in the unfortunate event of disaster, along with the set of procedures to be followed based on norms and guidelines issued both from Government of India & Government of Karnataka, NDMA and SDMA from time to time. Standard Operating Procedure (SOP) under the guidance of SDMA is incorporated within this Plan. Further, specific issues related with Disaster Management information along with mock drill guidelines are also included in this Plan.


Details of inventory of resources available in district can be used in disaster management are being updated in IDRN. IDRN (Indian Disaster Resource Network) is a nation-wide electronic inventory of resources that enlists equipment and human resources.

I would like to appreciate the effort put in by the officers from different departments in the district for their dedication in bringing out this manual within a short period and if you have any suggestions and comments, be free to convey the same so that we can include them in the next edition.

As a step to achieve this, the District Disaster Management Authority of Chikkaballapur (DDMA) is bringing out the Disaster Management Plan for the year 2019-20. We hope that the DDMP would be of immense use for all the stakeholders for promoting collaborating efforts to reduce the Disaster risk in the district.

Place: Chikkaballapur

Date: 21/11/2019


(R Latha)

TERMINOLOGY

Disaster

A serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources.

A disaster is a function of the risk process. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences of risk.

Disaster Management

Disaster management means a continuous and integrated process of planning organizing, coordinating and implementing measures which are necessary or expedient for

- Prevention of danger or threat of any disaster;
- Mitigation or reduction of risk of any disaster or its severity or consequences;
- Capacity-building;
- Preparedness to deal with any disaster;
- Prompt response to any threatening disaster situation or disaster;
- Assessing the severity or magnitude of effects of any disaster;
- Evacuation, rescue and relief;
- Rehabilitation and reconstruction;

Hazard

Hazard is an event or occurrence that has the potential for causing injury to life or damage to property or the environment.

Natural Hazards: Natural processes or phenomena occurring in the biosphere that may cause a damaging event.

Geological Hazards: Natural earth processes or phenomena that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.

Risk

Risk is defined as the probability of harmful consequences, or expected losses (deaths, injuries, property, livelihoods, economic activity disrupted or environment damaged) resulting from interactions between natural or human-induced hazards and vulnerable conditions. Conventionally risk is expressed by the notation

Risk = Hazards x Vulnerability

As a result of disaster, society incurs both loss and damage. The extent of damage and loss together provides an indicator of the likely risk.

Vulnerability is defined as the conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards. Based on the factors and processes the vulnerability may be classified as Physical Vulnerability, Social Vulnerability, Economic Vulnerability, and Environmental Vulnerability etc.

Capacity

A combination of all the strengths and resources available within a community, society or organization that can reduce the level of risk, or the effects of a disaster

Mitigation

The lessening of the adverse impacts of hazards and related disasters, It is describes the activities undertaken to reduce the risks or impact of any disaster. This efforts of mitigation can be further classified into Structural and non-structural and short-term and long-term mitigation strategies.

Preparedness

The knowledge and capacities developed by governments, professional response and recovery, organizations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions. It is therefore evident that the capacity of the community and the administration shall be in consonance with the disaster vulnerability.

Response

The provision of emergency services and public assistance during or immediately after a disaster in order to save lives reduces health impacts, ensure public safety and meet the basic subsistence needs of the people affected. The response mechanism includes the stages of Search and Rescue, Relief, Reconstruction, Recovery and Rehabilitation.

Cyclone

Cyclone is defined as drastic atmospheric variation in the Earth System Science depending upon the amount of pressure variation & mode of propagation & circulation.

Drought

Any lack of water to satisfy the normal needs of agriculture, livestock, industry or human population may be termed as a drought. While generally associated with semi-arid or desert climates, droughts can also occur in areas that normally enjoy adequate rainfall and moisture levels. Scientifically speaking, there is no unique definition of drought. Drought came's a different meaning in keeping with the perspectives of a scientific discipline. Accordingly, three types of drought are usually defined.

Earthquake

An earthquake occurs when rocks break and slip along a fault in the earth. Energy is released during an earthquake in several forms, including as movement along the fault, as heat. And as seismic waves that radiate out from the "source" in all directions and cause the ground to shake, sometimes hundreds of kilometers away.

Flood

Flooding is an overflowing of water onto land that is normally dry. It can happen during heavy rains, when ocean waves come onshore, when snow melts too fast, or when dams or levees break. Flooding may happen with only a few inches of water, or it may cover a house to the rooftop. The most dangerous flood event, the flash flood, happens quickly with little or no warning; other flooding events occur over a long period and may last days, weeks, or longer.

Landslide

A landslide is defined as "the movement of a mass of rock, debris, or earth down slope". Landslides are a type of "mass wasting" which denotes any down slope movement of soil and rock under the direct influence of gravity.

Tsunamis

"Tsunami" comes from the Japanese words for harbor ("tsu") and wave ("nami"). Anything that rapidly displaces a large volume of water can cause a tsunami. Typically, tsunamis are caused by underwater earthquakes, but landslides, volcanic eruptions, calving icebergs, and (very rarely) meteorite impacts can also generate tsunamis. These types of events can cause large disturbances in the surface of the ocean, and when gravity pulls the water back down, the tsunami is born.

ABBREVIATIONS

Abbreviations	Meaning /Explanation
ADM	Additional District Magistrate
ATI	Administrative Training Institute
BESCOM	Bengaluru Electricity Board
CBDP	Community Based Disaster Preparedness Plans
CBRN	Chemical, Biological, Radiological and Nuclear
DC	Deputy Commissioner
DDMA	District Disaster Management Authorities
DDMP	District Disaster Management Plan
DM	Disaster Management
DRR	Disaster Risk Reduction
DEOC	District Emergency operation Centre
EOC	Emergency operation Centre
ESF	Emergency Support Function
GIS	Geographical Information System
HVRCA	Hazard, Vulnerability, Risk And Capacity Assessment
IMD	Indian meteorological Department
IMP	Immediate Action Plan
IRS	Incident response system
ISRO	Indian Space Research Organization
KSNDMC	Karnataka State Natural Disaster Monitoring Centre
MAH	Major Accident Hazard
MFA	Medical first Aid
NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NGO	Non Governmental Organizations
NPDM	National Policy on Disaster Management
P/VDMC	Panchayat/Village Disaster Management
PPE	Personal Protective Equipment
PHC	Public Health Centre
S&R	Search and Rescue
SCBA	Self Contained Breathing Apparatus
SDMA	State Disaster Management Authority
SHG	Self Help Group
SOP	Standard Operating Procedures

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Chapter 1

Introduction

1.1 Rationale:

The revised UNDRR terminology, defines ‘disaster’ as:

“A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.” (UNISDR 2016)

The effect of the disaster can be immediate and localized but is often widespread, often persisting for long after the event. The effect may challenge or overwhelm the capacity of a community or society to cope using the resources immediately and therefore may require assistance from external sources, which could include neighbouring jurisdictions, or those at the national or international levels. UNISDR considers disaster to be a result of the combination of many factors such as the exposure to hazards, the conditions of vulnerability that are present, and insufficient capacity or measures to reduce or cope with the potential negative consequences. Disaster impacts may include loss of life, injuries, disease and other negative effects on human physical, mental and social well-being, together with damage to property, destruction of assets, loss of services, social and economic disruption and environmental degradation.

Disaster Management Cycle:



Figure 1.1:– Disaster Management Cycle

1.2 Legal Mandate:

Section 31 of the Disaster management (DM) Act 2005 mandates that there shall be a District Disaster Management Plan (DDMP) for the each District; The proposed DDMP complies with the National Policy on Disaster Management (NPDM) of 2009 and conforms to the provisions of the DM Act making it mandatory for the Government of India and various central ministries to have adequate DM plans. While the district plan will pertain to the disaster management for the whole of the district, the hazard specific nodal ministries and departments notified by the Government of India and State Government will prepare detailed DM plans specific to the disaster assigned. As per Section 32 of the DM Act, every office of the Government of India and of the State Government at the district level and the local authorities shall prepare comprehensive DM plans detailing how each of them will contribute to the national efforts in the domains of disaster prevention, preparedness, response, and recovery.

1.3 Aims:

“The basic aim for formulating a DDMP Plan is to ensure that the District Administration is prepared to handle any unprecedented situation that may arise in the District Chikkaballapur. The plan is essential to institutionalize Disaster Management in the District and to deal with future disasters in an efficient and effective manner.”

The district Disaster management plan is the key part of an emergency management. It will play significant role to address the unexpected disasters that occur in the district effectively. The information available in DDMP is valuable in terms of its use during disaster, Based on the history of various disasters that occur in the district, the plan has been so designed as an action plan rather than a resource book. Utmost attention has been paid to make it handy, precise rather than bulky one.

1.4 Objectives of DDMP:

The basic objective of the District Disaster Management Plan is to protect the residents of the district and their property from all sorts of untoward incidents through the following objectives:

- To prevent loss of human life and property damage
- To study analyze and evaluate the disasters.
- To Encouraging a culture of Disaster Preparedness in the District
- To identify the vulnerable locations and do the vulnerability and risk analysis
- To improve preparedness, prevention and mitigation at district level
- To ascertain the status of existing resources and facilities available
- To recommend appropriate strategies and responses to deal with future disasters
- To prevent and minimize loss of human lives and property by gearing up preparedness, prevention & mitigation at district level
- To develop convergence of action in addressing, preventing and mitigating disasters and to equip with maximum possible relief measures and to resort to pre-disaster during and post disaster steps.

- To assist line depts., Block administration community in developing coping skills for disaster management
- To impart training to create awareness, rehearsals, dissemination of knowledge information's rescue measures etc among the all the citizens living in the district.
- To identify the occurrence and nature of disasters by analyzing the periodicity, intensity and extent of damages.
- To ensure fail proof communication and supply of manpower ,material, machinery and goods and other inputs and activate the same within the shortest possible time backed by minimum simple procedures, orders etc at different levels by making optimal utilization of available resources without any gaps, duplication or overlapping.
- To ensure fastest approach for rescue & evacuation, rehabilitation and recovery.
- To avert further miseries of the calamity-stricken people.
- To facilitate the mitigation process.
- To facilitate convergence.
- Regular updation of resources available in and around the district.

Essentially, communities draw their support from the existing social institutions, the administrative structures, and their values and aspirations they cherish. Disasters may temporarily disorganize these institutions and the administrative system and disrupt their lives built around these values and aspirations. A systematic effort to put back the social life on its normal footing, with necessary technology support and resources, will contribute significantly to the resilience of the community and nation. In pursuance of this policy, the District Disaster Management Plan addresses itself to strengthening the pre-disaster and post-disaster responses of Emergency Support functionaries and stakeholders including the “victims” of the disaster.

1.5 Authority for the DDMP: Disaster Management Act 2005(DM act):

(The DDMP is prepared as per provision provided in the DM act 2005 as it stipulates)

On 23rd December, 2005, the Government of India took a defining step by enacting the Disaster Management Act, 2005, which envisaged creation of Authorities at all three levels as below:

- National Disaster Management Authority (NDMA),
- State Disaster Management Authorities (SDMA),
- District Disaster Management Authorities (DDMA).

As per provisions in Chapter-IV of the DM Act, each State Government shall establish a DDMA for every district in the State with such name as may be specified in that notification. Every district must have District Disaster Management Authority

The District authority shall consist of the Chairperson and such number of other members, not exceeding seven members.

- (a) Deputy Commissioner as the Chair person of District Disaster Management Authority
- (b) The elected representatives of local authority who shall be co-chairperson, ex officio;

Provided that in tribal areas, as referred to in sixth schedule to the constitution the chief executive member of the district council of autonomous district shall be the co-chairperson, ex officio;

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

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

- I. Prepare disaster management plan 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 the areas in the district vulnerable to disasters are identified and measures for the prevention of the disasters and the mitigation of its effects are undertaken by the departments of the government at the district level as well as by the local authorities.
- IV. Ensure that the guidelines for the prevention of disaster, mitigation of its effects, preparedness and response measures as laid down by the National authority and the state authority are followed by all departments of the Government at the district level and the local authorities in the district.

1.6 Evolution of DDMP in brief:

The District Disaster Management Committee, headed by the District Commissioner is responsible for developing and updating the DDMP in collaboration with the line departments, local authorities and other organizations having regard to the National Plan and the State Plan, to be approved by the State Authority. Plans should be reviewed annually and updated before any hazard season based on the vulnerability of the district. The revised plan should be submitted to KSDMA and the Relief Commissioner.

The main steps involved in development of DDMP are:

- Guidelines lay down by the National policy, state policy, National Plan; State plan has been taken as reference document for the preparation of DDMP.
- While developing the district disaster management plan the District Commissioner will call a meeting of suggestive members on the above and form the district disaster management committee under his/her chairmanship.
- The district disaster management team has to form with all possible line department officers to carry out various activities during normal time, pre disasters, during and post disaster.
- The possible suggestive district disaster management teams for a district based on the need: Information management team, rescue and evacuation team, emergency health management team, food relief, feed, fodder, and civil supply team, transportation management team, infrastructure management team, animal resource management team etc.
- Information has been gathered from relevant departments,

- Published peer reviewed literature and reports from various national and international sources pertaining to the DM are collected.

1.7 Stakeholders and their responsibilities:

At the District level, DDMA, the district plan shall be prepared by the District disaster management Authority, after consultation with the local authorities.

Other technical institutions, community, local self-governments, NGOs etc. is also stakeholders of the District Disaster Management Pan.

The duties and responsibilities of the stakeholders has been prepared with the sole objective of making the concerned departments understand their duties and responsibilities regarding disaster management at all levels and accomplishing them. Table 1.1 briefly refers to the name of all line departments and their role and responsibilities in perspective to disaster risk reduction in Bangalore Rural district.

Table 1.1:- Stake holders & their responsibilities.

SI. No.	Stakeholders	Responsibilities
1.	DDMA	<ul style="list-style-type: none"> • Overall management of the disastrous situation within the district • Coordination of the district with the various stake holding departments within the district • Coordination of the district with the state and the other neighboring districts • Maintaining a view of the activities of the DDMA and DEOC
2.	DEOC	<ul style="list-style-type: none"> • Receive and process disaster alerts and warnings from nodal agencies and other sources and communicates the same to all designated authorities. • Monitor emergency operations. • Facilitate coordination among primary and secondary ESFs/Departments/Agencies • Requisitioning additional resources during the disaster phase. • Issuing disaster/incident specific information and instructions specific to all concerned. • Consolidation, analysis, and dissemination of damage, loss and needs assessment data. • Forwarding of consolidated reports to all designated authorities.
3.	NDMA	<ul style="list-style-type: none"> • To coordinate and monitor with the State for the implementation of the policies and plans related to DM. • Coordinating DRR activities and implementation thereof. • Facilitating resources on demands raise by administration

4.	SDMA	<ul style="list-style-type: none"> • Coordinating DRR activities and implementation thereof. • Facilitating resources on demands raised by administration. • To approve DDMP • Monitor and implementation of the plan. • Provide guidance to DDMP for various facets of this plan. • Providing necessary assistance to the district in an event of disaster. • Recommend provision of funds for mitigation and preparedness measures.
5.	NDRF	<ul style="list-style-type: none"> • Carrying out search and rescue on requisition by District as well as state administration. • Strengthening the response mechanism through trainings and awareness. • Coordinate with administration in response as well as capacity building. • Facilitate administration with the key resources in disaster.
6.	Army/ Air Force	<ul style="list-style-type: none"> • Coordinating DRR activities and administration in response. • Receive and process disaster alerts and warnings from nodal agencies.
7.	Police	<ul style="list-style-type: none"> • Assess preparedness level • Establish radio communications and assist in precautionary evacuation activities with DEOC • Provide safety and security to citizens and their property during disaster • Establish command and control in coordination with fire and medical teams • Organise training on hazardous chemicals for police officers for facilitating handling of hazardous materials
8.	Fire Department	<ul style="list-style-type: none"> • To strengthen community response through trainings and awareness camps. • To train first responders at village / Panchayat level in firefighting. • To mitigate the fire risk by auditing and inspection and fighting fire disaster. - • To assist Search and rescue team in fire situations.
9.	Civil Defense, Home Guards	<ul style="list-style-type: none"> • Establish, maintain and manage search and rescue response system; • Coordinate search and rescue logistics during field operations; • Provide status reports of S&R updates throughout the affected areas.
10.	Health Department	<ul style="list-style-type: none"> • Coordinate assistance and response related to disaster within the District • Prepare and implement hospital preparedness plan.

		<ul style="list-style-type: none"> • Training of health workers on emergency preparedness and response. • Providing efficient and quick treatment of the affected people during the disaster • Prepare, keep and check ready Mobile Hospitals, stocks of equipment and drugs
11.	PWD	<ul style="list-style-type: none"> • Have a disaster response plan or disaster response procedures clearly defined • Site analysis and risk sensitive land-use planning • Restoration of roads to their normal condition • Repair/reconstruction of public utilities and buildings • Training and capacity building of the department and functionaries.
12.	Irrigation	<ul style="list-style-type: none"> • Preparedness and implementation of preparedness plan of the department • Monitor and protect irrigation infrastructure in pre and post disaster situation • Restoration of water supply to the affected area • Arrange adequate material and manpower to maintain cleanliness and hygiene
13.	BESCOM	<ul style="list-style-type: none"> • Restore the power supply and ensure uninterrupted power to all vital installation, facilities and site. • Identify requirements of external equipment required such as DG sets, generators etc; • Damage Assessment
14.	Transport	<ul style="list-style-type: none"> • Overall coordination of the requirement of transport in implement emergency related response and recovery
15.	Food and Civil Supplies	<ul style="list-style-type: none"> • Identify requirement of food and clothing for affected population; • Control the quality and quantity of food, clothing and basic medicines • Ensure the timely distribution of food and clothing to the people; • Ensure that all food that is distributed is fit for human consumption
16.	Information officer	<ul style="list-style-type: none"> • To provide and collect reliable information on the status of the disaster and disaster victims for effective coordination. • Respect the socio-cultural and emotional state of the disaster victims while collecting information for dissemination. • Coordinate with both print and electronic media to provide news flashes for specific do's, don'ts & needs.
17.	Animal Husbandry	<ul style="list-style-type: none"> • Establish procedures for coordination among local government agencies, volunteer organizations • Assistance during emergency with regards to medical care, temporary • confinement, shelter, food and water

		<ul style="list-style-type: none"> • Disposal of dead and unclaimed animals
18.	Forest	<ul style="list-style-type: none"> • Imparting special skills required during emergency operations to the officials • Check available stocks of equipments and materials likely to be most needed after disaster. • Assess the extent of damage to forests, nurseries and storage facilities • A pests and disease monitoring system should be developed • Training of the workers in disaster management
19.	Municipality	<ul style="list-style-type: none"> • Land Usage • Solid/ liquid waste treatment and management
20.	PRED	<ul style="list-style-type: none"> • Strengthening the community based response by awareness and implementation of DM policy and guidelines • Preparing the Community as first responder and local authorities as per Village Disaster Management Plan.
21.	Education	<ul style="list-style-type: none"> • Building capacity at school level through various competitions and awareness campaign. • To train the volunteers through NCC/ NSS etc. in Firefighting, First aid, and other disciplinary & volunteering
22	Fisheries Dept.	<ul style="list-style-type: none"> • The fisheries development officer shall check the functioning of life saving appliances and provide and render services of such equipment. • List to be prepared active fishermen, families with Livelihood activities and complete address for identification in case of emergency. • Identification of vulnerable habitations, creek points, likely marooned areas, rate of inundation and receding waters, identify the locations where fishing craft are anchored and prone to damages. • Ensure that boats and other equipments of fishermen are moved to safer places and secured. And ensure positioning the relief boats and expert swimmers, life saving appliances at vulnerable points for preventive and rescue activities. • Mobilize expert swimmers to the cyclone / flood hit areas. And alerting the teams for post disaster activities

1.8 Approval Mechanism of DDMP: Authority for implementation (State Level / District level orders)

The DM Act 2005 enjoins central and state governments to make provisions for the implementation of the disaster management plans. In this respect, the sections of the DM Act 2005 applicable for national, state, and district DM plans are 11, 23, and 31. The Chapters V and VI of the DM Act spell out the responsibilities of the central, state, and local governments with respect to disaster management. The DM Act states that every Ministry or Department of the

Government of India shall make provisions, in its annual budget, for funds for the purposes of carrying out the activities and programmes set out in its disaster management plan. The Act mandates that every Ministry and Department of the Government of India and every state must prepare a DDMP in accordance with the SDMP/NDMP. Annually, respective DM authorities must review and update their DM plans. Central ministries and state governments will integrate DRR into their development policy, planning and programming at all levels. They must adopt a holistic approach and build multi-stakeholder partnerships at all levels, as appropriate, for the implementation of the DM plans.

1.9 DDMP review and updation:

As per Section 31, sub section (4) of the DM Act 2005 states that the District Plan shall be reviewed and updated annually and sub section (7) states that District Authority shall review annually and update when significant changes in the nature of any hazards lessons learnt following any major disaster or when there is any significant change to organisation or responsibilities of primary members of the task forces defined in the plan. The implementation of the plan and issue such instructions to different departments of the Government in the districts as it may deem necessary for the implementation thereof.

1.10 Training and Rehearsals:

For effective implementation of Disaster Management Plan and to achieve above stated objectives, different Kind of training programmes has been conducted. Disaster Management Programme has Community based disaster Preparedness approach is being adopted for community level Awareness about Hazards and to create Disaster management Teams at village level. All formed teams were imparted subject related trainings. This will further enhance better understanding of individual's role and responsibilities in emergency response besides improving the overall coordinated efforts.

The main objectives of training plan are:

- Familiarizing key personnel involved in the plan with their equipment, the overall plans and their roles.
- Ensuring efficacy of emergency response mechanisms / resources.
- Reviewing the total plan, including communications and logistics, so that updating, modifying and training activities can be improved.

Team Drills:

These rehearsals are conducted at regular intervals at least once in a year by individual task force team in order to improve the resource planning, coordination and application of resources. The responsibility of conducting such drills at specified frequency lies with the respective Task Force Leader.

Full-Scale Mock Drills:

The ability of the emergency management team is to perform a set of critical tasks under simulated conditions for different hazards are validated by conducting a full scale mock drill once in a year. This includes but not limited to management initiatives, response activities, direction, and control, mobilization of resources, communications, mitigation and post incident activities of all concerned. This is a field mock drill on a large scale involving all the task forces. After completion of every team drills and/or Full Scale mock drills, a debriefing meeting shall be arranged in which proceedings of the mock drills are discussed highlighting weak areas-shortfalls for effecting improvement in the plan.

How can disaster management be done?

Disaster Management

Effective disaster management or disaster response can be defined as providing the technology, tools and practices that enable disaster response organizations to systematically manage information from multiple sources and collaborate effectively to assist survivors, mitigate damage and help communities rebuild.

Natural disasters are becoming more frequent, growing more severe and affecting more people than ever before.

The four elements of disaster management:

1. Preparedness
2. Response
3. Recovery
4. Prevention

1. PREPAREDNESS includes a set of activities that a community collectively takes before a disaster occurs to reduce the impact of a disaster. It includes:

- Community awareness
- Preparation of a disaster management
- Mock drill, training and practice
- Inventory of resources
- Proper warning system

2. RESPONSE includes a set of activities that a community collectively performs in anticipation of, during and immediately after a disaster to minimise the effects of disaster. It includes:

- Activate emergency operation centers
- Setting a community kitchen
- Setting up medical camps
- Mobilizing resources
- Settling up temporary living arrangement
- Deploy search and rescue teams

3. RECOVERY includes measures which support disaster affected communities in the reconstruction of the physical infrastructure and restoration of the emotional well being of the people. It includes:

- Developing awareness on health and safety measures
- Counselling for survivors of the disaster
- Restoring essential service
- Providing financial support
- Arranging for jobs
- Reconstruction of buildings

4. PREVENTION includes measures to eliminate the incidence of severity of disaster. It includes:

- Planning land use
- Construction of disaster resistant buildings
- Finding ways to reduce risks
- Preventing habitation in risk zones

There are more ways of managing a disaster but it depends upon the disaster and the situation.

Chapter 2

District Profile

2.1 Overview of the District:

Chikkaballapur district is in the state of Karnataka, India. On 23 August 2007, it was carved out of the pre existing Kolar district which was the fourth largest district (before bifurcation) of Karnataka by moving the taluks of Gauribidanur, Gudibande, Bagepalli, Chikkaballapur, Sidlaghatta and Chintamani into the new Chikkaballapur district. Kannada is the official and most widely spoken language.

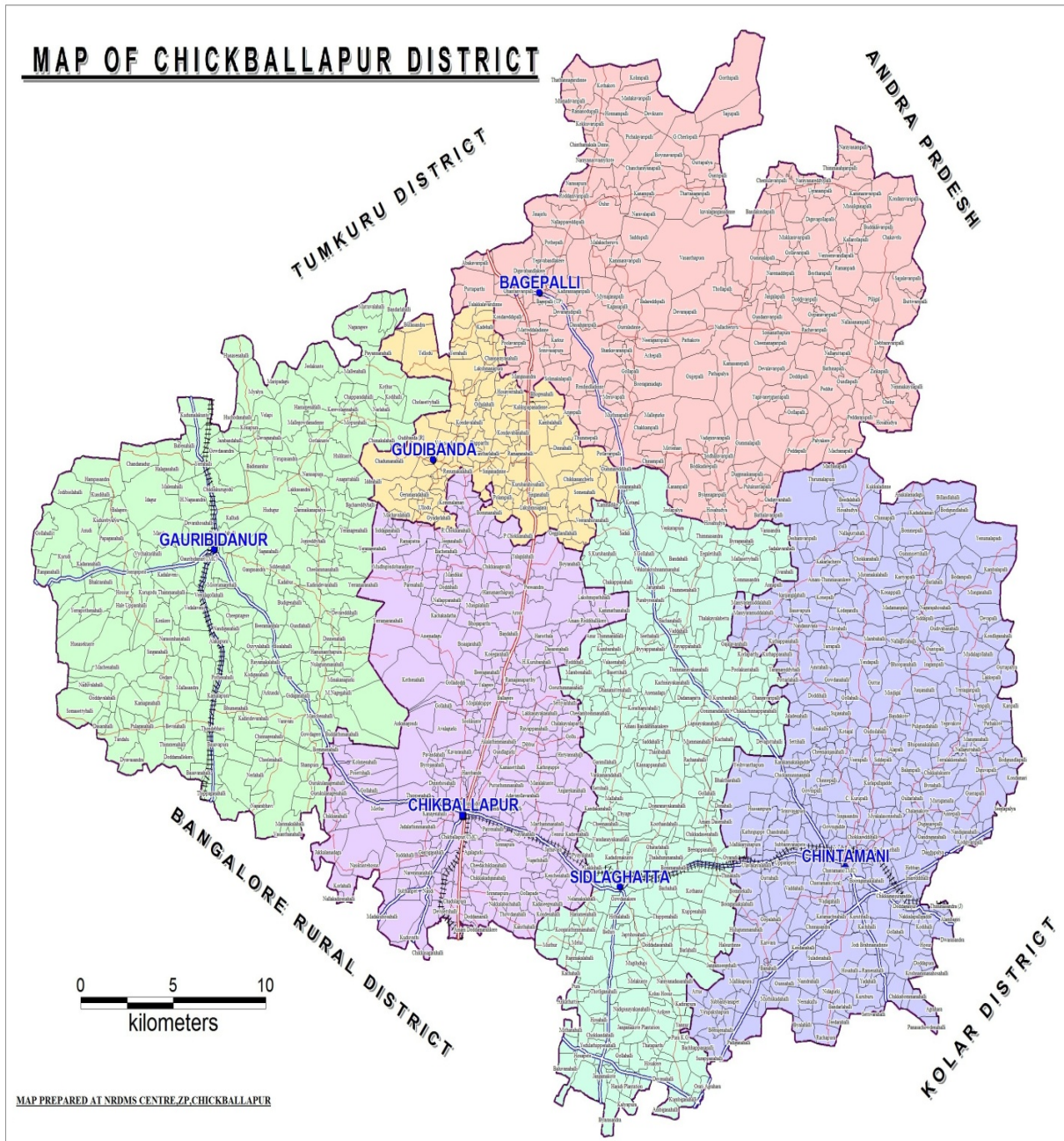


Figure 2.1:– Chikkaballapur District Map

Historical Background

The Marigowda, the son of the chief Avathimalla Biregowda, was hunting one day in the Kodimanchanahalli forest. He found a rabbit standing fearlessly in front of hunting dogs. Excited by this, the chief told his son that it was a sign of the boldness of the local people. So, he obtained permission from the king of Vijayanagara and built a fort and a town. This in course of time developed into the town of Chickballapur. During the rule of Baichegowda, the king of Mysore attacked the fort but had to withdraw due to the interference of Marathas. DoddaByregowda, who came to power after Baichegowda, resumed control of the territories seized earlier by Mysore. In 1762, during the rule of Chikkappanayaka, Hyder Ali laid siege the town for a period of three months. Then Chikkappanayaka agreed to pay 5-lakhs pagodas, and the army was withdrawn.

After this, Chikkappa Nayaka with the help of Murariraya of Gooty tried to get back his powers. He was hiding at Nandi hills along with Chikkappa Nayaka. Immediately Hyder Ali took Control over Chikkaballapur and other places and arrested Chikkappa Nayaka. Then with interfere of Lord Cornwallis, Chickballapur was handed over to Narayanagowda. some sources suggest that Lord Cornvallis visited the temple of Lord Shiva in Peresandra which is 18 km off Chikkaballapur. In few references British text suggest that Peresandra has a tremendous history; upon knowing this, Tipu Sultan again acquired Chickballapur. In 1791 British occupied Nandi & left Narayanagowda to rule the town; due to this fight between Britishers and Tipu Sultan again started. Narayanagowda lost his administration. Later on the British defeated Tipu Sultan. Chickballapur also came under the administration of Wodeyars of Mysore, which is now a part of Karnataka.

Bharatharathna **Sir Mokshagundam Visvesvaraya** who was born at Muddenahalli near Chikkaballapur was a visionary engineer and versatile genius who laid the foundation stone for progress in the fields of Education, Science & Technology, Agriculture, Industry & Politics. **Dr.H.Narsimhaiah**, popularly known as the ‘Gandhi Of Chikkaballapur District’ was a famous educationist born in Hossur village, Gowribidnur taluk, worked as the Vice –Chancellor of Bangalore University and a Member of Karnataka Legislative Council and struggled hard to develop scientific attitude among the people.

The Father of Nation, **Mahatma Gandhiji** visited Chikkaballapur in 1936. He rested a few days in Nandhi Hills. The first Prime Minister of India Jawaharlal Nehru inaugurated the Chikkaballapur Town Library in 1962 as a mark of respect to Sir Mokshagundam Visvesvaraya.

Nandhi Hills, which is 4850ft. above the sea level, is considered as ‘The Ooty of the Poor’. It is the birthplace of the rivers like North Pennar, Chitravathi, Arkavathi and Papagni. The SAARC Summit of 1986 was held at Nandhi Hills and Rajiv Gandhi was the former Prime Minister was presided the meeting. **Vidhuraswatha**, Which is popularly knwn as ‘The Jalian Wala Bagh of Karnataka’ is also place of attraction.

2.1.1 Administrative Structure:

Chikkaballapur District has six revenue taluks namely – Bagepalli, Chikkaballapur, Chintamani, Gowribidanur, Gudibanda and Shidlaghatta. The Chikkaballapur has 5 Assembly segments called Bagepalli (Includes Gudibanda taluk), Chikkaballapur, Chintamani, Gowribidanur and Sidlaghatta.

Table 2.1: Administrative Set up of Chikkaballapur District

S I N o	Taluk Name	Hoblies	Grama Panchayath s	Nada Office	Village Accountant (VA) Circles	Villages	City Municipal Council (CMC)	Town Municipal Council (TMC)
1	Bagepalli	5	25	5	40	229	0	1
2	Chikkaballapur	3	23	3	65	251	1	0
3	Chintamani	6	35	6	42	400	1	0
4	Gowribidanur	6	38	6	54	239	1	0
5	Gudibande	2	8	2	35	105	0	1
6	Sidlaghatta	4	28	4	11	291	1	0
Total		26	157	26	247	1515	4	2

2.2 Demographic details:

The Population of Chikkaballapur district as per 2011 census is 12.54 lakhs in which 6.37 lakhs of Males and 6.16 lakhs of Females. Distribution of populations Taluk wise are shown in the table. The sex ratio of the district is 968. The density of population is 298 per Sq.km with most of the population in rural areas.

Table 2.2: Distribution of Population in taluks

Sl No	Name of the Taluk	Area in (Sq. Kms)	Population (Census - 2011)				
			Total	Male	Female	Rural	Urban
1	Bagepalli	933	1,83,709	93,083	90,626	1,50,823	32,886
2	Chikkaballapur	644	2,13,176	1,09,264	1,03,912	1,49,019	64,157
3	Chintamani	892	2,98,584	1,51,369	1,47,215	2,22,278	76,306
4	Gowribidanur	894	2,91,327	1,47,682	1,43,645	2,43,409	47,918
5	Gudibande	227	56,618	27,868	27,750	46,215	9,403
6	Sidlaghatta	664	2,11,963	1,08,238	1,03,725	1,63,444	48,519
Total		4254	12,54,377	6,37,504	6,16,873	9,75,188	2,79,189

2.3 Literacy Scenario:

The Literacy rate of the Chikkaballapur district as per 2011 census is 69.76% in which Male literacy rate is 77.75% and Female literacy rate is 61.55%, detail view of taluk wise literacy rate is shown in the below table.

Table 2.3: Literacy Rate

Sl No	Name of the Taluk	Total literacy rate in %	
		Male	Female
1	Bagepalli	71.26	52.81
2	Chikkaballapur	81.01	66.25
3	Chintamani	80.22	64.18
4	Gowribidanur	77.97	62.19
5	Gudibande	73.82	56.44
6	Sidlaghatta	77.28	61.23
Chikkaballapur District Literacy Rate		77	60.5

Source:- 2011 Census

2.4: Climate and Rainfall

The Chikkaballapur district is located in the South-interior region of Karnataka state, which is drought prone and falls in the arid tract of the country. The climate of the district can be termed as mild to severe, with mild winters and hot summers. December is the coldest month with mean daily minimum of 15.7 degrees Centigrade, while April is the hottest month with mean daily maximum temperature of 36.0 degrees Centigrade. Relative humidity of over 75% is common during monsoon period. Wind speeds exceeding 15 km/h are common during the months of June and July. The recorded annual potential evaporation is around 1950 mm with May registering over 220 mm and December around 120mm. The normal annual rainfall of the district is 621 mm. The annual number of the rainy days is about 30 – 35 days. Nearly 67% of the rain is received during the southwest monsoon period (June- Sept) and the northeast monsoon contributes about 14%, during the post monsoon period. The Temperature, Relative humidity and rainfall is obtained from KSNDMC and Statistics is as shown in Table 2.4, 2.5 and Table 2.6.

Table 2.4: Month Wise Temperature & Relative Humidity

Sl No	Name of the District	Month	Min-Temp (Celsius)	Max-Temp (Celsius)	Min-Relative Humidity (%)	Max-Relative Humidity (%)
1	Chikkaballapur	January	14.6	30.2	30.4	95.6
2		February	15.2	31.9	21.2	87.1
3		March	18.7	34.5	22.0	81.6
4		April	21.6	36.0	26.5	86.8
5		May	22.4	35.2	37.6	90.5
6		June	21.8	31.7	53.1	93.9
7		July	21.1	30.2	55.5	95.4
8		August	20.9	29.5	57.8	94.5
9		September	21.5	30.6	59.5	96.3
10		October	19.8	30.4	53.5	94.9
11		November	18.7	28.8	54.2	97.6
12		December	15.7	28.8	43.0	97.4

Table 2.5: Actual Rainfall in Monsoon for a decade

Sl No	Taluk / Year	Normal Rainfall (mm)	Actual Rainfall (mm) South-West Monsoon										
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
1	Bagepalli	378	471	428	378	202	399	172	381	223	435	284	357
2	Chikkaballapur	452	534	533	392	360	382	268	445	441	413	346	397
3	Chintamani	386	514	460	333	305	379	179	404	309	401	279	374
4	Gauribidanur	384	487	522	362	327	409	305	431	432	401	279	371
5	Gudibanda	413	570	483	412	204	443	222	353	369	403	361	328
6	Sidlaghatta	409	579	466	396	306	381	189	433	351	349	306	347
District Total		399	510	460	372	245	390	220	410	345	402	299	366

Table 2.6: Actual Annual Rainfall (mm)

Sl No	Taluk / Year	Normal Rainfall (mm)	Actual Rainfall (mm) Annual									
			2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
1	Bagepalli	697	716	786	677	499	598	428	1010	439	798	521
2	Chikkaballapur	789	827	968	743	663	650	558	1058	694	819	567
3	Chintamani	751	798	900	668	721	642	458	1133	524	884	569
4	Gauribidanur	679	772	967	684	566	666	572	1070	655	844	473
5	Gudibanda	714	849	948	736	454	687	481	939	555	758	547
6	Sidlaghatta	767	862	873	757	668	650	499	1074	585	837	566
District Total		731	694	899	669	566	570	415	1010	495	833	537

Table 2.7: Monthly Average Rainfall of District

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total Year Average	Total % Departure
Normal Rainfall (mm)	2.2	4.6	8.2	26.6	68.5	62.6	86.1	100.1	150.2	154.9	52.5	14.8	731.3	
2013	0.3	16.4	1.7	25.6	56.9	51.7	63.9	63.0	214.9	120.0	23.5	4.0	642.1	-12.2
2014	0.0	0.0	15.9	9.7	108.4	56.9	34.6	72.7	56.7	114.4	21.8	6.6	497.9	-31.9
2015	8.3	0.0	38.2	72.3	99.2	69.0	50.0	113.5	180.0	107.0	314.8	9.6	1,061.7	45.2
2016	6.4	0.2	4.7	0.6	136.5	104.9	183.3	16.9	40.3	7.5	8.3	59.9	569.5	-22.0
2017	1.7	0.0	28.9	28.1	96.1	104.9	33	100	217	251	20	4.0	884	14
2018	0.1	8.2	54	23	87	85	34	37	142	51	12	3.0	537	-27
2019	9	4	0	26	63	84	58	65	159	217				

The district has 164 Rain gauge stations each at Gram Panchayaths and one each at taluks. The rain gauge is a meteorological instrument for measuring the amount of

rainfall amounts fallen during a given time interval at a certain location. The weather and rainfall forecasting and maintenance of rainguages are monitored by KSNDMC.

Table 2.7: Rainfall: Rain Recording Stations:

SI No	Taluk	Number Of GP's	Rain Recording stations
1	Bagepalli	25	26
2	Chikkaballapur	23	25
3	Chintamani	35	36
4	Gowribidanur	38	39
5	Gudibande	8	9
6	Sidlaghatta	28	29
Total		157	164

Table 2.8: No. of Consecutive Dry Spell Weeks

S I N O	Name of Taluk	Deviation from normal rainfall (%age)							Week No. 36	No. of Consecutive Dry spells Weeks
		Week No. 29	Week No. 30	Week No. 31	Week No. 32	Week No. 33	Week No. 34	Week No. 35		
		(16th to 22nd July)	(23rd to 29th July)	(30th July to 5th Aug)	(6th to 12th Aug)	(13th to 19th Aug)	(14th to 26th Aug)	(27th Aug to 2nd Sep)		
1	Bagepalli	-94	-96	-88	-65	-25	-99	-75	-100	4
2	Chikkaballapur	-87	-87	-81	-55	-9	-94	-62	-100	4
3	Chintamani	-96	-85	-73	-50	-58	-95	-78	-100	8
4	Gauribidanur	-96	-89	-94	-28	37	-86	-61	-100	3
5	Gudibanda	-94	-95	-90	-24	-24	-97	-53	-99	3
6	Sidlaghatta	-94	-76	-71	-47	-41	-95	-79	-100	3

2.5: Drought

The Chikkaballapur district has been identified as one of the chronically drought prone areas. The Meteorological history says that out of 11 consecutive years, 8 to 9 years district has faced with the drought. The occurrence of drought is on number of factors such as unorganized cropping method, Soil types, lack of conservation of water, drainage system etc. Due to the drought, district is facing with the scarcity of water and fodder, to overcome this district administrative is providing drinking water to 330 villages out of 1515 villages every year in which there is scarcity for drinking water, to overcome the scarcity of drinking water district

administration is providing water through tankers and private bore wells at 40 LPCD. Fodder banks and Goshalas are being setup to feed the Cattles. Administration has taken necessary action to provide drinking water, Fodders & works are started in local gram panchayats level by MGNREGA for livelihoods.

Table 2.9: Drought Affected Taluks in a decade

Sl No	Taluk/Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Drought years in an Decade
1	Bagepalli	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9
2	Chikkaballapur	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	8
3	Chintamani	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9
4	Gauribidanur	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	8
5	Gudibanda	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	9
6	Sidlaghatta	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	8

2.5 Agriculture

Agriculture is the prime occupation of the district. The district has 210450 hectare cultivable land in which 75% of the cultivable land is depending on monsoons (Rain feed area), only 25% of cultivable land is irrigated (Bore wells). The ground water level has gone down to 1300 ft and bellow. Paddy, Ragi, Mize, Redgram, Groundnut, Popcorn, Minor millets, Horsegram, Avare, Cowpea, Sunflower, mustered, Seasam, Niger, Castor, Vegetables, Mango and Grapes are Major crops of the district. Most of the people are depending on silk rearing and Dairy farming.

Table 2.10: Land use pattern: (No. of HH)

Sl No	Taluk	Big Farmers	Marginal Farmers	Small Farmers	Agricultural Laborers	Total house holds
1	Bagepalli	139	24053	9835	32447	44594
2	Chikkaballapur	74	26132	6445	29991	46607
3	Chintamani	241	30031	9935	43842	66321
4	Gowribidanur	123	35462	10180	58667	68341
5	Gudibande	25	10743	3067	11288	12855
6	Sidlaghatta	177	14554	6175	30704	43593
District Total		779	140975	45637	206939	282311

Table 2.11: Crop Pattern

Sl No.	Name of the Taluk	Type of Crops	Area Cultivated in (Hect.)	Crop insurance (No of Farmer)
1	Bagepalli	Paddy, Ragi, Mize, Redgram, Groundnut, Popcorn, Minor millets, Horsegram, Avare, Cowpea, Sunflower, mustered, Sesam, Niger, Castor,	18678	4705
2	Chikkaballapur		13205	446
3	Chintamani		18892	889
4	Gowribidanur		28528	4021
5	Gudibande		8931	1841
6	Sidlaghatta		10999	2462
District Total			99233	14385

2.6: Sericulture

Sericulture activity plays a vital role in the earnings and livelihood of the farmer of the district. About 16529 families are engaged in sericulture and cultivating mulberry 19856.95 ha of land in the district. From which 2117.454 metric tons of silk was produced. Chikkaballapur District is one among the leading silk producing districts of Karnataka.

Mulberry is a perennial crop being cultivating under irrigated and semi-irrigated conditions major source of water is either borewells or rain water. Since last 3years MGNREGA is a boon for the small & marginal sericultural farmers of the district and improving the Socio-economic conditions of the farmers.

Table 2.12: Silk Production.

Sl No	Taluk	Area Under Mulberry (Ha)	Cocoon Production (Tons)	No Of Farmers engaged in occupation	Silk produced		Chawki Centers (Private)	Seed Producers		Govt Cocoon Markets
					QTY in tons	Value in Rs		Govt	Private	
1	Chintamani	5779.05	4283.884	3005	625.385	17.51	2	2	2	1
2	Sidlaghatta	7281.31	6258.764	6423	913.688	25.58	16	1	6	2
3	Chikkaballapur	2661.12	1233.471	2330	180.069	5.041	5	1	2	1
4	Gowribidanur	2797.87	2016.028	2587	294.311	8.24	8	-	1	-
5	Bagepalli	1056.6	567.738	1720	82.881	2.32	1	-	2	-
6	Gudibande	321	144.673	464	21.12	0.59	-	-	-	-
TOTAL		19896.95	14504.558	16529	2117.454	59.281	32	4	16	4

2.7: Horticulture

Chikkaballapur district is one of the major Horticulture cropping area in Karnataka, comprising of Mango, Grapes, Guava, other various vegetable and Flower crops. Horticulture Department consists of one Deputy director of Horticulture post at district level, Senior Assistant Director of Horticulture post for each taluk (6 No.) , Assistant Horticulture Officers at Hobali level (26 No.) and one technical assistant (ADH cadre) at each taluk (6 No.) with supporting Ministerial staff.

Table 2.13: Horticulture crop pattern

Sl No.	Name of the Taluk	Type of Crops	Area Cultivated in (Hect.)	Farmers under Crop insurance
1	Chikkaballapur	Perennial Crops	4433.12	463 Farmers
		Annual Crops	2389.11	-
2	Chintamani	Perennial Crops	7734.97	38 Farmers
		Annual Crops	3836.89	-
3	Gauribidanur	Perennial Crops	3484.65	10 Farmers
		Annual Crops	1838.58	-
4	Sidlaghatta	Perennial Crops	3549.6	40 Farmers
		Annual Crops	1465.3	-
5	Bagepalli	Perennial Crops	460.98	0
		Annual Crops	1690.3	-
6	Gudibande	Perennial Crops	235.3	16 Farmers
		Annual Crops	709.83	-

2.8: Irrigation

In Chikkaballapur District there are three river basins namely North Pennar, South Pennar and Palar basins.

1. Under North Pennar basin there are Six sub-series namely Papagni river, Chitravathi river, Kushavathi river, Vandaman - Gulur sub-series, Kumadvathi river and North Pennar Gowribidanur sub-series
2. In South Pennar basin there is one sub-series namely Vadigenahalli.
3. Under Palar basin there is only one sub-series Yeduru sub-series.

These rivers are active during monsoon seasons only.

- a) In Chikkaballapur taluk 3727.00 hectares of land is irrigated out of 140 tanks pertaining to both Minor Irrigation & Zilla Panchayath Engineering Department.
- b) In Gauribidanur taluk 10577.21 hectares of land is irrigated out of 187 tanks pertaining to Minor Irrigation & Zilla Panchayath Engineering Department.
- c) In Bagepalli taluk 4752.23 hectares of land is irrigated out of 391 tanks pertaining to both Minor Irrigation & Zilla Panchayath Engineering Department.
- d) In Sidlaghatta Taluk 3869.00 hectares of land irrigated out of 227 tanks pertaining to both Minor Irrigation & Zilla Panchayath Engineering Department.
- e) In Chintamani taluk 4748.14 hectares of land irrigated out of 565 tanks pertaining to both Minor Irrigation & Zilla Panchayath Engineering Department.

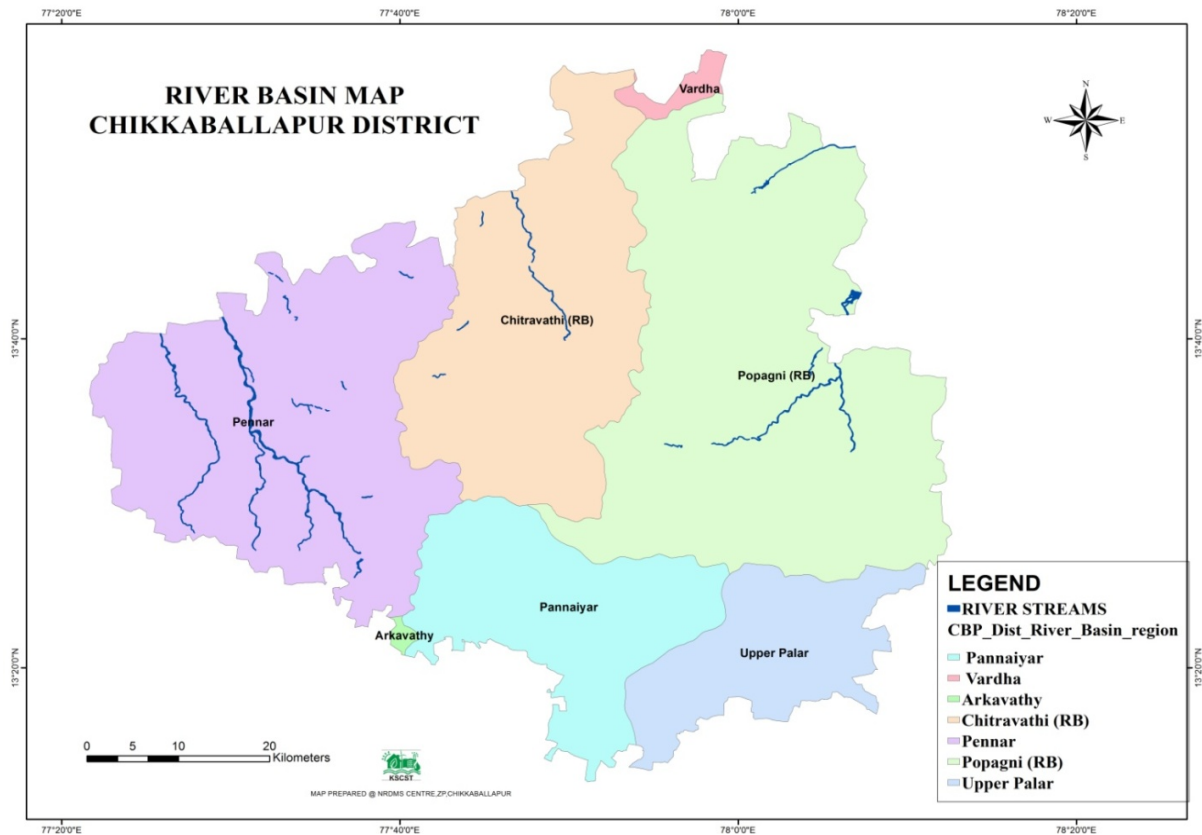
- f) In Gudibande taluk 2022.03 hectares of land irrigated out of 93 tanks pertaining to Minor Irrigation & Zilla Panchayath Engineering Department.

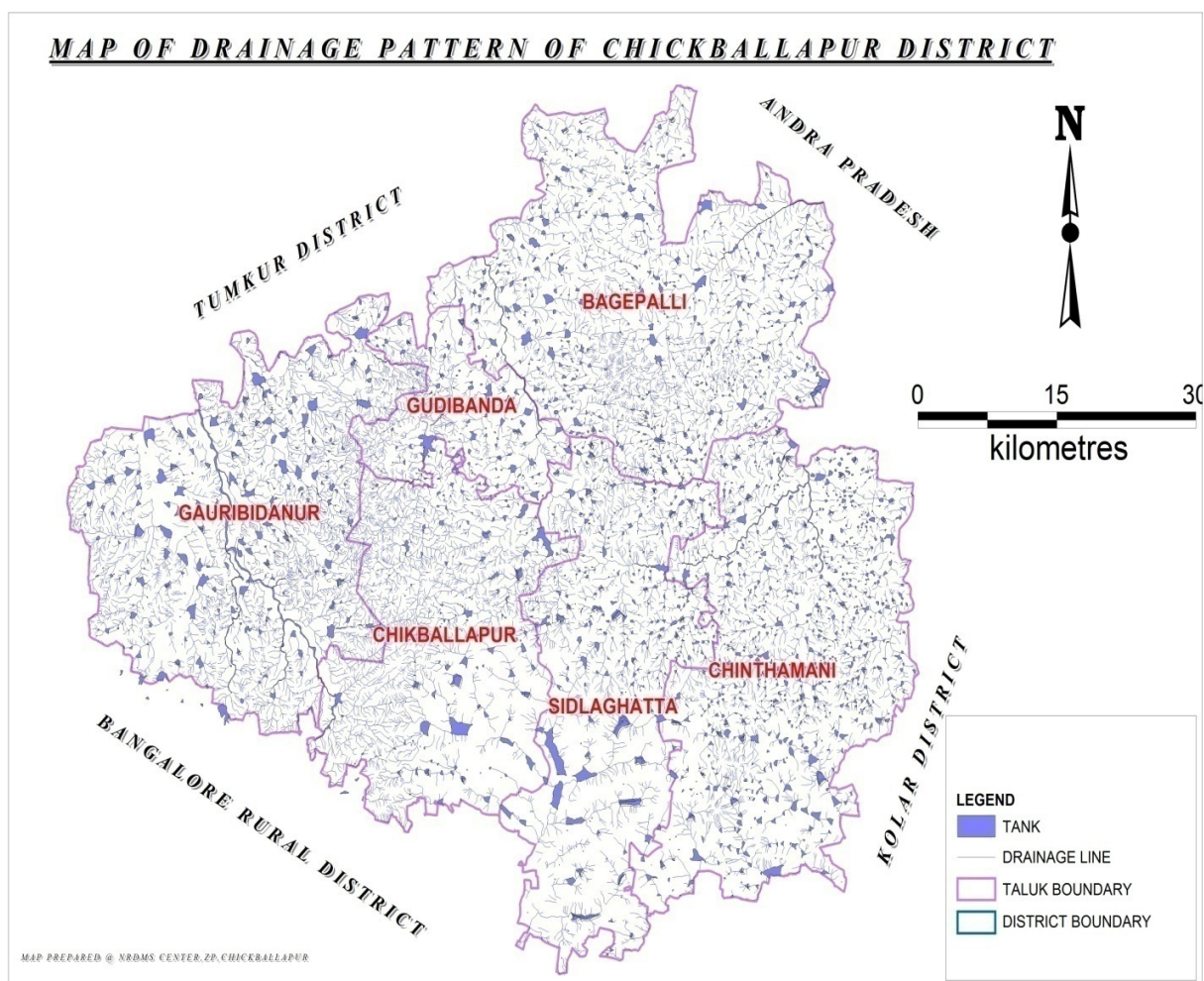
The total Minor Irrigation & Zilla Panchayath Engineering Department tanks in the district are 1603 and total irrigated area is 29,695.61 hectares in this district.

The details of M.I. tanks and their atchkat, waterspread area and capacity of tanks are given in Annexure

Table 2.14: Details of Tanks

Sl No	Taluk	Number of tanks	Type of Embankments	Length of Embankments in Mtrs	Ayacut in Hect	Water spread area	Capacity of tank
1	Chikkaballapur	21	Homogenous Bund	16605	2781.41	1264.54	1006.75
2	Gowribidanur	87	Homogenous Bund	78693	8066.9	4116.41	2954.18
3	Gudibande	14	Homogenous Bund	10250	1127.09	555.46	287.73
4	Sidlaghatta	29	Homogenous Bund	22205	5580	2241.24	707.47
5	Chintamani	19	Homogenous Bund	18620	1524.14	1114.4	18.43
6	Bagepalli	31	Homogenous Bund	21250	7789.15	1301.74	265.73
Total		201		167623	26868.69	10593.79	5240.29



**Table 2.15:** Drinking water Sources

Sl No	Name of the Taluk/Municipality	Tube well/Hand post (Tube well)		Well	Stand post/cistern
		Functional	Defunct		Cistern
1	Chikkaballapur	517	48	-	189
2	Chintamani	668	78	-	126
3	Gowribidanur	658	18	-	362
4	Bagepalli	503	45	-	291
5	Sidlaghatta	610	51	-	203
6	Gudibande	164	17	-	124
Total		3120	257	-	1295

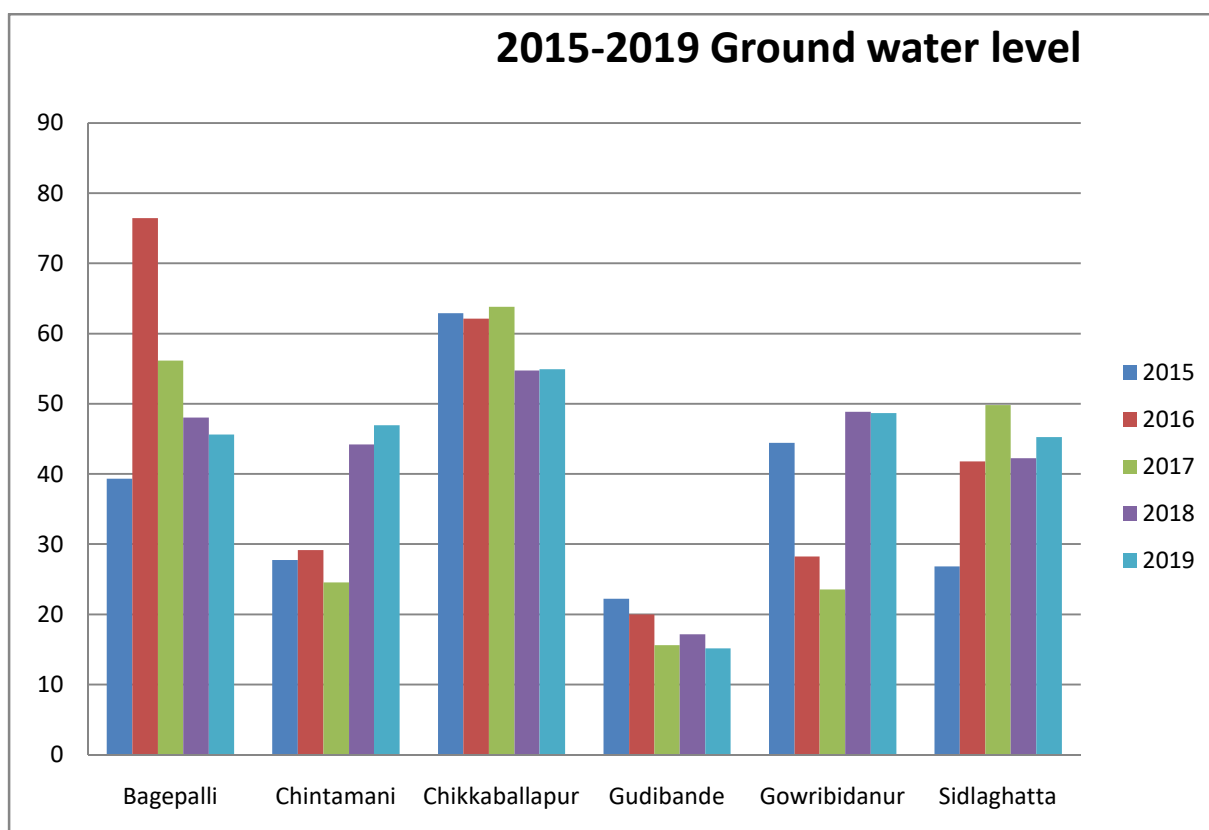
2.9 Ground Water

The Chikkaballapur district has no perennial water sources for both agriculture and drinking water purposes and its only source of water is ground water. Ground water plays an important role in the economy of the farmers of the Chikkaballapur district. Agriculture was mainly dependent on irrigation facility by numerous widely distributed tanks during earlier days. Due to drought situations farmers are now mainly depending upon borewells for their agriculture needs. As per CGWB report, there is **no scope for further ground water development**. All the taluks are over exploited.

Fluoride concentration of more than 1.5 mg/l is reported from many parts in the district especially in Bagepalli district. However, some of the exploratory borewells also have recorded fluoride concentration of 2mg/l and above especially in Bagepalli Taluk.

Implication of high fluoride Content: Natural contamination of groundwater by fluoride causes irreparable damage to plant and human health. High oral intake of fluoride results in **physiological disorders, skeletal and dental fluorosis, thyroxin changes and kidney damage in humans**. High fluoride levels inhibit germination, causes ultrastructural malformations, reduce photosynthetic capacities, alter membrane permeability, reduce productivity and biomass and inflict other physiological and biochemical disorders in plants.

Figure 2.1: Bar graph of Ground water level



Total District Average Static Water Level is 68.90meters (without Pumping)

Table 2.16: Taluk wise Ground water levels

Sl No	Taluk	Average Ground Water Level (Taluk Wise)					2015-2019 Taluk wise Average
		2015	2016	2017	2018	2019	
1	Bagepalli	76.47	56.15	48.05	45.63	68.909	59.0418
2	Chintamani	29.16	24.54	44.23	46.94	57.487	40.4714
3	Chikkaballapur	62.17	63.85	54.76	54.92	64.025	59.945
4	Gudibande	19.98	15.64	17.2	15.14	19.823	17.5566
5	Gowribidanur	28.23	23.52	48.89	48.7	70.144	43.8968
6	Sidlaghatta	41.78	49.82	42.28	45.26	60.465	47.921
Total		42.96	38.92	42.57	42.76	56.80	68.909

High fluoride and Nitrate Content in water:

The uncontrolled exploitation of ground water has led to high fluoride and nitrate in water. Consumption of this water has had negative impact on the health of people. Dental fluorosis is prevalent among children's and skeletal fluorosis has set-in few villages.

Harmful effects of different levels of Fluoride in Drinking Water

Fluoride Level (mg/liter)	Harmful Effects
Less than 1	No dental caries
1.00 – 1.50	Acceptable
1.50 – 3.00	Mottling and pitting of teeth
3.00 – 6.00	Skeletal Fluorosis
More than 10.00	Crippling Fluorosis (Skeleton)

2.10: Forest

The Chikkaballapur forest division was established in August 2007. The division consists of six territorial forest ranges, viz., Chikkaballapur, Bagepalli, Chintamani, Gauribidanur, Gudibande and Sidlaghatta which are more or less co-terminus with the respective taluks. Chikkaballapur forest division has two forest sub-divisions, i.e., Chikkaballapur Sub-division with headquarters at Chikkaballapur and Chintamani sub-division with headquarters at Chintamani. The district has a geographical area of 404501 ha, in which Forest area 48926.1 ha.

Working plan area consist of dry deciduous and Scrub types of forest which are poorly stocked, Trees are stunted and branchy. The soil is poor and fallow and rains scanty. There are large extents of torn forest also. With a number of rivers and streams flowing in several directions and a large number of tanks and wells situated amidst hilly surroundings, one would expect to find the district full of green vegetation. However the rainfall being scanty and rivers and streams remaining dry for a large part of the year, the area is for most part devoid of vegetation.

Table 2.17: Notified Forest in district

SI No	Name of the Taluk	Reserve Forests	Unclassified Forests	Village Forests
1	Chikkaballapur	15467.17	-	103.2
2	Gowribidanur	3666.5	-	75.68
3	Gudibande	4993.02	179.56	0
4	Bagepalli	14959.09	-	0
5	Sidlaghatta	4180	-	0
6	Chintamani	5041.94	-	121.86
Total		48307.72	179.56	300.74

2.11: Health

In Chikkaballapur district there is 1 District hospital of bed strength 140, 5 taluk General Hospitals of bed strength 100 each, 6 CHC of bed strength 30 each, 56 PHC of bed strength 6 each.

Table 2.18: Hospitals

SI No	Name of the District	CHC/ UHC	PHC	Civil Hospital/GH/DH	Spy. Hospital	
					Govt.	Private
1	Chikkaballapur	6	56	6	6	25

Table 2.19: Aids, Leprosy, T.B, Cancer Control Programme are administered in the District.

SI No	Taluk	AIDS Control Programme			Leprosy Control Programme		T.B Control Programme			Cancer control Programme		
		HIV+	Cured	Deaths	No. of patients	Cured	T.B +	Cured	Deaths	Cancer +	Cured	Deaths
1	Chikkaballapur	877	0	169	24	17	656	297	29	225	-	-
2	Gowribidanur	872	0	208	42	36	262	149	20	107	-	-
3	Bagepalli	772	0	150	17	12	184	143	12	71	-	-
4	Chintamani	960	0	162	26	26	278	137	18	135	-	-
5	Sidlaghatta	531	0	102	17	15	149	83	10	76	-	-
6	Gudibande	309	0	64	3	3	136	59	6	28	-	-
Total		4321	0	855	129	109	1665	868	95	642	-	-

Table 2.20: Outbreak Summary of diseases identified in district

Disease / Illness	Taluka	PHC	Villages	No. of cases	Laboratory confirmation by	Lab Report	No of deaths	Epidemiological Responsible
JE	Sidlaghatta	E thimmasandra	Settigere	1	NIV	JE positive	0	
Malaria	Gowribidanur	Ramapura	Ramapura School	6	PHC lab	Malaria positive	0	History of travel to the endemic area
Rabies	Bagepalli	Billuru	Gettakindapalli	1	Isolation hospital Bng	Rabies Positive	1	History of Rabid Dog bite
Micro Fileria	Chickaballapura	Muddenahalli/ Nandi	Dinne Gerahalli/ Nandi	6	CML Bangalore	Positive for Fileria	0	History of travel from North India
Chikungunya	Chintamani	chinnasandra	Chikkakondrahalli	13	SSL	Chikungunya Pasitive	0	History of Previous Illness
Chikungunya	Chickaballapura	Nandi	Gandinagara	25	SSL	positive for chikungunya	0	
Chikungunya	Gowribidanur	Namagondlu	Hanumenahalli	25	SSL	Chikungunya Pasitive	0	
Food poisoning	Chickaballapura	UHC Chckaballapura	BGS Hostel	146	BMRCI	Water non potable for drinking	0	Due to water contamination
H1N1	Chickaballapura District			10	MVCR	Positive for H1N1	2	History of travel to the endemic area & cross infection

2.12: Animal Husbandry & Veterinary

Livestock Farming is an important source of income & employment in rural sector. It helps in to bring equality in income level in rural areas by encouragement of economical status of small & Marginal farmers as also landless laborers. Control of major Livestock diseases would greatly contribute to the growth of Livestock Sector.

In Karnataka, Animal Husbandry sector has made a tremendous progress in the past two decades and it could perform even better if the large number of endemic livestock diseases are controlled and eradicated.

Foot And Mouth Disease, pestis des petits Ruminants, Brucellosis, Sheep Pox and Avian influenza are considered as Trans-Boundary animal Diseases (TAD) with threat to trade of Live animals and their products due to their negative impact on Meat and Milk production. National Control programmes are being implemented for control of FMD. PPR and Brucellosis in the state

THE PRIVANTION AND CONTROL OF INFECTIOUS AND CONTAGIOUS DISEASES IN ANIMALS ACT 2009 plays in important role in prevention, control and eradication of infectious and contagious diseases affecting animals in the country.

Table 2.21: Live Stock census as per 2012

Sl no	Taluk	Cattle			Buffaloes	Goat	Sheep
		Indigenous	Cross Bred	Total			
1	Bagepalli	21610	18791	40401	3788	22172	75028
2	Chikkaballapur	8804	28081	36885	9582	17508	45687
3	Chintamani	9018	45456	49558	14700	30250	115168
4	Gowribidanur	15506	40174	55680	9360	33102	90835
5	Gudibande	7219	10183	17402	1875	10936	26898
6	Sidlaghatta	11126	30114	41240	7941	22791	78379
	Total	83709	157457	241166	47246	136759	431995

Table 2.22: Veterinary Hospitals

Sl No	Taluk	Institution/ Hospital	PVC	Veterinary Dispensaries	Mobile Vety Centers	Total
1	Bagepalli	5	1	5	1	12
2	Chikkaballapur	4	3	9	1	17
3	Chintamani	4	4	20	1	29
4	Gowribidanur	6	3	8	1	18
5	Gudibande	3	2	3	1	9
6	Sidlaghatta	5	2	14	1	22

2.13: Fire and Emergency

Fire and Emergency services plays a very critical role in the habitat management. One of the main factors that have accelerated the degradation of forest cover is the occurrence of fire, which has almost become an annual feature. The glaziers, firewood and MFP collectors and tourists tend to set fire deliberately or by accident. Smugglers and poachers also set fire to the forest to divert the attention of field staff. Due to the forest fire the natural regeneration is lost and the forests are deprived of rich humus. The district is rich in fauna & flora. Wild animals particularly herbivores and reptiles are the worst sufferers for want of green foliages while innumerable soil fauna will be destroyed, which play a very important role in maintaining the ecological balance by decomposing and releasing energy from dead plant and animals. Hence preventive and fire control measures have been given much importance in the habitat development.

Table 2.23: Fire Station Information

Sl No.	Name of the Taluk	Number of the fire station	Telephone Number	Disposition of Vehicle & Pumps	Disposition of Man Power
1	Chikkaballapur	01 no	08156-277052	02 water tenders & 01pump	18
2	Chintamani	01 no	08154-250006 08154-250008	02 water tenders & 01pump	10
3	Gowribidanur	01 no	08155-284101	01 water tenders & 01pump	11
4	Bagepalli	01no	08150-283101	02 water tenders & 01pump	13
5	Sidlaghatta	01 no	08158 - 25488	01 water tenders & 01pump	13
6	Gudibande	01 no	08156-261101	01 water tenders & 01pump	12

Table 2.24: Water tender equipments

Sl No	Type of Equipment	Water capacity	Contact Person and address	Telephone Offices/ Res.
1	Water tender Water Bowzer	20500 ltrs	Fire station officer Chikkaballapur	08156-277052
2	Water tender & water lorry	9000 ltrs	Fire station officer Chintamani	08154-250006 08154-250008
3	Water tender	4500 ltrs	Fire station officer Gowribidanur	08155-284101
4	Water tender	9000 ltrs	Fire station officer Bagepalli	08150-283101
5	Water tender	4500 ltrs	Fire station officer Sidlaghatta	08158-25488
6	Water tender	4500 ltrs	Fire station officer Gudibande	08156-261101

Table 2.25: Communication Network

Sl No	Name of the Taluk	VHF	Satellite Phones	HAM Radio Operators	Wireless Communication
1	Chikkaballapur	-	--	--	01 set
2	Chintamani	-	--	--	01set
3	Gowribidanur	-	--	--	01 set
4	Bagepalli	-	--	--	01 set
5	Sidlaghatta	-	--	--	01 set
6	Gudibande	-	--	--	01 set

Table 2.26: Details of life Saving equipments & other services

SI No	Taluk / Resource	Life Boy	Life Jacket	Ropes	Ladder	Breathing Apparatus Set
1	Chikkaballapur	8	8	9	3	4
2	Chintamani	8	8	6	2	2
3	Bagepalli	10	10	9	2	2
4	Gowribidanur	8	8	12	2	4
5	Gudibande	2	4	2	1	2
6	Sidlaghatta	4	4	4	1	2
Total		40	42	42	11	16

Table 2.27: Types of calls

Year	station	Total call received	Type of Calls				
			Small Accidents	Medium Accidents	Serious	FALSE	Others
2017	Chikkaballapur	64	61	01	--	--	02
2018		24	22	01	--	--	01
2019		71	60	07	--	--	04
2017	Chintamani	128	122	05	01	--	10
2018		51	47	03	01	--	03
2019		91	85	05	01	--	08
2017	Gauribidanur	114	107	03	02	--	02
2018		63	59	04	--	--	--
2019		83	78	02	--	---	--
2017	Bagepalli	60	51	09	--	--	--
2018		52	39	05	--	--	--
2019		60	52	06	01	--	01
2017	Sidlaghatta	26	22	02	--	---	02
2018		55	51	01	--	--	03
2019		72	69	02	--	--	01
2017	Gudibande	06	06	--	--	---	01
2018		18	15	02	--	--	01
2019		43	35	04	--	--	03

Table 2.28: Type of Accidents

Year	Station	Residential/ Commercial	Argi / forest	Rescue of lives	Injured lives	Lives lost	Damaged (Rs)
2017	Chikkaballapur	14	50	6	---	4	10,16,000
2018		11	13	2	--	--	9,01,500
2019		20	51	3	--	6	21,70,000
2017	Chintamani	21	107	2	--	8	102,16,000
2018		7	44	--	--	4	16,27,500
2019		10	81	7	--	4	46,97,000
2017	Gauribidanur	19	23	--	1	1	28,94,000
2018		16	34	5	6	48	24,84,500
2019		3	60	--	--	1	54,33,000
2017	Bagepalli	16	44	10	8	5	16,27,500
2018		11	33	5	4	1	46,97,000
2019		13	47	2	1	1	28,94,000
2017	Sidlaghatta	6	20	1	1	1	9,01,500
2018		7	48	4	4	5	21,70,000
2019		4	68	3	3	2	10,21,6000
2017	Gudibande	6	--	1	--	--	78,000
2018		18	--	1	--	--	8,04,000
2019		42	1	--	--	2	12,24,000

2.14: Electricity and Solar Energy

Chikkaballapur district plays a major role in the production of the Solar Energy by using the renewable energy and the produced 15.668MWp solar energy is been used for the domestic usage in the district, in the upcoming days district administration is giving more preference for the production of solar energy.

Table 2.29: Solar Energy & Electrical installations

SI No	Name of Taluk	Solar Energy (SRTPV)		Electric installations	
		No of Installations	Capacity	No of 220/66 kV MUSS	No of 66/11 kV MUSS
1	Chikkaballapur	4	1.65 MWp	-	5
2	Gowribidanur	1	1 MWp	1	5
3	Gudibande	3	2 MWp	-	5
4	Bagepalli	1	1 MWp	1	7
TOTAL		9	5.65 MWp	2	22
5	Chintamani	9	8.018MWp	1	7
6	Sidlaghatta	2	2MWp	0	9
TOTAL		11	10.018MWp	1	16
DISTRICT TOTAL		20	15.668MWp	3	38

2.15: Industries and Commerce

The Department is encouraging the Entrepreneurs for establishment of their units by approving the projects through DLSWCC, which help the entrepreneurs to avail financial assistance, power, land conversion and other facilities offered from the Govt as per Industrial Policies in force.

The Department is identifying suitable land for establishment Industrial Areas/Estates in co-ordination by the KIADB, thereby providing proper infrastructure in the respective Industrial Areas/Estate for the prospective Entrepreneurs. Also providing escort service to the entrepreneurs for their speedy implementation of their projects. Solving the problems of the entrepreneurs through DLSWCC, Suitable guidance in respect of departmental activities and facilities available from the various Agencies viz., KIADB, BESCOM, KSSIDC and Quality Control and promoting the entrepreneurs for availing loan facility from the Financial Agencies. The Department is acting as liaisoning between the Entrepreneur and Govt. Department.

Table 2.30: Type of Workers

SI No	Type of Workers							
	Skilled Workers		Semi Skilled Workers		Unskilled Workers		Total Workers	
	Male	Female	Male	Female	Male	Female	Male	Female
1	10490	4498	14689	6295	16788	7194	41967	17987

Table 2.31: Industrial Accidents

Industrial accidents are minor in cases as seen in comparison of past 5 years.

Year	No. of accident	No. of Injured	No. of Deaths
2014	1	0	1
2015	2	0	2
2016	0	0	0
2017	0	0	0
2018	1	1	0
2019	0	0	0

Table 2.32: The Major HAZARDS Industries in the District

Sl No	Name & Address of the unit	Activity	Category
1	SDU Winery Private Limited, 644,645,646, Alkapura Village, Thondebhavi Hobli, Gowribidanur Taluk, Chikkaballapur District.	Wine Manufacturing	Private
2	A-One Steel & Alloys Pvt Ltd., IP-62, IP-63, KIADB Industrial Area, Kasaba Hobli, Gowribidanur, Chikkaballapur District-561 208.	M. S. Billets	Private
3	Thirumala Milk Products Private Limited, Sy. No. 181/1, Thalagavara Village & Post, Kaiwara Hobli, Chintamani Taluk, Chikkaballapur District.	Milk Chilling	Private
4	Manz Agro Chemicals, Plot No. IP 46, KIADB Industrial Area, 5th Road, Kudumalakunte Village, Gauribidanur Taluk, Chikkaballapur District-561 208.	Agro Chemicals (Bio Fertilizers and Pesticides)	Private
5	Dodla Dairy Limited, No. 213, Beedaganahalli, Doddamaralli Post, Chikkaballapur Taluk and District.	Milk Chilling	Private
6	Dodla Dairy Limited, Sy. No. 196, Ulavadi Village, Madikeri Cross, Chintamani Taluk, Chikkaballapur District.	Milk Chilling	Private
7	RACS Pharmachem (India) Pvt Ltd., Plot No. IP-13, Part-2, I Phase, KIADB Industrial Area, Kudumalakunte Village, Gauribidanur Taluk, Chikkaballapur District-561 208.	Inorganic Chemicals	Private

8	Tropical Nanosciences Private Limited, Sy. No. 94/4A, Thondebhavi, Gauribidanur Taluk, Chikkaballapur District-561 213.	Biofertilizers, Biopesticides and Seeds	Private
9	R L Finechem Pvt Ltd., Plot No. IP-27, 28, 29, I Phase, KIADB Industrial Area, Kudumalakunte Village, Gauribidanur Taluk, Chikkaballapur District-561 208.	Active Pharmaceuticals ingredients	Private
10	Prakruthi Recycling Private Limited, Plot No. B-3 & B-4, KSSIDC Industrial Estate, Kudumalakunte Village, Gauribidanur Taluk, Chikkaballapur District-561 208.	E-waste recycling	Private
11	Hindusthan Distilleries (Karnataka) Pvt., Ltd., P.B. No. 3, B.H.Road, Gauribidanur, Chikkaballapur District-561208.	Rectified spirit and extra neutral spirit	Private
12	Chintamani Chilling Centre, Kannampalli, Chintamani, Chikkaballapur District-563 125.	Milk Chilling	Private
13	Kolar District Co-Operative Milk Producers Association Ltd., Sadali, Via Peresandra, Shidlaghatta Taluk, Chikkaballapur District.	Collection & cold storage of milk	Private
14	Milk chilling centre, Alakapura Village, B.H.Road, Gowribidanur, Chikkaballapur District-561 208.	Milk Chilling	Private
15	Precot Meridian Ltd, Chikkakurugodu, Gowribidanur Taluk, Chikkaballapur District-561 208	Dyeing of polyester yarn	Private
16	S.V. Rubber Industries, No. 19/B, KIADB Indl Area, Chikkaballapur-562 101.	Tyre Retreading Materials, Rubber Moulded Products	Private
17	SAS Agro Oils Refinery (P) Ltd., M.G.Road, Aravinida Nagar, Gauribidanur, Chikkaballapur District-561 208.	Edible Refined Oil	Private
18	Southern Agro Industries, No. 43/B, KIADB Industrial Area, Chikkaballapur-562 101.	Derivative of Acitic acid	Private
19	Unique Laboratories Pvt., Ltd., Plot No. 32, KIADB Industrial Area, Chikkaballapura-562 101.	Basic Chemicals and Drug Intermediates	Private
20	Malt Spirit India PVT Ltd Plot no 20 KIADB industrial area, Chikkaballapur, Kolar	Blending and botteling of IML	Private

21	Dynarx Technology (I) Ltd, No. 9, KIADB Industrial Area, Chikkaballapur-562 101.	Iodine Compounds	Private
22	ACC Ltd, Thondebhavi Village, Madugiri Road, Gauribidanur Taluk, Chikkaballapur District-561 213.	Cement Manufacturing	Private
23	Nandi Cold Storages Pvt., Ltd., Plot No.1A,1B, Chikkaballapur Industrial area, Chikkaballapur	Cold Storage	Private
24	Satvayur Extracts Ltd., Plot No.39, KIADB Industrial area, Chikkaballapur-562101	Spice oil and oleoresin Herbal Extracts	Private

2.16: Transportation Facilities

Table 2.33: Transportation Facilities in district

Sl No	Name of the District	Transportation (Y/N)	No. of Bus		No of Tract or		No of Jeeps		No of Two Wheelers	
			G	P	G	P	G	P	G	P
1	Chikkaballapur	YES	1381	106	15	8943	11	191	97	173262

Table 2.34: Comparative Road Accidents in the past 5 years

Year	No. of accident	No. of Injured	No. of Deaths
2014	803	492	492
2015	648	463	463
2016	681	488	488
2017	694	202	492
2018	655	195	460

Table 2.35: Type of Vehicles in Govt dept in district

Type of Vehicles	Contact person and address	Government/ Private	Telephone Office/ Residential
Tractors	Regional Transport Officer	Government	08156270445 9449863440
Bus	Regional Transport Officer	Government	08156270445 9449863440
Truck/Mini truck	Regional Transport Officer	Government	08156270445 9449863440

Table 2.36: Accidental Prone area (Black spots)

SL NO	Name of the Accidental Prone Area	2017		2018		2019	
		No. of Non fatal Cases Reported	No. of persons Injured.	No. of Non fatal Cases Reported	No. of persons Injured.	No. of Non fatal Cases Reported	No. of persons Injured
1	Old dc office	3	6	0	0	1	1
2	Harobande gate	3	3	8	8	3	3
3	Reddygollavarahalli	3	3	4	4	1	1
4	Kamath hotel	6	8	10	13	0	0
5	Agalagurki fly over bridge	4	5	6	10	3	4
6	Honnenahalli	3	4	2	2	4	4
7	J.venkatapura	0	0	2	5	1	1
8	Vyjakuru	9	10	9	16	1	1
9	Kaiwara cross	7	8	8	9	1	1
10	Perumachanahalli	3	13	2	3	1	1
11	Chinnasandra	5	7	10	10	1	1
12	Imareddyhalli	3	3	3	4	2	2
13	Sunkamma temple	2	2	1	2	2	2
14	Chendooru cross	3	5	2	4	2	2
15	Varlakonda	4	8	2	3	0	0
16	Sadali cross	2	2	2	3	0	0
17	Peresandra	3	4	2	2	2	4
18	Aruru cross	3	3	3	4	0	0
TOTAL		66	94	76	102	25	28

Table 2.37: District Police control room strength

SI No	PARTICULAR	PI(W)	PSI(W)	ASI(W)	HC(W)	PC(W)	TOTAL
1	Sanction Strength	01	04	08	13	09	35
2	Actual strength	01	03	06	04+04 (PCW)	09	28
Vacant		-	01	02	05	-	07

Table 2.38: District armed reserve force

SI No	NAME OF STATIONS	DYSP	RPI	RSI	ARSI	AHC	APC
1	Sanction Strength	1	1	6	27	65	184
2	Actual strength	1	1	4	25	65	121

2.17 HOME GUARDS

Chikkaballapur District has 10 units of home guards for the district. The District Commandant heads the Home Guards Department and is supported by Deputy Commandant, instructors (two) and about 1200 home guards, some of whom are specially trained in rescue and various other emergency fields of civil defence.

2.18 Department of Tourism

The Department of Tourism, set up in 1974, focuses on implementing the Tourism Department's decisions and undertaking overseas/ domestic promotion and publicity. It has 19 district offices and 8 tourist offices. Its aggressively promoted the State, and its sustained marketing promotions and campaigns have finally made the world sit up and take notice of the 'Many Worlds' that make up this vibrant state.

There are 3 government undertakings functioning under the Department of Tourism, namely Karnataka State Tourism Development Corporation (KSTDC), Jungle Lodges and Resorts (JLR) and Karnataka Exhibition Authority, Mysore.

About Chikkaballapur

Chikkaballapur is one of the recently formed districts in the state of Karnataka in India. Established in the year 2007, the social and economic growth of this place is worth mentioning. This place is also in the process of establishing several educational institutions including engineering and medical schools of good reputation. A town that's always given importance to agriculture the name of this place in Kannada means a town that uses small measure for its grains. This place is well known for grain, grape and silk cultivation.

The Tourism Department, Government of Karnataka, plays an active role and acts as a catalyst in placing Karnataka on the list of must-visit places in India through several policy formulation measures that cover Infrastructure development at tourism destinations, Skill development for better employment opportunities, Mega Circuit Development and Last mile connectivity. It also provides fiscal incentives that come from policy formulation like providing subsidies etc.

Detail View of Tourism of Chikkaballapur.

Chikkaballapur town is located in the Chikkaballapur district, about 57km from Bangalore, Karnataka. It is an important port link in North Bangalore area and an educational hub. Nandi Hills, Bhoga Nandeshwara, Vivekananda Waterfalls, Avalu betta and Yoga Nandeshwara temples are some of the famous places here providing opportunities of sight-seeing, rock climbing and exploring natural as well as man-made attractions. It is an important port link in North Bangalore area and an educational hub. The National Highway 7 passes through this district and also serves as its main road. This town is famous for its gold and silver trade and for its incense industry.

Table 2.38: Tourism places

Sl No	Place	Speciality
1	The Ranganatha Swamy temple	Brilliantly carved stone statue of Vishnu and there are scriptures written in original Vijaynagar way on a black stone.
2	Kaivara	Beautiful town located in a picturesque valley, According to the Indian epic, Mahabharata, the Pandavas stayed here, Bhima one of the Pandavas, killed the demon Bakasura in same place.
3	Bhoganandeeshwara Temple	Constructed around 806 A.D, by Rathnavalli of Bana Dynasty in the Dravidian style, such temples in the area are the Yoganandishwara temple and Sri. Arunachaleswara temple
4	Muddenahalli	Home town of Sri M.Visveswaraya (Sir.MokshaGondam Visveswaraya), the architect of modern Karnataka. The house of this genius is converted to a museum is a must visit.
5	Nandi Hills	Nandi Hill is also known as Nandidurga fort because of the fort built by the ruler Tipu Sultan. It takes about 7 km more to reach the top of the hill from the base. Nandi Hills also called Tipu Drop because Tipu Sultan dropped his prisoners as punishment.
6	Jaramadagu Falls: The Jog of Chikkaballapur	It is a miracle of Mother Nature that a drought prone district like Chikkaballapur is blessed with a lovely waterfall like the Jaramadagu, tough to believe that the place receives below average annual rainfall.

7	Vidurashwatha	Vidurashwatha is regarded as the Jallianwala Bagh of South India. On 25th April 1938 a group of villagers had gathered in Vidurashwatha to organize a Satyagraha as a part of the freedom struggle of the country. But, as just it had happened in case of Jallianwala Bagh, the police had fired indiscriminately at the unarmed villagers in this case too. It caused the death of 10 people. A memorial was erected at the location in memory of the people who lost their lives in the firing.
8	Gudibande Fort	Gudibande fort is a multi-level structure that was constructed about 400 years ago. The fort was built in a grand style by a local chieftain called Byre Gowda. According to the local legends Byre Gowda used to rob the rich people and help the poor with the looted money. The ruined fort has many secret passage built inside it. The fort had a perfect system of rainwater harvesting even 400 years ago. There are 19 rock ponds inside the fort that exists at different levels.
9	Skanda Giri	This ancient structure stands at an elevation of 1350 m on the Nandi Hill ranges. There are two caves in Skanda Giri which might also merit a peek while visiting the fortress. The two caves are yet to be properly explored, but locals say that one of them leads to the fort. The locals also believe that the cave has 6 samadhis or mausoleums.

Table 2.39: Issues that Occur in the Tourism Place.

SI No	Tourist Place	Types of Disaster
1	Nandi Hills	Water Problem
2	Aadi Narayan Betta	Water Problem
3	Gummanayakanpalya	Water Problem

CHAPTER -3

INSTITUTIONAL MECHANISM OF DISASTER

MANAGEMENT

3.1 Introduction

There are two distinct features of the institutional structure for Disaster Management in India. Firstly, the structure is hierarchical and functions at four levels - Centre, State, District and Local. Secondly, it is a multi-stakeholder setup, i.e., the structure draws involvement of various ministries, government departments and administrative bodies. The institutional structure for disaster management in India is in a state of transition after enactment of GoI's Disaster Management (DM) Act 2005. The National Disaster Management Authority has been established at the GoI level, and the SDMA at state and DDMA at district level are formalized. In addition to this, the National Crisis Management Committee, part of the earlier setup, also functions at the Centre. The nodal ministries, as identified for different disaster types of function under the overall guidance of the Ministry of Home Affairs (Nodal Ministry for disaster management). This makes the stakeholders interact at different levels within the disaster management framework.

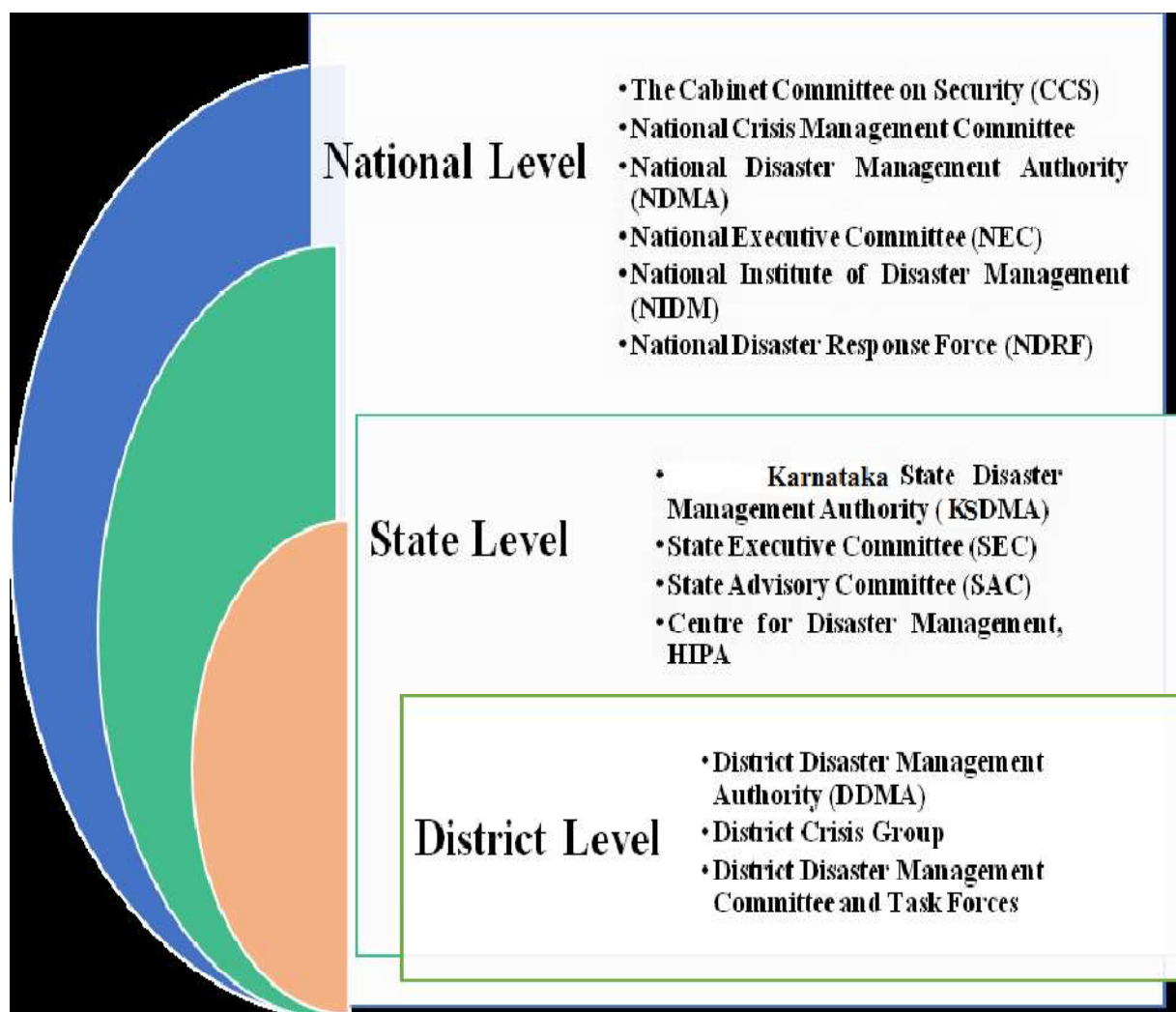


Figure 3.1: Three-Tire institutional mechanism of disaster management in India.

Disaster Management Act, 2005

DM Act provides for the effective management of disasters and for matters connected therewith or incidental thereto. It provides institutional mechanisms for drawing up and monitoring the implementation of the disaster management. The Act also ensures measures by the various wings of the Government for prevention and mitigation of disasters and prompts response to any disaster situation.

The Act provides for setting up of a National Disaster Management Authority (NDMA) under the Chairmanship of the Prime Minister; State Disaster Management Authorities (SDMAs) under the Chairmanship of the Chief Minister of the respective states; District Disaster Management Authorities (DDMAs) under the Chairmanship of Deputy Commissioners at the district level. The Act further provides for the constitution of different Executive Committee at national and state levels. Under its aegis, the National Institute of Disaster Management (NIDM) for capacity building and National Disaster Response Force (NDRF) for response/rescue purpose has been set up. It also mandates the concerned Ministries and Departments to draw up their own plans in accordance with the National Plan. The Act further contains the provisions for financial mechanisms such as creation of National Disaster Response Fund and State Disaster Response Fund to take up preparedness and mitigation measures and to respond to disasters effectively. The Act also provides specific roles to local bodies in disaster management.

3.2. Institutional Framework

3.2.1. National Level

The overall coordination of disaster management vests with the Ministry of Home Affairs (MHA). The Cabinet Committee on Security (CCS) and the National Crisis Management Committee (NCMC) are the key committees involved in the top-level decision-making with regard to disaster management. The NDMA is the lead agency responsible for the preparation DM plans and the execution of DM functions at the national level. Figure 3.1 provides a schematic view of the basic institutional structure for DM at national level. The figure represents merely the institutional pathways for coordination, decision-making and communication for disaster management and does not imply any chain of command. In most cases, state governments will be carrying out disaster management with the central government playing a supporting role. The central agencies will participate only on the request from the state government. Within each state, there is a separate institutional framework for disaster management at the state-level. The DM Act of 2005 provides for the setting up of NDMA at national level, and, the SDMA at the state level. The role, composition and the role of the key decision making bodies for disaster management at national-level are briefly described in the Table 3.1. The extent of involvement of central agencies will depend on the type, scale, and administrative spread of the disaster. If the situation requires the direct assistance from central government or the deployment of central agencies, the central government will provide all necessary support irrespective of the classification of the disaster.

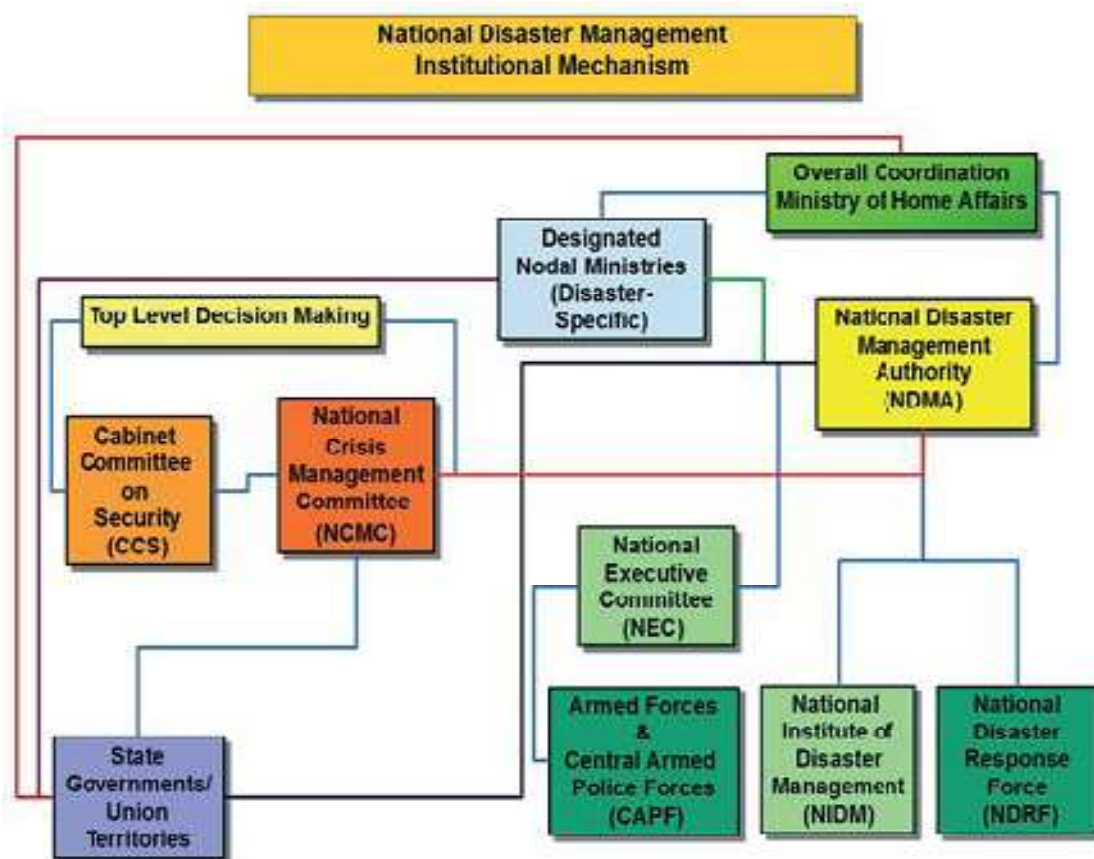


Figure 3.2: National-level disaster management - basic institutional framework.

Note: this represents merely the institutional pathways for coordination, decision-making and communication for disaster management and does not imply any chain of command (Source: NDMP-2009).

Table 3.1: Institutional Arrangements for Disaster Management & Roles & responsibilities

Agencies	Departments	Roles & responsibilities
<p>Cabinet Committee on Security (CCS)</p>	<p>Prime Minister, Minister of Defense, Minister of Finance, Minister of Home Affairs, Minister of External Affairs</p>	<ul style="list-style-type: none"> • Evaluation from a national security perspective, if an incident has potentially security implications. • Oversee all aspects of preparedness, mitigation and management of CBRN emergencies and of disasters with security implications • Review risks of CBRN emergencies from time to time, giving directions for measures considered necessary for disaster prevention, mitigation, preparedness and effective response

National Crisis Management Committee (NCCM)	Cabinet Secretary <ul style="list-style-type: none"> Secretaries of Ministries Departments and agencies with specific DM responsibilities 	<ul style="list-style-type: none"> Oversee the Command, Control and Coordination of the disaster response. Give direction to the Crisis Management Group as deemed necessary Give direction for specific actions to face crisis situations
National Disaster Management Authority (NDMA)	Prime Minister <ul style="list-style-type: none"> Members (not exceeding nine, nominated by the Chairperson) 	<ul style="list-style-type: none"> Lay down policies, plans and guidelines for disaster management Coordinate their enforcement and implementation throughout the country Approve the NDMP and the DM plans of the respective Ministries and Departments of Government of India Lay down guidelines for disaster management to be followed by the different Central Ministries,/Departments and the State Governments
National Executive Committee (NEC)	<p>Union Home Secretary Secretaries to the GOI in the Ministries/Departments of Agriculture, Atomic Energy, Defence, Drinking Water and sanitation, Environment, Forests and Climate Change, Finance (Expenditure), health and Family Welfare, Power, Rural Development, Science and Technology, Space, Telecommunications, Urban Development, Water Resources, River development</p> <p>The Chief of the Integrated Defence Staff of the Chiefs of Staff Committee, ex-Officio as members.</p> <p>Secretaries in the Ministry of External Affairs, Earth Sciences, Human Resource Development, Mines,</p>	<p>To assist the NDMA in the discharge of its functions;</p> <ul style="list-style-type: none"> Preparation of the National Plan. Coordinate and monitor the implementation of the National Policy. Monitor the implementation of the National Plan and the plans prepared by the Ministries or Departments of the Government of India. Direct any department or agency of the Govt. to make available to the NDMA or SDMA's such men, material or resources as are available with it for the purpose of emergency response, rescue and relief. Ensure compliance of the directions issued by the Central Government, Coordinate response in the event of any Threatening disaster situation or disaster. Direct the relevant Ministries / Departments of the GoI, the State Governments and the SDMA's regarding measures to be taken in response to any specific threatening disaster situation or disaster. Coordinate with relevant Central Ministries/

	Shipping, Road Transport and Highways & Secretary, NDMA are special	<p>Departments / Agencies which are expected to provide assistance to the affected State as per Standard Operating Procedures (SOPs).</p> <ul style="list-style-type: none"> • Coordinate with the Armed Forces, Central Armed Police Forces (CAPF), the National Disaster Response Force (NDRF) and other uniformed services which comprise the GoI's Response to aid the State authorities. • Coordinate with India Meteorological Department (IMD) and a number of other specialised scientific institutions which constitute key early warning and monitoring agencies. • Coordinate with Civil Defence volunteers, home guards and fire services, through the relevant administrative departments of the State Governments
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National Institute of Disaster Management (NIDM):

NIDM is a statutory organisation under the Disaster Management Act, 2005. Section 42 of Chapter VII of the Disaster Management Act, 2005 entrusts the institute with numerous responsibilities, namely to develop training modules, undertake research and documentation in disaster management, organise training programmes, undertake and organise study courses, conferences, lectures and seminars to promote and institutionalize disaster management, undertake and provide for publication of journals, research papers and books.

National Disaster Response Force (NDRF):

The National Disaster Response Force (NDRF) has been constituted under Section 44 of the DM Act, 2005 by up-gradation/conversion of eight standard battalions of Central Para Military Forces i.e. two battalions each from Border Security Force (BSF), Indo-Tibetan Border Police (ITBP), Central Industrial Security Force (CISF) and Central Reserve Police Force (CRPF) to build them up as a specialist force to respond to disaster or disaster like situations. NDRF has 12 Battalions across the country.

Objective of NDRF (National Disaster Response Force)

- To maintain 24 hours National & State level mobilization centers round the year.
- To make available emergency relief teams at short notice for search and rescue operations.
- To develop effective strategies and procedures to save more lives and reduce loss of life and property.
- To promote activities aimed at search and rescue operations in disaster prone areas.

10th battalion NDRF based at Guntur covers KARNATAKA.

Each Battalion has 6 Coys (3 Teams each): Total 18 teams.

Each Team comprises of 45 personnel.

A team of 50 personnel are stationed in Bangalore.

Capabilities of NDRF

- Earthquake and Collapsed Structure Response.
- Flood and Water Rescue.
- Cyclone, Landslide and other Natural Disasters.
- Medical First Aid.
- Chemical, Biological, Radiological and Nuclear emergencies (CBRN).
- Response to all Man Made Disasters.

3.3 State Level

3.3.1. State disaster Management Authority (SDMA)

As per the DM Act of 2005, each state in India shall have its own institutional framework for disaster management. The DM Act mandates the setting of a State Disaster Management Authority (SDMA) with the Chief Minister as the ex- officio Chairperson. Figure 3.3 provides schematic view of the typical state-level institutional framework. As per clause (b) of sub-section (2) of Section 14 of the Disaster Management Act 2005, the Karnataka State Disaster Management Authority under the chairperson of the Honorable Chief minister was constituted with the following persons as member of the KSDMA.

Table 3.2: SDMA Structure

Sl No	SDMA Members	Designation
1	Chief Minister of Karnataka	Chairman, Ex-officio
2	Minister for Revenue	Vice-Chairman
3	Minister for Home	Member
4	Minister for Agriculture	Member
5	Minister for Health and Family Welfare	Member
6	Minister for Rural Development and Panchayat Raj	Member
7	Minister for Public Works	Member
8	Minister for Animal Husbandry	Member
9	Minister for Housing	Member
10	Minister for Energy	Member
11	Chief Secretary (Chairman of SEC)	Chief Executive Officer
12	Secretary, Dept. of Revenue(Disaster Management)	Member Secretary

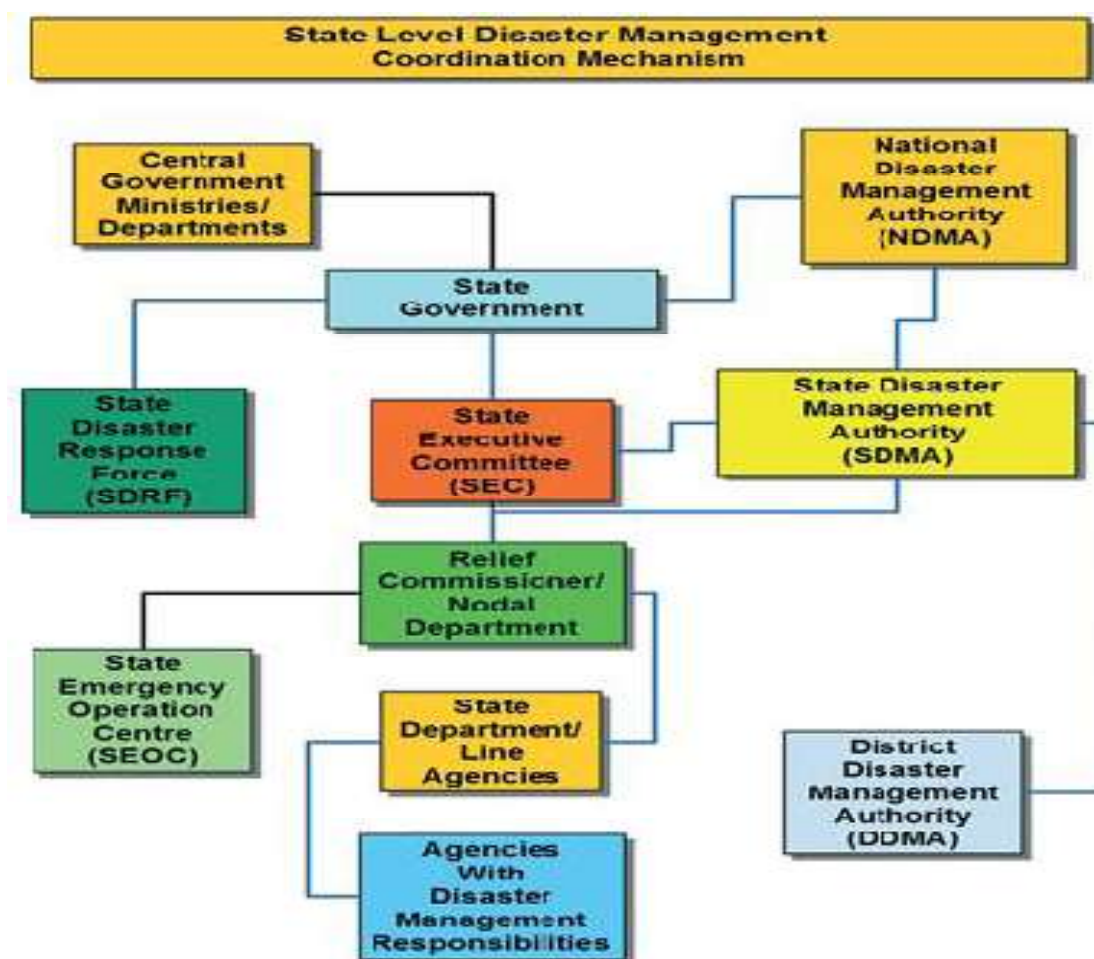


Figure 3.3: State-level disaster management - basic institutional framework.

Note: The figure represents merely the institutional pathways for coordination, decision-making and communication for disaster management and does not imply any chain of command (Source: NDMP-2009).

Role & Responsibility of SDMA

State Authority shall have the responsibility for laying down policies and plans for disaster management in the State.

- Lay down the State disaster management policy.
- Approve the State Plan in accordance with the guidelines laid down by the National Authority.
- Approve the disaster management plans prepared by the departments of the Government of the State.
- Lay down guidelines to be followed by the departments of the Government of the State for the purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance therefore.

- Coordinate the implementation of the State Plan.
- Recommend provision of funds for mitigation and preparedness measures
- Review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein.
- Review the measures being taken for mitigation, capacity building and preparedness by the departments of the Government of the State and issue such guidelines as may be necessary.
- The Chairperson of the State Authority shall, in the case of emergency, have power to exercise all or any of the powers of the State Authority but the exercise of such powers shall be subject to ex post facto ratification of the State Authority".

Cabinet Sub-Committee on Disaster Management

Cabinet Sub-committee on Disaster Management is formed under the Chairmanship of Revenue Minister. The Cabinet Sub-Committee meets regularly to take stock of situation especially drought situation gives necessary guidance and directions. The composition of SEC is as follows:

Table 3.3: Cabinet Sub-Committee on Disaster Management

Sl. No	Cab. Sub-Committee Members	Designation
1.	Minister for Revenue	Chairman
2.	Minister for Law and Parliamentary affairs	Member
3.	Minister for Rural Development and Panchayat Raj	Member
4.	Minister for Horticulture and Agriculture Marketing	Member
5.	Minister for Co-operation and Sugar	Member
6.	Minister for Agriculture	Member
7.	Minister for Food and Civil Supplies and Consumer Affairs	Member
8.	Minister for Minor Irrigation	Member

3.3.2 State Executive Committee

State Executive Committee (SEC) has been constituted under the chairmanship of Chief Secretary. SEC has the responsibility for coordinating and monitoring the implementation of the National Policy, the National Plan and the State Plan as provided under section 22 of the Act. The composition of SEC is as follows:

Table 3.4: State Executive Committee Structure in Karnataka State

Sl. No	SEC Members	Designation
1	Chief Secretary to Government of Karnataka	Chairperson, Ex-officio
2	Addl. Chief Secretary/Principal Secretary to the Government, Home Department	Member
3	Principal Secretary/Secretary to the Government, Rural Development and Panchayat Raj Department	Member
4	Principal Secretary/Secretary to the Government, Agriculture Department	Member
5	Director General of ATI	Member
6	Director KSNDMC	Member
7	Secretary to the Government, Revenue Department (Disaster Management)	Member Secretary
8	Director General of Police and Director General of Fire and Emergency Services, Home Guards, and Civil Defence	Permanent Invitee

Role & Responsibility of SEC

- Development of awareness campaign strategy and its implementation in the state.
- Development of Human Resource Plan for implementation thereof – development of training modules and material
- Preparation or updation of state disaster management plan to ensure that the issues of DRR have been addressed
- To initiating risk and vulnerability assessments and preparation of annual vulnerability and risk reduction reports.
- Laying down guidelines to integrate DRR into development process
- Follow up with various line departments to ensure that DRR issues have been addressed in their development plans.
- Preparation of Disaster Risk Reduction Projects in various sectors.
- Carrying out DRR Audit of the development plans prepared by line departments.
- Developing a Recovery framework for the state.
- Development of Knowledge and information sharing platform in DRR
- Conceptualizing and formulating projects and programmes as a part of the national initiatives/schemes.
- Preparation of Minimum Standards of Relief
- Preparation of Disaster Management Policy
- Preparation of Mitigation plans with respect to various hazards

- Coordinate and monitor the implementation of National Policy, National Plan and State Plan
- Lay down guidelines for the preparation of DMP by various departments
- Lay down guidelines for safe construction practices and ensure compliance thereof
- Provide necessary technical assistance or give advice to District Authorities.
- Lay down, review and update state level response plans and guidelines
- Ensuring the communication system is in order – setting up and strengthening of EOCs
- Ensuring the conduct of mock drills regularly.

State Disaster Response Force (SDRF)

Karnataka is raising 4 companies of SDRF. SDRF is a hybrid force which consists of personnel from state police, reserve police, and fire and emergency personnel. This force is raised exclusively for rescue and relief operations in times of disasters.

3.3.3. State Crisis Management Group (SCMG)

The crisis management groups at State level have been constituted. The State Crisis Management Group (SCMG) is headed by the Chief Secretary along with Relief Commissioner. This group comprises of senior officers from departments of revenue, relief, home, civil supplies, power, irrigation, water supply, agriculture, forests, rural development, health, planning, Public works, finance and Panchayat. The SCMG shall normally handle all crisis situation and advice and guide the District Crisis Management Group (DCMG) also. Its duty is to set establish a Emergency Operation Centre(Control Room) as soon as the disaster situation arises including all information on forecasting and warning of disasters.

3.3.4. State Emergency Control Room

There is a State Emergency Control Room in the Karnataka Disaster Management Secretariat, to provide Secretarial support to the Karnataka State Disaster Management Authority and also facilitate the functioning of the Authority. **1070 is the Helpline Line Number of State Emergency Control room which is operational 24 x 7.** This Control Room will receive the information from various sources. It shall be in constant contact with the District Disaster Control Rooms, Police Control Rooms. The State Emergency Control Room will receive the information, record it properly and put up to the State Disaster Management Authority instantly. Similarly the instructions passed by the State Authority shall be conveyed to the addressees and a record maintained to that effect.

3.4. District Level

The district administration is the focal point for implementation of all governmental plans and activities. The actual day-to-day function of administering relief is the responsibility of the District Magistrate who exercises coordinating and supervising powers over all departments at the district level. As per provisions in Chapter-IV of the DM Act, each State Government shall establish a District Disaster Management Authority for every district in the State with such name as may be specified in that notification.

3.4.1. District Disaster management Authority (DDMA), Chikkaballapur District

In general the role of District Disaster Management Authority, Chikkaballapur District is to plan, coordinate, implement and to carry out any other measures for disaster management in the district as per the guidelines laid down by National Disaster Management Authority (NDMA) and State Disaster Management Authority (SDMA). The DDMA is headed by the Deputy Commissioner with the elected representative of the local authority (Chairman Zila-Parishad) as the Co-Chairperson. DDMA acts as the planning, coordinating and implementing body for DM at the District level and take all necessary measures for the purposes of DM in accordance with the guidelines laid down by the NDMA and SDMA. It inter alia prepares the District Disaster Management Plan for the District and monitors the implementation of the National Policy, State Policy, National Plan, State Plan and the District Plan. DDMA also ensures that the guidelines for prevention, mitigation, preparedness and response measures lay down by the NDMA and SDMA are followed by all Departments of the State Government at the District Level and the local authorities in the District.

The DDMA acts as District Planning, coordinating and monitoring body in accordance with the guidelines lay down by the State Authority. As per Section 25 of the DM Act 2005 DDMA has been constituted for Chikkaballapur District as follows:

Table 3.5: DDMA Structure of Chikkaballapur District

Sl No	Name of the Officer	Designation of the Officer	Designation in DDMA	Contact Number	Email ID
1	Smt. R Latha, IAS.,	Deputy Commissioner, Chikkaballapur District	Chairperson (Ex Officio)	08156-277001 9482348499	deo.ckbpur@gmail.com
2	M B Chikka Narsimaiah	President, Chikkaballapur Zilla Panchayath, Chikkaballapur	Co- Chairperson (Ex Officio)	08156 – 277019 9448019588	zppresidentcbpur@gmail.com
3	Abhinav Khare, IPS.,	Superintendent of Police, Chikkaballapur District	Member (Ex Officio)	08156 – 277210 9480802501	spcbpura@ksp.gov.in
4	Fouzia Taranum B, IAS.,	Chief Executive Officer, Chikkaballapur Zilla Panchayath, Chikkaballapur	Member (Ex Officio)	08156 - 277011 9480859000	ceozpcbpur@gmail.com

5	Smt. Arathi Anand, KAS Senior Grade.	Addl. Deputy Commissioner, Chikkaballapur District	Chief Executive Officer of the District Authority (Ex Officio)	08156 – 277002 9449306346	deo.ckbpur@gmail.com
6	Dr. B M Yogesh Gowda	District Health Officer, Chikkaballapur District	Member (Ex Officio)	08156 – 277099 9449843046	dhochikballapur@gmail.com
7	Shivakumar	Executive Engineer Rural Water Supply Chikkaballapur District	Member (Ex Officio)	08156-272504 7975370083	eerdwsd.ckbr@gmail.com
8	Smt. Roopa L	Joint Director of Agriculture Chikkaballapur District	Member (Ex Officio)	08156 – 277005 8277930801	jdacbp@gmail.com

The roles and responsibilities of the DDMA, it's been elaborated in Section 30 of the DM Act, 2005.

- The DDMA will act as the planning, coordinating and implementing body for DM at the District level and take all necessary measures for the purposes of DM in accordance with the guidelines laid down by the NDMA and SDMA. It will, inter alia prepare the District DM plan for the District and monitor the implementation of the National Policy, the State Policy, the National Plan, the State Plan and the District Plan.
- The DDMA will also ensure that the guidelines for prevention, mitigation, preparedness and response measures lay down by the NDMA and the SDMA are followed by all the Departments of the State Government at the District level and the local authorities in the District.
- The DDMA will also ensure that the areas in the district vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are taken;
- The DDMA will also ensure that the guidelines for prevention of disasters, mitigation of its effects, preparedness and response measures as laid down by the National Authority and the State Authority are followed by all departments, lay down guidelines for prevention of disaster management plans by the department of the Government at the districts level and local authorities in the district.
- The DDMA will also monitor the implementation of disaster management plans prepared by the Departments of the Government at the district level;
- The DDMA will also ensure lay down guidelines to be followed by the Departments of the Government at the district level for purposes of integration of measures for prevention of disasters and mitigation in their development plans and projects and monitor the implementation of the same,

- The DDMA will review the state of capabilities and preparedness level for responding to any disaster or threatening disaster situation at the district level and take steps for their up gradation as may be necessary,
- The DDMA will organise and coordinate specialised training programmes for different levels of officers, employees and voluntary rescue workers in the district, facilitate community training and awareness programmes for prevention of disaster or mitigation with the support of local authorities, governmental and non-governmental organisations, set up, maintain,
- The DDMA will review and upgrade the mechanism for early warnings and dissemination of proper information to public, prepare, review and update district level response plan and guidelines.
- The DDMA will also coordinate response to any threatening disaster situation or disaster, coordinate with, and provide necessary technical assistance or give advice to the local authorities in the district for carrying out their functions,
- The DDMA will examine the construction in any area in the district and issue direction the concerned authority to take such action as may be necessary to secure compliance of such standards as may be required for the area;
- The DDMA will further 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 establish stockpiles of relief and rescue materials or ensure preparedness to make such materials available at a short notice.
- The DDMA will encourage the involvement of non -governmental organisations and voluntary social-welfare institutions working at the grassroots level in the district for disaster management ensure communication systems are in order, and disaster management drills are carried out periodically.

3.4.2 Control Room, Chikkaballapur District

It has been observed that at the time of a calamity/disaster, communication services are the first to go out of order. **The Control Room reachable round the clock through toll free number -1077**, Control Room plays a vital role in Emergency Operation activation and place multi-mode and multi-channel communication system during and post emergency situation. It coordinates the flow of information with respect to activities associated with relief operations. Additional District Magistrate is the nodal officer for the Control room and all operations of Disaster management in the District.

District Emergency Operation Centre (DEOC), Chikkaballapur District could not be able to establish all basic and advance communication and IT infrastructure in constraint of limited space. The design, layout, equipment and operation of the DEOC, Chikkaballapur District as per the EOC Manual prepared at the State level by Karnataka State Disaster Management Authority (KSDMA), National Disaster Management Authority (NDMA), Delhi (India) would be established according to essence mentioned above in 2020 in District Complex.

3.4.3. Role and Objectives of Control Room, Chikkaballapur District

Control Room plays a vital role in Emergency Operation activation in the district and has following roles and objectives during occurrence of any disaster and normal time,

- It acts as a control room that would be the nerve centre for the fatal incident and disaster management in the district.
- To monitor, coordinate and implement the actions for disaster risk management within the district.
- Activate the Emergency Support Function (ESF) in the event of a disaster and coordinate the actions of various line departments/ agencies.
- Encourage each line and stakeholder department within the districts to prepare their area-specific plans in terms of their vulnerability and proneness to specific disasters and receive reports on preparedness from their side.
- Serve as a data bank to all line departments and the planning department with respect to risks and vulnerabilities and ensure that due consideration is given to mitigation strategies in the planning process.
- Maintain a web-based inventory of all resources available with all concerned department in the district and update it through the India Disaster Resource Network (IDRN).
- Receive appropriate proposals on preparedness, risk reduction and mitigation measures from various departments/agencies and place the same for consideration of the Chief Secretary through Deputy Commissioner's approval.
- Monitor preparedness measures undertaken at the district levels including simulation exercises undertaken by various departments.
- Ensure from each line departments that all warning, communication systems and instruments are in working conditions. Upgrade the Disaster Management Action according to the changing scenario.
- Monitor preparedness measures and build the capacity on the disaster risk management training, workshops and awareness generation programme.
- Maintain a data base of trained personnel and volunteers who could be contacted at any time.

3.4 Incident Response System (IRS)

Incident Response System is a combination of facilities, logistic, personnel, finance, operation and communication operating within a common organizational structure, with responsibility for the management of assigned resources to accomplish the objectives effectively pertaining to an incident. The IRS organization functions through Incident Response Team (IRT s) in the field. The District Magistrate (DM) as the chairman of the DDMA is a Responsible Person (RO) as overall in charge of the incident response management. If needed, he can delegate his functions to any other responsible officer or appoint another senior officer as an incident commander if the disaster is in more than scenario.

Table 3.6: Responsibilities of the IRS sections

Responsible Officer	Major responsibilities	Primarily responsible for effective response
Incident commander	Overall In-charge of the Incident Response Team & its Effective Functioning.	<ul style="list-style-type: none"> • To create and integrate communication flow during emergency period • To manage incident scene, and report through integrated and coordinated command • To facilitate procedures and protocols according to ESF Departments within District as well as State and Central Government. • To put the communication system in place to receive, record, acknowledge incoming and outgoing information of any form during the disaster <ul style="list-style-type: none"> • To manage resources as per their availability such as– distribution of relief material with ESF agencies required during emergency etc. • Monitoring functional areas during and post disaster phase
Operations Sections	Direct & supervise all tactical actions.	<ul style="list-style-type: none"> • Activates and supervises organization elements in accordance with the Incident Action Plan and directs its execution • Determine need and request additional resources • Review suggested list of resources to be rebased and initiate recommendation for release of resources • Report Information about special activities, events or occurrences to Incident Commander • Maintain Unit / Activity details
Planning Sections	Collect/Analyse data, Workout need of required resources and prepare action plan for incident/Disaster of the district.	<ul style="list-style-type: none"> • Prepare alternative strategies and control of operations, • Supervise preparation of Immediate Action Plan (IAP) • Provide input to IC and Operation in preparation of IAP • Reassign of service personnel already on site to other positions as appropriate • Determine need for any specialized resources in support of the incident
Finance Section	The Finance section is basically of the administration and managing finance.	<p>The major roles of this section include managing (1) Incident Command Post, (2) Staging Areas, (3) Base, and (4) Camps. The major functions are:</p> <ul style="list-style-type: none"> • Minimize excessive communication of resources calling for assignment. • Allow IC/OPS to properly plan for resources use and allow for contingencies.

<p>Logistics Section</p>	<p>Provide logistic support, procurement & cost accounting</p>	<ul style="list-style-type: none"> • Compile and display incident status information • Oversee preparation and implementation of Incident Demobilization Plan. • Incorporate Plans (e.g. Traffic, Medical, Site Safety, and Communication) into IAP. • Other Functions include, briefing on situation and resource status, setting objectives, establishing division boundaries, identifying group assignments, specifying. • Tactics/safety for each division, specifying resources needed by division, specifying operations facilities and reporting locations – plot on map and placing resource and personnel order. • Assign work locations and tasks to section personnel. • Identify service and support requirements for planned and expected operations. • Coordinate and process requests for additional resources. • Provide input to / review communication plan, traffic plan, medical plan etc. • Recommend release of unit resources. • Maintain Unit/ Activity details
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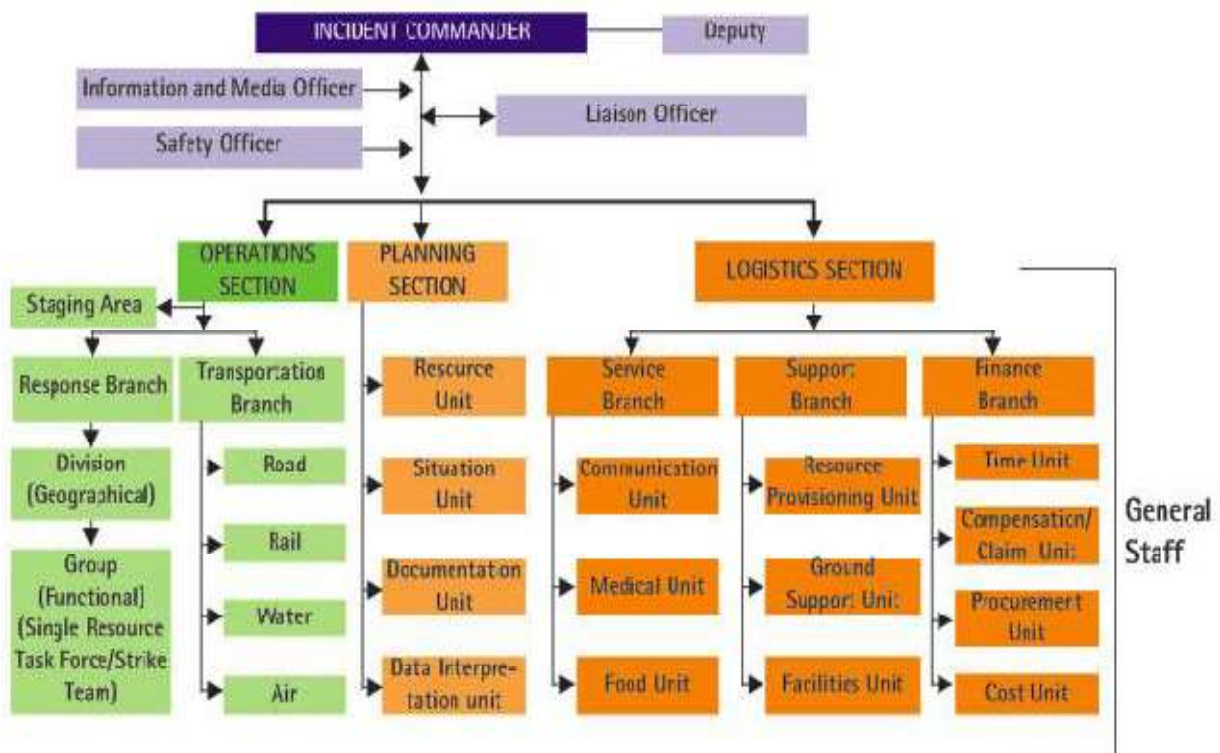


Figure 3.5: General flowchart of IRS in District

3.5 Civil Defence:

Civil Defence is an Organisation of the people who fight to mitigate the effect of disasters both man-made and natural disasters on civilian life. The organization strives to save life, to minimize damage to property, and restore normalcy as soon as possible. It consists of highly skilled professional who render their service without any monetary benefits. They are expanding their bases in most of the districts. Dr. P.S.R. Chethan is the Chief Warden of civil defence for Bangalore Region. Phone number is annexed with this plan.

Disaster Management Support from ISRO

Department of Space (DOS) has embarked upon the Disaster Management Support (DMS) Programme as a prime application activity, to reach the benefits of the aerospace technology for the resolves of disaster management in the country. Various centres of ISRO/DOS are involved in implementing different components of DMS Programme, which is centrally coordinated by DMS Programme office at ISRO HQ. The Decision Support Centre (DSC) established at National Remote Sensing Agency (NRSA) is the single window delivery point for aerial and space enabled inputs together with other important data layers for its use in disaster management of pre-disaster, during-disaster and post-disaster phases. For online transfer of space enabled inputs to the State and Central government user departments, a VSAT based satellite communication network has been put in place. At present, DSC is addressing five natural disasters viz., Flood, Cyclone, Agricultural Drought, Forest Fire, Earthquake and Landslide. The operations are Disaster information collection, Data Acquisition, processing, and transfer to DSC, Data analysis, Output Generation & Dissemination to user via VSAT, FTP, Web page, E-mail etc.

On receiving information from the identified nodal forecasting organization or Ministry of Home Affairs (MHA), action for acquisition of space and airborne data is initiated. Depending upon the satellite pass, cameras are tilted and data is acquired and analysed. First level information thus derived from space data is made available to MHA and Central & State user agencies. The information is monitored on a regular basis for damage assessment. DSC has provision to mobilize aircraft equipped with Synthetic Aperture Radar (SAR), Air-borne Laser Terrain Mapping unit (ALTM) and High Resolution Digital Camera for obtaining aerial data. DSC aims to build a comprehensive geo-spatial database for the disaster vulnerable regions in the country. Using the available geospatial data sets in centralized data server, DSC is capable to develop support tools for decision making. Besides web hosting, satellite based connectivity with the National and State Emergency Operation Centres is established for fast dissemination of space enabled services. DSC is working on preparation of maps showing hazard zones. DSC is working on space inputs for long-term disaster mitigation and rehabilitation. DSC provides support to the International Charter on Space and Major Disasters. Bhuvan portal developed by ISRO gives 2D and 3D images of disaster prone areas.

3.6. Forecasting and warning agencies

The timely flow of early warning system from the source to the targeted stakeholder is very important. The dissemination of early warning should be institutionalized so that it reaches the stakeholders in minimum possible time by recognized means of communication. In the

following table, the name of the Nodal agencies of the Government of India mentioned which are mandated for providing early warning of different natural hazards that may strike within the state of Chikkaballapur District

Table 3.7: Forecasting and warning agencies, their contact number and other details

Disaster	Nodal Ministry/ Department	Early Warning/ Forecasting Agencies	Contact Details	Emil/ Webpage/ Remarks
Floods	Min. of Water Resources (MoWR)	<ul style="list-style-type: none"> ➤ N- (CWC) Central Water Commission ➤ S-IMD ➤ D -Irrigation and Public Health Dept./ DEOC 	N-011-26187232 S- 080-22244419 22235725, D-08158- 270427	http://india-water.gov.in/ffs/ http://www.imd.gov.in/pages/main.php mc.bng@imd.gov.in deo.ckbpur@gmail.com
Droughts	Min. of Agriculture and Farmers Welfare (MoAFW)	<ul style="list-style-type: none"> ➤ N- IMD ➤ S – State Regional IMD office ➤ D –Agriculture and DEOC 	N-011-24619167 S- 080-22244419 22235725, 22235733, D-08158- 263136	http://www.imd.gov.in/pages/main.php mc.bng@imd.gov.in deo.ckbpur@gmail.com
Earthquake/ Tsunami	Min. of Earth Sciences (MoES)	<ul style="list-style-type: none"> ➤ N- IMD ➤ S SDMA/SEOC/KSN DMC ➤ INCOIS ➤ D- DDMA/ DEOC 	S-1070/ 080-22253707 D-1077	http://www.imd.gov.in/pages/earthquakeprelim.php secy.dm@gmail.com deo.ckbpur@gmail.com
Forest Fire (FF)/ Domestic Fire (DF)	Min. of Environment , Forest sand Climate Change (MoEFCC)	<ul style="list-style-type: none"> ➤ N-Forest Survey of India/ISRO (for FF) ➤ S- SEOC/Forest Deptt. (For FF) ➤ D- Department of Forest (For FF) ➤ D- Department of Fire Services (Domestic Fire) 	S-1070/080- 22032995 D-08158- 263198, 08158 - 274322	https://earthdata.nasa.gov/earth-observation-data/near-real-time/firms/active-fire-data secy.dm@gmail.com dfochkblpr@ksfes.gov.in deo.ckbpur@gmail.com
Landslides	Min. of Mines (MoM)	<ul style="list-style-type: none"> ➤ N- GSI > ➤ S- Regional office of GSI ➤ DEOC/DDMA/PW D 	D-1077 S-1070/080- 22032995	http://www.portal.gsi.gov.in/
Chemical and Industrial	MoEFCC/ Ministry of Industries	<ul style="list-style-type: none"> ➤ D- Deptt. of Industries ➤ D- Department of labour and employment 	S- 080-26531200 D-08158- 273303	deo.ckbpur@gmail.com
Road	Min. of	<ul style="list-style-type: none"> ➤ D- Police 	D-08158-	helpdesk-sarathi@gov.in

Accidents	Road Transport and Highways (MoRTH)		270446 D-08158 - 277210	sp.cbpura@ksp.gov.in deo.ckbpur@gmail.com
Aircraft Crash	Ministry of civil aviation	➤ N-Airports Authority of India (AAI)	N-011 2463 2950 S-1070 080-22253707 D-1077	deo.ckbpur@gmail.com tn.dwivedi57@nic.in secy.dm@gmail.com
Stampede	Ministry of Revenue	➤ D- District Administration/DEO C	S-1070 D-1077	deo.ckbpur@gmail.com
Dam / Reservoir Burst	Min. of Water Resources	➤ D- Hydro power project, I&PH, District Administration	D-1077	egov-mowr@nic.in deo.ckbpur@gmail.com
Epidemics	Ministry of - Health and Family Welfare	➤ D- Health and Family Welfare Department	D-08158- 277099	dhochikballapur@gmail.com deo.ckbpur@gmail.com
Human Induced Hazards	NDMA	➤ D- Karnataka Police	D-08158 - 277210	Secretary@ndma.gov.in controlroom@ndma.gov.in sp.cbpura@ksp.gov.in
Hydro-meteorological (High Wind, Heat Wave, etc.)	Min. of Agriculture and Farmers Welfare (MoAFW)	➤ N- IMD/INCOIS ➤ S- SEOC ➤ D- DEOC	S-1070 080-22253707 D-1077	http://www.imd.gov.in/pages/allindiawxfcbulletin.php

Receipt of Early Warning and Dissemination

NEOC, MHA and the SEOC receive early warning and assimilate and disseminate information in terms of issuing alerts when a disaster is likely to occur or is imminent. The levels of alert for each disaster type are given in the SOPs. On receipt of early warning, contingency measures are activated, these measures include

- Communication of early warning.
- Continuous situation assessment.
- Planning and implementing response.

KSNDMC In Karnataka apart from the above nodal bodies Karnataka State Natural Disaster Monitoring Center (KSNDMC) issues alerts and early warning. Brief profile of KSNDMC as follows

3.7 Karnataka State Natural Disaster Monitoring Center (KSNDMC)

KSNDMC is a state-of-art center natural disaster monitoring which is a registered society of Government of Karnataka with a mandate to achieve following objectives.

- Hazard mapping and vulnerability studies.
- Strengthening of information technology for Natural Disasters Management.
- Monitoring and impact assessment of natural hazards.
- Human Resource Development mainly by imparting training.
- Natural Disaster early warning system.



- Karnataka State has the distinction of being first in the country to establish Drought Monitoring Cell (DMC) in 1988 as an institutional mechanism to monitor the Drought.
- Activities broadened to also include monitoring other natural disasters and renamed as Karnataka State Natural Disaster Monitoring Centre (KSNDMC) in 2007.
- Executive Committee chaired by Principal Secretary, Dept., of IT, BT and S&T with Principal Secretary, Revenue as Vice Chairperson – Members from line depts., and scientific organizations.
- Governing Body headed by the Chief Secretary with Development Commissioner as Vice President – Members comprising line departments and Scientific organizations.
- The Master Control Facility of KSNDMC is established in 10 acres and at Major Sandeep Unnikrishnan Road, Near Yelahanka-Attur Layout in Bangalore.
- The master control centre is operational 24hrsx7daysx365days providing information, reports, advisories to the community, Research Organizations and the Government.

- KSNDMC has been serving as a common platform to the various response players in the field of natural disaster management by providing timely proactive science and technology inputs.
- The Centre provides inputs to the farming community, agriculture and horticulture based sector, fisherman, transport sector, power and electricity sector, State and District level Disaster Management Authorities in Karnataka through state of the art natural hazards monitoring sensors, information and communication system.

Status of progress in installation of monitoring sensors and real time data base management:

- GPRS enabled and solar powered Telemetric Rain gauges are established and operational at 2565 stations in Karnataka.
- Telemetric Weather Monitoring Stations installed and operational at 747 stations in Karnataka.
- VSAT enabled and solar powered Permanent Seismic Monitoring stations installed and operational in the State.
- Development and calibration of Hobli level weather forecast mathematical model has been initiated in collaboration with CSIR – CMMACS, GoI.
- Information, reports, advisories being made available through mobile phones, e-mail and web portal to DC's, CEO's, HQA's, AC's, Tahsildars, JD's (Agri), AD's (Agri), Agri Officers, SP's, Raitha Samparka Kendras, farmers facilitators under Bhoochethana Program, Krishi Vigyana Kendras (KVKs), Universities, Civil Defense, Homeguards, Print and Electronic Media.
- An Interactive Help-Desk called Varuna Mitra has been functioning 24x7x365 days to give advisories to farmers.



GPRS enabled Solar Power Telemetric Rain Gauge



GPRS enabled Solar Power Telemetric Weather Station

Master Control Centre (MCC): It is established centrally located MCC at Bangalore to receive and analyse data, received on near real time, from:

- Telemetric rain gauges.
- Satellite and GPRS linked weather stations.
- Doppler Weather Radar.
- Storm surge stations.
- Earth quake monitoring stations.

Gauribidanur Radio Observatory

Concurrent with international efforts to monitor nuclear explosions and distinguish them from natural earthquakes, the Atomic Energy Establishment, Trombay (later renamed as BARC) set-up a seismic array station at Gauribidanur in 1965, in collaboration with the U. K. Atomic Energy Authority (UKAEA) under the guidance and inspiration of the late Dr. Homi Bhabha. The Gauribidanur Radio Observatory is a radio telescope observatory. It is operated jointly by Raman Research Institute and the Indian Institute of Astrophysics. The observatory has been in operation since 1976.

The Gauribidanur Observatory has a 6-meter radio telescope (GEETEE), a radio heliograph (GRH), a high resolution radio spectrograph and a gravitational laboratory. The station is about 70 km north of Bangalore and 10 km west of the Gauribidanur Township. Gauribidanur Seismic Array Station celebrated its Silver Jubilee and to mark the occasion the Bhabha Atomic Research Centre.

The Gauribidanur Radio Heliograph (GRH) is a radio heliograph used to obtain two dimensional pictures of the outer solar corona at frequencies from 40-150 MHz. The GRH has been operating since 1997.

KSNDMC provides Scientific and Technology based inputs and assistance proactively to Line departments of Government of Karnataka:

- ❖ **The Department of Revenue, GoK:** This Centre renders support in identifying, mapping vulnerable areas, **providing alerts and early warning to the revenue functionaries up to Grampanchayath level.** The areas affected by Drought, Floods and other natural hazards are identified and mapped on day-to-day / event based. KSNDMC provides the services to the Revenue department on day-to-day basis and has been successful in integrating with the needs of Revenue Department.
- ❖ **The Department of Agriculture, GoK:** The KSNDMC participates in the Video-Conference conducted every week and provides information about Rainfall, Temperature, Relative Humidity and Moisture Stress along with weather forecast at Hobli-level. The inputs provided are enabling Agriculture Department to plan their activities and also to evolve contingency plans. The customized information is being provided to the functionaries of the department up to Grampanchayath level.
- ❖ **The Department of Water Resources, GoK:** The KSNDMC also provides information on anticipated flow in the major river systems in the state.
- ❖ **The Department of Rural Development & Panchayath Raj, GoK:** Providing information on the health of the rural drinking water supply by monitoring and assessing Bore-well and Overhead Tank storages.

Chapter 4

Hazards, Vulnerability and Risk Assessment (HVRA)

4.1 Introduction:

Understanding of the risks and vulnerability of the community and likely extent of population and areas of concern based on past history of disasters is the first step in planning. This basically means carrying out a risk assessment and vulnerability analysis. This resulting in identification of areas vulnerable to different disasters which can be indicated on the vulnerability maps. Risk and Vulnerability analysis should be done at the local levels by involving the local community. Map showing vulnerable areas to different disasters need to be prepared and updated from time to time for easily identification of vulnerable areas.

Risk analysis is carried out to reduce (a) casualties from potential disasters, (b) disruption to the economic and social activities, and to mainstream (c) the culture of safety in all activities undertaken by the governments. It has become part of decision making in sectors such as health care, environment, physical infrastructure systems, etc.

Table 4.1 Types of Hazards, Risk and Vulnerability

Sl No	Hazard Risk	Hazards	Who/ What is at risk	Vulnerability
1	High Risk Hazards	Earthquake	Human Life, House and property, Slums, Community Infrastructure	High
		Fire	Human Life, House and Property	
		Terrorist Attack	Human Life, House and Property	
		Building Collapse	Human Life, House and property, Slums, Community Infrastructure	
		Chemical Disaster Biological Disaster Radiological Disaster Nuclear Disaster	Human Life Environment & Eco-system Economy	
2	Moderate Risk Hazards	Flood	Human Life, Transport, Houses, Constructions, Drinking Water, Equipments, Educational Institutions , Slum dwellers, Vulnerable Groups	Moderate
		Drought	Human Life, Drinking Water, Agriculture.	
		Epidemics	Human Life, Animals, Vulnerable sections	
		Road Accidents	Human Life, Road Side	
		Rail Accidents	Human Life, Rails, DMRC Infrastructure,	
3	Low Risk Hazard	Religious riots	Human Life, Community Infrastructure,	Low

4.2 Chikkaballapur Proneness to Different Disasters:

Chikkaballapur district is less prone to most of the natural disasters except drought. There are instances of many man-made disasters such as incidents of fire, road/rail accidents.

Table 4.2: Proneness to Different Disasters

Type of hazard	Time of occurrence	Potential impact	Vulnerable area
Drought	Sep – May	Crop loss, scarcity of drinking water, fodder, etc. Depletion and contamination of ground water with fluoride and nitrate ions.	Entire Chikkaballapur district.
Earthquake	Any time	Loss of life and damage to dam, property, houses, buildings, etc.	Entire district.
Floods(as there are no perennial rivers in Chikkaballapur district, probability of flooding due to river is almost nil) chances of urban flooding are high due to encroachment of water bodies and drains)	June – August or whenever there is a heavy downpour	Damage to infrastructure such as roads, houses, culverts, and epidemic etc.	Along the lake beds, slums, and along encroached drains.
Heavy rainfall	June - August	Loss of crops.	Entire district.
Cyclonic indirect effect	June – Aug	Heavy rainfall, loss of crops	Entire district.
Fire accident	Any time of the year	Loss of life and property	Entire district.
Industrial Accidents	Any time of the year	Loss of property and life	Areas where industries are located
Road Accidents	Any time of the year	Injury and death	Entire district (NH and SH)
Train Accidents	Anytime of the year	Injury and death	Unmanned level crossing
Man-animal conflicts	October-May	Loss of crops, injury and death	Chintamani, Gowribidanur, Gudibande, Shidlagatta
Ground water contamination(high fluoride content) due to over-exploitation of ground water	Throughout the year	Skeletal and dental fluorosis, kidney damage	Whole of Chikkaballapur district especially in Bagepalli Taluk

Illegal Sand Mining and quarrying	Throughout the year	Destruction of ecosystem, depletion of groundwater and water contamination	Whole of Chikkaballapur District
Biological disasters Biological disasters(epidemic like plague, dengue, etc; pest attacks; endemic animal diseases)	Any time of the year, predominantly in summer and rainy seasons.	Hospitalization, death, and economic loss.	Whole of Chikkaballapur district
Building Collapse	Any time of the year	Loss of life and damage to property, houses, buildings, etc.	Whole of Chikkaballapur district
Uncovered borewell /abandoned borewell(fall risk)	Any time of the year	Death/injury	Whole of Chikkaballapur district

4.3 Occurrence of Disasters in Chikkaballapur District:

Table 4.3: Disasters that occurred in the district in decade

Disasters	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Earthquake	-	-	-	-	-	-	-	-	-	-	-	-
Floods	-	-	-	-	-	-	-	-	-	-	-	-
Cyclones	-	-	-	-	-	-	-	-	-	-	-	-
Drought	Yes	Yes	-	Yes	Yes	Yes	Yes	Yes	Yes	-	Yes	Yes
Epidemics	-	-	-	-	-	-	-	-	-	-	-	-
Food poisoning	-	-	-	-	-	-	-	-	-	-	Yes	Yes
Industrial accidents	-	-	-	-	-	-	-	-	-	-	-	-
Fire	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Road/rail accidents	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Building collapse	-	-	-	-	-	-	-	-	-	-	-	-
Bomb blasts	-	-	-	-	-	-	-	-	-	-	-	-
Pests	-	-	-	-	-	-	-	-	-	-	-	-

4.3 Seismic Zoning map:

The Geological Survey of India (GSI) first published the seismic zoning map of the country in the year 1935. With numerous modifications made afterwards, this map was initially based on the amount of damage suffered by the different regions of India because of earthquakes. Color coded in different shades of the color red, this map shows the four distinct seismic zones of India. Following are the varied seismic zones of the nation, which are prominently shown in the map:

- Zone - II: This is said to be the least active seismic zone.
- Zone - III: It is included in the moderate seismic zone.
- Zone - IV: This is considered to be the high seismic zone.
- Zone - V: It is the highest seismic zone.

Chikkaballapur falls under Zone II which is least active seismic zone.



Figure 4.1: Seismic Zone Map of India

4.4 Seasonality of Hazards in Chikkaballapur district

Table 4.4: Seasonality of Hazards

Type of Hazard	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Drought	✓	✓	✓	✓	✓						✓	✓
Vector Borne diseases like Malaria, Dengue, and Chikungunya, etc.						✓	✓	✓	✓	✓	✓	✓
Water borne diseases like Acute Diarrheal Diseases, gastroenteritis, etc.	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Fire	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Pest attacks				✓	✓	✓	✓	✓	✓			
Accident	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Earthquake	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cyclone												
Cattle disease												

4.5 Risk Analysis of Drought:

Karnataka has an area of 192 204 km²; of this nearly one third is constantly affected by drought. Based on various factors responsible for causing drought conditions, the Chikkaballapur district has been identified as one of the chronically drought prone areas.

Drought is a normal, recurring feature of climate. In contrast to aridity, which is a permanent feature of climate, drought is a temporary occurrence and is a direct consequence of a reduction in the amount of precipitation received over an extended period of time, usually a season or more. It results in a water shortage for some activities, groups or environmental sectors (Wilhite and Svoboda, 2000).

Meteorological drought is defined by a precipitation deficiency over a pre-determined period of time, while agricultural drought is defined more commonly by the lack of availability of soil moisture to support crop and forage production. Hydrological drought is defined by deficiencies in surface and subsurface water supplies relative to average conditions. Socio-economic drought reflects the relationship between the supply and demand for some commodity or economic good that is dependent on precipitation (UN-ISDR, 2009).

Drought may occur due to want of rain at proper time or sometimes heavy rainfall may damage the crops. Cyclonic effect in the eastern coast and Bay of Bengal may cause excessive rainfall which would result in crop damage and other loss.

Table 4.5: Economic risk analysis of drought

	Direct Impact	Indirect Impacts
Costs and losses to agricultural producers	<ul style="list-style-type: none"> • Annual and perennial crop losses. • Damage to crop quality • Reduced productivity of cropland. • Insect infestations • Plant disease • Wildlife damage to crops 	<ul style="list-style-type: none"> • Income loss to farmers because of reduced crop yields. • Increased irrigation costs • Cost of new or supplemental water resource development, e.g., tankers, wells, and pipelines • Long-term loss of organic matter • Loss to industries directly dependent on agricultural production, e.g., food processors • Increased commodity prices
Costs and losses to livestock producers	<ul style="list-style-type: none"> • Reduced productivity of range land, animal carrying capacity • Increased travel time for grazing • Decreased stock weights and reduced milk production • Increased livestock diseases • Closure/limitation of public lands to grazing • Range fires 	<ul style="list-style-type: none"> • Forced reduction of foundation stock (seeds) • High cost/unavailability of feed or water for livestock • Reductions in livestock market prices • Increased feed transportation costs • Disruption of reproduction cycles (delayed breeding, more miscarriages) • Increased predation and pouching
Costs and losses to industry and urban activities	<ul style="list-style-type: none"> • Higher cost of water and sanitation • Decrease in public water supplies • Impacts on transportation • Higher cost/lower availability of hydro-electric power 	<ul style="list-style-type: none"> • Higher cost or unavailability of water for horticulture, agri-food processing and value added manufacturing • Impaired productivity of forest land and reduced timber production • Increased pollution, e.g., dust • Increased diseases • Reduction in tourism revenue, e.g., wildlife • Strain on financial institutions, e.g., greater credit risks

Reduced quality of life	<ul style="list-style-type: none"> • Increased workload for women in collecting fuel-wood and water • Reduced levels and variety of food sources • Increased government expenditure on relief 	<ul style="list-style-type: none"> • Increased poverty • Migrations (rural to urban areas) • Reduction or modification of recreational activities • Disruption of cultural practices and belief/ value system • Loss of cultural sites and aesthetic values
Increased conflicts		<ul style="list-style-type: none"> • Water user conflicts • Political conflicts • Management conflicts • Other social conflicts, e.g., scientific and media-based
Health	Physical and emotional stress. anxiety, depression and loss of security	<ul style="list-style-type: none"> • Depletion of ground water will increase fluoride and nitrate ions resulting in fluorosis and lower absorption of proteins which leads to mal-nutrition. • Loss of human life • Increased respiratory ailments. • Increased disease caused by wildlife concentrations

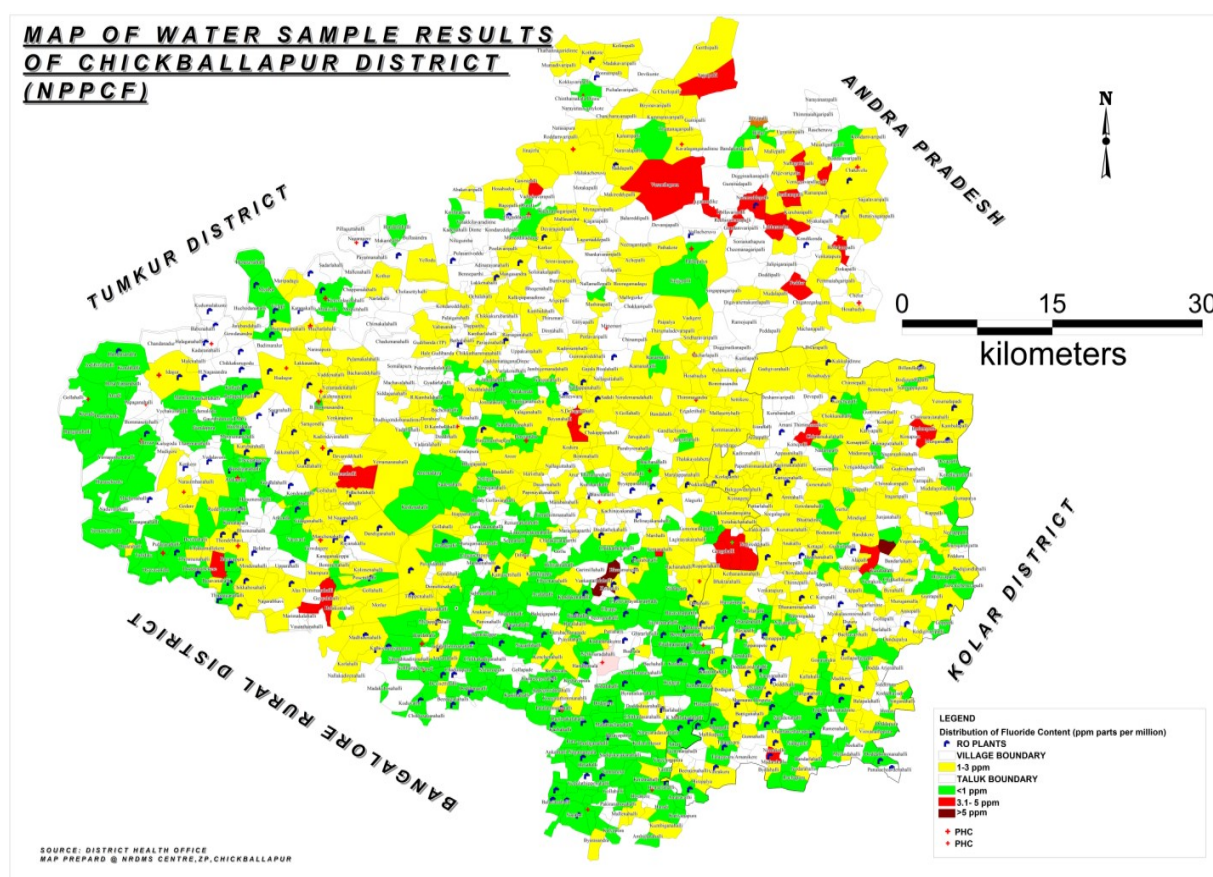
4.5 Risk of Ground water Contamination:

GROUND WATER ISSUES AND PROBLEMS:

Chikkaballapur district has no perennial water sources for both agriculture and drinking water purposes and its only source of water is ground water. Ground water plays an important role in the economy of the farmers of the Chikkaballapur district. Agriculture was mainly dependent on irrigation facilities by numerous widely distributed tanks during earlier days. Due to drought situations farmers are now mainly depending upon borewells for their agriculture needs. As per CGWB report, there is **no scope for further ground water development**. All the taluks except Bagepalli are over exploited.

Fluoride concentration of more than 1.5 mg/l. is reported from many parts in the district especially in Bagepalli district. However, some of the exploratory borewells also have recorded fluoride concentrations of 2mg/l. and above especially in Bagepalli Taluk.

Implication of high fluoride content: Natural contamination of groundwater by fluoride causes irreparable damage to plants and human health. High oral intake of fluoride results in **Physiological disorders, skeletal and dental fluorosis, thyroxine changes and kidney damage in humans.** High fluoride levels inhibit germination, cause ultrastructural malformations, reduce photosynthetic capacities, alter membrane permeability, reduce productivity and biomass and inflict other physiological and biochemical disorders in plants.



In the Above MAP Which Shows the Distribution of Fluoride in the District, **Green** mark shows fluoride Content in water is $< 1\text{ mg/l}$ its safe for drinking, **Yellow** mark shows fluoride Content in water is $1 - 3\text{ mg/l}$ its cant be used for Drinking, Same as **Red** mark indicate fluoride Content in water is $3 - 5\text{ mg/l}$ and **Brown** mark indicate fluoride Content in water $> 5\text{ mg/l}$ i.e., not suitable for drinking and RO plants are installed in such places, RO Plants installations places are shown in **Blue** mark.

Impact of Eucalyptus Plantation on Ground Water (depletion):

Eucalyptus is grown extensively in Chikkaballapur district. Eucalyptus is a controversial trees globally, due to its merits and as well as notoriety. Its merits like fast growing habit, quick adaptations to wide ranging ecological situations, several industrial applications and as means of livelihood for unprivileged have elevated it to one of the most desirable tree species to be introduced in afforestation, farm forestry and social forestry programmes. Nevertheless, Eucalyptus is also known to cause a number of environmental hazards like depletion of groundwater, dominance over other species by allelopathic effects, loss of soil fertility and negative impacts on local food security issues. Chikkaballapur district has large tract of Eucalyptus plantation which in turn will accentuate ground water depletion.

According to the study “**IMPACT OF EUCALYPTUS PLANTATIONS ON GROUND WATER AVAILABILITY IN SOUTH KARNATAKA**” by **Mukund Joshi and K. Palanisami**, Karnataka government promoted fast growing Eucalyptus plantation to cover the

denuded areas, as a part of afforestation programme since 1960s, even finding a buying partner in corporate sector to purchase its wood for industrial purposes (coverage 70,000 ha). Later, as a sequel to modified Indian forest Act during 1988, Eucalyptus was promoted as a profitable, no maintenance low investment crop in cultivated lands, in the style of farm forestry (140,000 ha). However, the major spread of Eucalyptus was restricted to two districts namely, Bangalore (rural) and Kolar (undivided Kolar which includes Chikkaballapur), replacing 70,000 ha Ragi, a staple food. Almost 90 percent of existing Eucalyptus area in Karnataka is in these two districts. The farmers have continued to grow this easy crop, requiring low capital and attention. **But, in these twenty years of Eucalyptus plantation, the ground water level in these districts has dwindled alarmingly as compared to other districts.** This is evidenced by the report of Central Ground Water Board classifying these districts as most critically over- exploited areas. The study is annexed in the annexure.

The status of ground water is over exploited in all taluks, where there is no scope for further tapping of Groundwater.

Table 4.5: Ground Water Levels

Sl No	Taluk	Annual ground water recharge in ham	Net annual ground water available in ham	Existing gross ground water draft in ham	% of exploitation	Category
1	Bagepalli	7204	6483	5442	84	Critical
2	Chintamani	5750	5286	7908	150	over exploited
3	Chikkaballapur	4650	4319	6921	160	over exploited
4	Gowribidanur	4414	3973	7540	190	over exploited
5	Gudibande	2639	2375	3803	160	over exploited
6	Sidlaghatta	6498	5990	8446	141	over exploited

4.6 Risk Analysis of Biological Disasters:

Silk is reared in Chikkaballapur. There are more than 300,000 cattle's and buffaloes in Chikkaballapur district. Poultry farm is also one of the major sources of livelihood. Pigs, goat, sheep, are also reared. Spread of epidemic like FMD, virus attack would lead to loss of business and livelihood. Foot and mouth disease is contagious disease which affects the cloven footed animals like cattle, buffaloes, sheep, goat, pig and also wild animals like deer, bison and elephant. '0'- Zero type viruses causes the disease outbreak in the State during the month of August to November.

Acute respiratory tract infection/Influenza like Illness, acute diarrheal disease, dengue Chickungunia, bacillary dysentery, enteric fever, pneumonia are diseases prevalent in the district. There is also past history of outbreak of plague in undivided Kolar district. Economically weaker section with poor sanitation facility with unsafe drinking water is vulnerable to disease mentioned above.

Table 4.6: Epidemic Diseases

Year	Name of the Disease	No. of people hospitalized	No. of Deaths
2015	Dengue	108	1
2016		38	0
2017		149	0
2018		8	0
2019		40	0
2015	Chikungunya	28	0
2016		38	0
2017		73	0
2018		28	0
2019		35	0
2015	Malaria	8	0
2016		5	0
2017		5	0
2018		18	0
2019		9	0
2015	H1N1	17	5
2016		0	0
2017		9	2
2018		10	2
2019			
2015	JE	2	0
2016		2	0
2017		1	0
2018		1	0
2019		1	0
2015	Rabies	0	0
2016		1	1
2017		2	2
2018		1	1
2019		0	0
2015	Snake Bite	571	1
2016		675	0
2017		546	2
2018		614	1
2019		420	0

4.7 Risk Analysis of Unplanned Waste Disposal:

Municipal solid waste (MSW) normally termed as “garbage” or “trash” is an inevitable byproduct of human activity. Population growth and economic development lead to enormous amounts of solid waste generation by the dwellers of the urban areas. Urban MSW is usually generated from human settlements, small industries and commercial activities. An additional source of waste that finds its way to MSW is the waste from hospitals and clinics. When these wastes are mixed with MSW, they pose a threat for health and also they may have long term effect on environment (Patnaik and Reddy, 2009).

The biodegradable portion dominates the bulk of Municipal Solid Waste. Generally the biodegradable portion is mainly due to food and yard waste. With rising urbanization and change in lifestyle and food habits, the amount of municipal solid waste has been increasing rapidly and its composition changing. There are different categories of waste generated, each take their own time to degenerate.

Main Sources of Municipal Waste

- House hold waste
- Commercials
- Street sweeping
- Hotels and restaurants
- Clinics and dispensaries
- Construction and demolition
- Horticulture
- Sludge



Figure 4.2: Open Waste Dump

Adverse Effect of open dump: An open dumping is defined as a land disposal site at which solid wastes are disposed of in a manner that does not protect the environment, are susceptible to open burning, and are exposed to the elements, vectors, and scavengers. Open dumping can include solid waste disposal facilities or practices that pose a reasonable probability of adverse effects on health or the environment.

Health Effects

- The health risks associated with illegal dumping are significant. Areas used for open dumping may be easily accessible to people, especially children, who are vulnerable to the physical (protruding nails or sharp edges) and chemical (harmful fluids or dust) hazards posed by wastes.
- Rodents, insects, and other vermin attracted to open dump sites may also pose health risks. Dump sites with scrap tires provide an ideal breeding ground for mosquitoes, which can multiply 100 times faster than normal in the warm stagnant water standing in scrap tire causing several illnesses.
- Poisoning and chemical burns resulting from contact with small amounts of hazardous, chemical waste mixed with general waste during collection & transportation.
- Burns and other injuries can occur resulting from occupational accidents and methane gas exposure at waste disposal sites.

Environment Impact of open dump:

- Air pollution: Dust generated from on-site vehicle movements and placement of waste and materials.
- Water Pollution: Runoff from open dump sites containing chemicals may contaminate wells and surface water used as sources of drinking water open dumping can also impact proper drainage of runoff, making areas more susceptible to flooding when wastes block ravines, creeks, culverts, and drainage basins & also contamination of groundwater resources and surface water from leachate emissions.
- Soil Contamination: Permanent or temporary loss of productive land.

Global Warming and climate change: In most of the cities & towns the municipal solid waste is being dumped & burnt in open spaces without understanding the adverse impacts on the environment. The waste in the dumping ground undergoes various anaerobic reactions produces offensive Green House gases such as CO₂, CH₄ etc. These gases are contributing potentially to Global Warming & Climate Change phenomenon.

4.8 Risk of Level Crossings and its Vulnerability:

The Road Traffic crosses the Railway Track either on “Grade Separated Crossing” (Road and rail at different Levels) or at “Level Crossing” (Road and rail at same levels). The level crossings are made to facilitate the smooth running of traffic in a regulated manner governed by specific rules and conditions.

The primary causes of accidents at unmanned level crossings include haste of the driver to cross the level crossing before train arrives, mis-adventure to cross level crossings in the face of an approaching train, road vehicles getting stalled at the locations, rash driving of un-licensed drivers etc. Accidents at level crossings happen primarily because the road users do not respect the right of way of railways.

It is observed that most of the time road vehicle driver’s error in judgement of the speed of train leads to accident. It is a fact that human reaction time is 2.5 seconds which is just enough to coordinate the reflexes against speed of 60-70 kmph; however, most of the trains on Indian railways are plying at about 100-120 kmph for which the reaction time is inadequate. Road users continue to cross the tracks even if the train is visible and approaching causing leading to level crossing accidents. People walking along the railway track plugging their ears with earphone, listening to music, are oblivious of the approaching train and are knocked over by the train. There is an increased trend of this off-late.

Table 4.7: Road Accidents in the Five years

Year	No. of accident	No. of Injured	No. of Deaths
2015	709	820	245
2016	937	710	253
2017	692	784	258
2018	704	757	286
2019	650		

Table 4.8: Accidental Prone Area (Black Spots)

Sl. No	Name of the Unit	Name of the Accidental Prone Area
1.	Chikkaballapura District.	Old DC office
2.		Harobande gate
3.		Reddygollavarahalli
4.		Kamath hotel
5.		Agalagurki fly over bridge
6.		Honnenahalli
7.		J.venkatapura
8.		Vyjakuru
9.		Kaiwara cross
10.		Perumachanahalli
11.		Chinnasandra
12.		Imareddyhalli
13.		Sunkalamma temple
14.		Chendooru cross
15.		Varlakonda
16.		Sadali cross
17.		Peresandra
18.		Aruru cross

4.9 Industrial Accidents

Year	No. of accident	No. of Injured	No. of Deaths
2014	1	0	1
2015	2	0	2
2016	0	0	0
2017	0	0	0
2018	1	1	0

Table 4.10: The Major HAZARDS Industries in the District & Mitigations

Sl No	Taluk	Name Of the Industry	Address
1	Gowribidanur	Precot Meridian Limited	B.H.Road, Gowribidanur Tq, Chickaballapur Dist.
2	Chikkaballapur	Dynarx Techonology (India) ltd	Plot No.9, KIADB Industrial area. Chickaballapur Tq & Dist.
3	Gowribidanur	Acc Ltd.,	Thondebhavi Village, Gauribidanur Taluk, Chickaballapur Dist.
4	Gowribidanur	R.L. Fine chem Pvt Ltd.,	Plot No: 27-29, KIADB Industrial area, Gowribidanur (T), Chikkaballapura (D).
5	Chikkaballapur	RACS Pharma chem (India) Pvt Ltd.,	Plot No: IP-13- Part -2, Gowribidanur 1st Phase, Gowribidanur (T), Chikkaballapura (D).
6	Gowribidanur	Monsanto India Ltd.,	Sy No.69/1,69/23,62/1,62/2,68,2B2,63 & 57,Kallinayakanahalli, Gowribidanur (T), Chikkaballapura District.
7	Gowribidanur	Prakruthi Recycling Private Limited	Plot No. B-3 & B-4, Kudumalakunte, Kasaba Hobli, Gowribidanur Taluk, Chikkaballapura Dist

4.10 Weak and Vulnerable embankments

Sl No	Name of Weak and Vulnerable embankments	Location	Reason of its Vulnerability	Population likely to be affected	Remarks
1	Thimmanaya kanahally agraharda kere	Nalloanahally Sidlaghatta Tq	Bund is made up of siltmix sandy soil. rain cuts and burrows are found all along the bund which may lead to leakages and later on breached the bund	Total population of nalloanahally is 150 affected people are nearly 22-25 people in lowlaying area	lands affected villages are nalloanahally, thimmanayakanah all, kudapakunte and anemodugu

Chapter-5

Prevention and Mitigation Measures

5.1 Introduction:

Disaster mitigation means measures designed to prevent, predict and prepare for respond to mitigate the impact of disaster. Once the area has been identified as hazard prone, it becomes important that the government and the community should practice mitigation plan may vary according to hazards. As it has been discussed in the previous chapters Chikkaballapur district lies in Zone II, low damage risk zone and risk gets compounded when hazard meets with Vulnerabilities as high dense population, weak physical structures and conventional construction technologies. Similarly, district is also vulnerable to high degree of Drought, fire and Road/Industrial accidents.

The disaster especially the natural hazards like flash floods, earthquakes, and cloudbursts cannot be avoided, however, with mitigation measures along with proper planning of developmental work in the risk prone area, these hazards can be prevented from turning into disasters if we take preventive and mitigation measures in advance. This requires changes in the current development model, practices and priorities. For efficient disaster mitigation, the pre-disaster phase needs to be utilized for planning and implementing preventive measures on the one hand and working on preparedness activities on the other. Disaster is caused due to failure of manmade structures, lack of preparedness and awareness. So far, disaster mitigation efforts are mostly reactive. Since usually the disaster consider as a development problem, prevention and mitigation needs to be built in this process only. The primary objectives of prevention and mitigation efforts would be:

- To identify and assess the existing and potential risks and to work towards reducing causalities and damage from disaster.
- To substantially increase public awareness of disaster risk to ensure safer environment for communities to live and work.
- To reduce the risk of loss of life, infrastructure, economic costs, and destruction that result from disasters.

5.2 Hazard-specific Prevention & Mitigation Measures (Structural & Non-Structural Measures):

The major hazards which are likely to affect Chikkaballapur district are being discussed below for mitigation purposes. Both structural and non-structural measures shall be taken as part of mitigation plan. Structural mitigation refers to any physical construction to reduce or avoid possible impacts of hazards, which include engineering measures and construction of hazard-resistant and protective structures and infrastructure. Non-structural mitigation refers to policies, awareness, knowledge development, public commitment, information sharing which can reduce risk.

Table 5.1: Hazard-specific Prevention & Mitigation Measures (Structural & Non-Structural Measures)

Hazard	Possibilities Mitigation Measures	Implementing Departments	Remarks	
Structural Mitigation Measures				
Flood	<ul style="list-style-type: none"> • Desilting/dredging of water bodies and deepening of water channel. • Repair/Construction of embankments/ protection wall and maintenance of Flood Channels, canals, natural drainage, storm water. • Drainage improvement and Diversion of flood water in order to lower water levels in the rivers. 	Primary Agency: Irrigation Supporting Agency: PWD, ULBs		
	<ul style="list-style-type: none"> • Vegetative cover against the land erosion 	Primary Agency: Forest Department		
	Non-Structural Mitigation Measures			
	<ul style="list-style-type: none"> • Flood Zoning mapping and demarcation using GIS • Capacity building of volunteers and technicians. • Awareness generation on health and safety of livestock. • Promote people for the cleanliness of water channels • Tie-up with IMD, CWC has been strengthened so that EWS can be effectively communicated to the vulnerable community 	Primary Agency: DDMA, Supporting Agency: Irrigation, District information officer, PRED, DUDC, ULBs.		
	<ul style="list-style-type: none"> • Safety audit of existing and proposed housing stock in flood prone areas 	Primary Agency: Revenue Dept. Supporting Agency: PWD, DUDC		
	<ul style="list-style-type: none"> • Promotion of traditional, local and innovative practices like bamboo/plastic bottle rafts etc. 	Primary Agency: DRD Dept.,		
	<ul style="list-style-type: none"> • Creation of trained medical first responders for first aid and resuscitation measures • Developing of patient evacuation plans 	Primary Agency: Medical and Health Department Supporting Agency: DDMA and SDMA		

Structural Mitigation Measures			
Fire (Forest and Domestic)	<ul style="list-style-type: none"> • Establishment of Fire stations as per Fire Safety Bye-laws. • All fire tenders should be equipped with wireless sets / mobile phones 	Primary Agency: Fire Department	
	<ul style="list-style-type: none"> • Zoning of forest areas 	Primary Agency: Dept. of Forest	
	Non-Structural Mitigation Measures		
	<ul style="list-style-type: none"> • Implementation of Fire safety measures and enforcement • Updating basic infrastructure and adopting modern fire-resistant technologies. • Improving outreach of fire services. Making the fire services a multi-hazard response unit. • Compulsory fire hazard evaluation of life line building e.g. Hospital, School, Warehouse, industries and all other Public Buildings 	Primary Agency: Fire Department Supporting Agency: Irrigation, PWD, ULBs, DTCP, and DRD Dept.	Fire extinguishers will be made available in Panchayat offices far from a water source.
	<ul style="list-style-type: none"> • Training of community members in fire-fighting techniques • Planning and calendar of evacuation drills/ mock drills in vital installations/ industrial plants/ government buildings / schools and critical infrastructure like hospitals, etc 	Primary Agency: DDMA Supporting Agency: Fire Department	
Structural Mitigation Measures			
Earthquake	<ul style="list-style-type: none"> • Seismic strengthening of existing structures • Prioritization of structures especially critical/ lifeline structures • Structural safety audit of critical lifeline structures e.g. Hospital, School, Warehouse, industries all other Admin Building • Retrofitting of lifeline structures, weak or old buildings, rural unsafe house and public building and office • Earthquake-resistant construction in urban, rural and semi-urban areas 	Primary Agency: PWD Supporting Agency: DTCP, DRD Dept, BESCOM, ULBs.	

Non-Structural Mitigation Measures			
	<ul style="list-style-type: none"> •Development of Rapid Visual Screening procedures and Detailed Vulnerability Assessment •Regular conduction of Fire Safety Audits and Electrical Safety Audits •Techno-legal regime for ensuring compliance of earthquake-resistant design and construction practices in all new constructions •Licensing and certification of professionals. •Strict enforcement of guideline pertaining to seismic safety for government rural housing, urban development structure 	<p>Primary Agency: PWD</p> <p>Supporting Agency: DTCP, DRD Dept, BESCOM, ULBs.</p>	<p>Supporting Agency: DTCP, DRD Dept, ULBs. Safety in Urban areas and the same will be disseminated with the help of workshops and trainings.</p>
	<ul style="list-style-type: none"> •Mock-drills for Schools, Hospitals and , Public Buildings and trainings for mason, engineers and architects •Registration of trained and certified mason 	<p>Primary Agency: DDMA</p> <p>Supporting Agency: District information officer, ULBs, DDPI, PWD</p>	<p>Trainings and awareness campaigns will be aimed at training rural population.</p>
Structural Mitigation Measures			
Drought	<ul style="list-style-type: none"> •Water management including water harvesting and conservation •Promote modern irrigation methods in drought prone areas e.g. micro-irrigation including drip and sprinkler irrigation. •Rain Water Harvesting storage tanks at household level and public buildings. •Structures for water harvesting and recharging like wells, ponds, check dams, farm ponds, etc •Development of fodder plots/banks 	<p>Primary Agency: Irrigation</p> <p>Supporting Agency: PWD, ULBs and DRD Dept, DDMA</p>	
	<ul style="list-style-type: none"> •Afforestation with bio-diesel species through the National Afforestation Programme •Development of Pasture land in common property, seed farms and trust land 	<p>Primary Agency: Forest Department</p> <p>Supporting Agency: Agriculture and Horticulture Dept.</p>	

Non-Structural Mitigation Measures			
	<ul style="list-style-type: none"> • Drought-prone area delineation at block level based on rainfall, cropping pattern, available supplement irrigation, satellite derived indicators, soil map, groundwater availability map, cattle population and fodder demand and socio-economic data • Gradation of drought-prone areas based on the frequency of occurrence of droughts, sensitivity to rainfall variation and vulnerability of community • Monitoring of drought based on rainfall and other parameters, crop health, available ground water and migration and impact on community • Set up control mechanism for regulated water use (ponds, small dams, check dams) on the early onset. 	Primary Agency: Irrigation Supporting Agency: PWD, ULBs, DDMA and IMD regional office	
	<ul style="list-style-type: none"> • Insuring of crops 	Primary Agency: Banks Supporting Agency: Revenue Dept. & Agriculture and Horticulture Dept.	
	<ul style="list-style-type: none"> • Farmer education to practice drought resistant crops and efficient water use. 	Primary Agency: Agriculture and Horticulture Dept. Supporting Agency: DDMA	
Structural Mitigation Measures			
Chemical & Industrial	<ul style="list-style-type: none"> • Creation of appropriate infrastructure as mentioned in Off-site and On-site plans including Public Address system 	Primary Agency: Dept. of Industries Supporting Agency: PWD and ULBs	
	<ul style="list-style-type: none"> • Enforcement of code of practices, procedures and standards • Audits of On-site & Off-site Emergency plans at regular intervals • Statutory inspection, safety audit and testing of emergency plans • Safety Auditing 	Primary Agency: Dept. of Industries Supporting Agency: Department of labour and Employment, PWD and ULBs	

	<ul style="list-style-type: none"> • Hotline telephone connection with nearby emergency services 	Primary Agency: BSNL Supporting Agency: Dept. of Industries	
	<ul style="list-style-type: none"> • Awareness generation among community 	Primary Agency: DDMA Supporting Agency: Dept. of Industries	
	<ul style="list-style-type: none"> • Training of specialized Medical First Aid Responders 	Primary Agency: Medical and Health Dept. Supporting Agency: Dept. of Industries	
Structural Mitigation Measures			
Road Accident	<ul style="list-style-type: none"> • Provision of adequate signboards, speed breakers and guard stones near the accident prone spots. • Adequate construction/resurfacing/widening etc. at risky or prone areas • Construction of pedestrians both side of the road • Install reflectors on roads so that deviations and medians are clearly visible to drivers. 	Primary Agency: PWD Supporting Agency: RTO and Revenue Dept.	
	Non-Structural Mitigation Measures		
	<ul style="list-style-type: none"> • Setting up of a Highway Safety Patrol 	Primary Agency: Police Dept.	
	<ul style="list-style-type: none"> • Awareness and Installation of warning hoardings 	Primary Agency: DDMA and Revenue	
	<ul style="list-style-type: none"> • Vehicle registration and proper investigation under road safety acts 	Primary Agency: RTO	
Structural Mitigation Measures			
Landslide	<ul style="list-style-type: none"> • Catchment area treatment/ A forestation, building up of check dams/detention basins in order to reduce the flood peaks and control the suddenness of the runoff 	Primary Agency: IPH Supporting Agency: Forest Dept.	Distribution of seedlings of plant material useful in land reclamation in sloppy areas will be taken up with the
	<ul style="list-style-type: none"> • Stabilization of slopes in landslides prone areas. • Construction of retaining walls and other structures to bring greater stability to dangerous slopes. • Construction walls of piles in slope areas to prevent landslides. 	Primary Agency: PWD Supporting Agency: IPH, DTCP,	

Non-Structural Mitigation Measures		
<ul style="list-style-type: none"> • Enforce land-use and building ordinances in areas susceptible to landslides and debris flows. • Discourage construction of buildings on steep slopes or near streams and rivers 	Primary Agency: DTCP, RTO Supporting Agency: PWD	
<ul style="list-style-type: none"> • Assessment of the availability of equipment's that would be needed at the time of landslides and regular updating of them. 	Primary Agency: PWD Supporting Agency: ULBs.	

Lightening:

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

Few Tips to survive lightning:

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

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

Do's and Don'ts during Lightning

- If caught on high ground or in an open area, seek shelter in a low area and stay away from trees.
- If you are swimming, get out of the water immediately, and move away from the body of water. Being near water is extremely dangerous during a lightning storm.
- If you are caught in a lightning storm with a group of people, maintain a distance of at least 50-100 feet between each person.
- While inside, keep windows closed, and try to stay within inner rooms of the structure
- In a car, try to avoid touching any part of the metal frame or the car's glass.
- Stay inside at least 30 minutes after the last strike. Don't go out if the rain starts letting up.

Measures to be taken –Chemical/Industrial Disaster

In MAH following are the emergency response plan for various types of industrial disasters as identified in.

Prepare for a Chemical Emergency

- Avoid mixing chemicals, even common household products. Some combinations, such as ammonia and bleach, can create toxic gases.
- Always read and follow the directions when using a new product. Some products should not be used in small, confined spaces to avoid inhaling dangerous vapors. Other products should not be used without gloves and eye protection to help prevent the chemical from touching your body.
- Store chemical products properly. Non-food products should be stored tightly closed in their original containers so you can always identify the contents of each container and how to properly use the product. Better yet – don't store chemicals at home. Buy only as much of a chemical as you think you will use. If you have product left over, try to give it to someone who will use it. Or see below for tips on proper disposal.
- Beware of fire. Never smoke while using household chemicals. Don't use hair spray, cleaning solutions, paint products, or pesticides near the open flame of an appliance, pilot light, lighted candle, fireplace, wood burning stove, etc. Although you may not be able to see or smell them, vapor particles in the air could catch fire or explode.
- Clean up any spills immediately with some rags, being careful to protect your eyes and skin. Allow the fumes in the rags to evaporate outdoors in a safe place then wrap them in a newspaper and place the bundle in a sealed plastic bag. Dispose of these materials with your trash. If you don't already have one, buy a fire extinguisher that is labeled for A, B, and C class fires and keep it handy.
- Dispose of unused chemicals properly. Improper disposal can result in harm to yourself or members of your family, accidentally contaminate our local water supply, or harm other people or wildlife.
- Many household chemicals can be taken to your local household hazardous waste collection facility. Many facilities accept pesticides, fertilizers, household cleaners, oil-based paints, drain and pool cleaners, antifreeze, and brake fluid. Some products can be recycled, which is better for our environment. If you have questions about how to dispose of a chemical, call the facility or the environmental or recycling agency to learn the proper method of disposal.

Toxic Release

The emergency procedures address to large-scale release of toxic chemical like ammonia having widespread impact.

- Assess the situation in consultation with industries handling toxic chemicals like Ammonia, Benzene, H₂S, Depending on the situation, determine the action to be taken.
- Inform general public with the help of police, Radio broadcast or TV channel about required precaution to be taken.
- In case of ammonia leakage, instruct general public to cover their nose with wet cloth and move towards safe location notified (crosswind direction).
- Ask them to evacuate or remain indoors as per the situation.
- Instruct the villagers to free all the live-stocks to enable them escape. They will move out to safe place by their natural instinct.
- If evacuation is required, determine the area to be evacuated in downwind direction to designated Safe Assembly points.

Fire / Explosion

Leakage of LPG from storages or tankers and subsequent fire / explosion can cause widespread damage. Emergency response action for tackling LPG leaks is given below.

- Leaks from LPG storages, tankers, LPG pump glands, pipes flanges or pipeline ruptures or from vent emissions due to cargo tank over-pressure or relief valve failure will initiate a vapour cloud. Therefore, in case of release of large quantity of flammable vapour, immediate effort should be directed to eliminate source of ignition. In such event, eliminate all sources of ignition i.e. open flames, welding, cutting, operation etc.
- If possible, isolate the vessel involved in the incident.
- Direct or disperse the vapour cloud away from such sources by means of fixed and/or mobile water sprays or by water fog arrangement.
- If ignition does occur, there are chances of flash back to the source of leak. Leaks from pipelines are likely to be under pressure and these, if ignited, will give rise to a jet flame.
- In such a case it may be safer to allow the fire to burn out while protecting surroundings by copious cooling water rather than to extinguish the fire and risk a further vapour cloud which may result in explosion or flash back on encountering ignition source again.

Spillage of POL products in the industry will generally be contained in dyke resulting in confined pool. Leakages from road/rail tankers will result into unconfined pool. Emergency response actions for tackling such leaks are given below.

- A liquid spillage on land from tank or pipeline ruptures may be in large quantities and will generally be contained in bonded areas or culverts. The ignition of the ensuing vapour cloud would then result in a pool fire.
- If possible, isolate the vessel involved in the incident.
- Fire fighting operation should be carried from upwind direction.

- The hydrocarbon liquids like POL burn with a production of soot. Hence fire fighting operation should be carried out using respiratory personal protective equipment and / or fire proximity suits.
- Cool surrounding area exposed to heat radiation or flame impingement, with water in order to prevent secondary fire. It is suggested that fire fighters should maintain safe distances from fire.
- The bunds or dykes are provided around the storage tanks storing flammable materials to limit the size of any pool fires. The storage tanks containing Class 'A' products are normally provided high expansion foam pouring arrangement to control the rate of burning. This is to be activated in the event of a fire.
- If there is no fire, arrangement should be made to pump out / transfer spilled material to safer place e.g. into another tank or tankers.

Before Disaster	During Disaster	Post Disaster
<ul style="list-style-type: none"> • To familiarize professionals like fire fighters, medical personnel with special tactics and hazards, and enabling them to test their part of the plan • To review the total plan, including communications and logistics, so that updating modifying and training activities can be improved 	<ul style="list-style-type: none"> • Control emergency by arresting leakages, spillage, fighting fire, shutting off the valves and / or equipment etc. by utilizing the combat team • Take measures to preserve the property and minimize damage to environment and loss of material by segregation, covering, salvaging and diverting fire as required • Take care of the surrounding areas to reduce the 'domino effect' • Nullifying the sources of leak / toxic release. 	<ul style="list-style-type: none"> • To ensure that law and order is maintained at evacuation/ relief centers and in the affected areas as well • Identify the trauma cases and counsel them appropriately • Identify and characterize the source and its origin • Arrangements for distribution of gratuitous relief and cash doles • Special attention to ladies, children and elders

Emergency Response Procedure - Transportation Disasters

Road Tanker Accident

Various hazardous chemicals are transported along the major roads in the district. Any accidents involving these tankers may or may not result in release of hazardous chemicals.

Following procedures is formulated to deal with such emergencies

- It should be the endeavor of the first observer to immediately inform the nearest Police Station clearly indicating the location of the accident and the number of vehicles affected.

While talking to the caller the following information should be sought from him:

- Where has the accident occurred?
- Where is the accident location i.e. nearest village / town etc?
- How many people are hurt?
- Is the driver alive and is he around?
- What is material involved in the accident, is it hazardous? And has he initiated any action? (if driver is calling)
- How many vehicles are involved in the accident?
- Is the road blocked due to accident?
- Is it a tanker or trailer?
- Can you cite any fire?
- Is any leakage observed from tanker?
- Do you feel any irritation in your throat or eyes?
- **Instructions by Police to be given immediately to the caller / Informer are:**
- Ask no one to go near the tanker.
- Do not try to plug the leak.
- Try to instruct people to move away from the downwind direction of the leak (in the direction of wind).
- Stay clear from the road
- The Police should immediately rush to the site and cordon off the accident site from either side of the State Highway/District road and stop the traffic on either side.
- Request for ambulance and heavy equipment like crane for rescue operation and normalisation.
- Police should ascertain the chemical in the tanker based on HAZCHEM code on the tanker or from the tremcard. The information may also be obtained from tanker crew, if not seriously injured.
- Inform the District Administration, fire brigade and nearby industry who are supplier / user of these chemicals, if information available. Industry to be contacted for specific chemicals is given below.
 - Depending on nature of chemicals, action should be initiated to evacuate the persons in downwind direction. If chemical is flammable like LPG, Petrol or others, effort should be made to put-off all ignition sources like open flame, bidis, cigarettes etc.
 - All the vehicles in vicinity should be asked to stay put and with their ignition off.
 - Using proper personal protective equipment, rescue of affected persons should be initiated. Proper medical attention should be provided.
 - On arrival of expert help and depending on the situation, efforts should be made to contain the leak or transfer into another tanker or to neutralise the leak.

Drought Mitigation Plan

Drought Mitigation work that are being done in the districts are

- a) **Cleaning of Traditional Water Bodies i.e., Kalyani's:** District as More Traditional water bodies, one of them is Kalyani's and 149 Kalyani's are been identified in the district in which about 149 Kalyani's are been Cleaned by Shramadana of Govt Official and Local Voluntaries, Cleaning and Identifying of Kalyani's are in process.



Figure 5.1: Kalyani's cleaned

Water Filled after Cleaning

- b) **Injection Well:** Injection wells are built in place where water ruins freely on the surface, Once water recharged to deep aquifers via Injection well, all the surrounding bore wells were recharged at every interval of rain and it is very helpful to farmers.



Figure 5.2: Injection & Recharge Well

- c) **Recharge Well:** Recharge wells are ensure that rainwater percolates into the ground and recharges aquifers. They mitigate water-logging and flooding.

d) Desilting of Tanks: Most of the Tanks are Encroached and Filled with Silts, Removal of Encroachments and Desiltation process in going on throughout the district, about 50% of Tanks Encroachments and Desiltation Removal is finished.



Encroachment Removal



Desiltation



Water Filled After Desiltation

e) Plantation: Deforestation is also one of the reasons for the Drought; To mitigate the Drought in the district for the purpose of plantation took up Koti Nati Project the aim the project is to Plant One Crore plants in the District within year till now we have done the plantation of 20 lakhs and by the end of the year the target will be achieved.



f) Awareness of Water: For the Conservation of the Water, awareness programs such as Jalamrutha & Jal Shakti Abhiyan campaign



- g) **Rain Water Harvesting: “Chilume”** to conserve and implement rain water harvesting in all households. To words sustainable development all Govt/Private Buildings are to be done with Rain Water Harvesting Structure for Conservation of water.



Roof Top Rain Water Harvesting

Agriculture Mitigation measures:

Agriculture Drought occurred when the rainfall is less than half of the normal rainfall in four consecutive weeks. Under such agricultural drought situations, farmers are advised to follow the following cultivation practices.

- Ploughing across the slope.
- Formation of small section bunds at an interval of 30 to 40 feet across the slope.
- Opening of Dead furrows at an interval of 10 feet across the slope.
- Application of more organic matter to the soil.
- Line planting /sowing across the slope using seed drill.
- Hardening the seeds before sowing.
- Growing drought tolerant crops like Ragi, Same, Thur, Avare , cowpea, Horsegram, Castor, Niger etc.,
- Selection of crop varieties suitable to the situation based on the month of sowing.
- Staggered method of Nurseries/Planting.
- Less water consuming crops like Ragi, Maize, Cowpea, Groundnut, Sunflower and vegetables etc., are to be grown in tank-fed areas instead of more water consuming crops like Paddy and sugarcane.

Contingent Cropping Plan:

Due to delayed monsoon, the following contingent cropping pattern can be followed.

1. Growing short duration Ragi crop varieties like, GPU-48, ML-365 etc
2. Growing short duration pulse crops like, Cowpea(C-158, S-488) Horsegram and Avare (H-4) etc.
3. Growing minor millets like Same, Navane etc.
4. Growing drought tolerant Oil seed crops like castor and niger.
5. Growing fodder maize and jawar for fodder purpose.

Horticulture Drought Mitigation Measure (Non-Structural Measures):

Chikkaballapur District is one of the important Horticulture district in the Karnataka. Mango, banana, Papaya, Tomato, Potato, Rose and Marigold are the important crops grown in the district. Among the fruit crops Mango is the major crop and among the vegetable Tomato is the major crop grown in the district. This is due to an account of availability of good quality soil and excellent agro climatic condition. Chikkaballapur is a rainfed region but due to shortfall in rainfall farming community is dependent upon borewell irrigation. Since ground water is declining, dry land horticulture will get increased attention in future years.

- **Water efficiency improvement schemes implemented by the Department of Horticulture:** Micro irrigation scheme: It is implemented with the objective of better utilization of available water. At present, 80% subsidy is given to encourage installation of drip irrigation in horticulture crops in the district. Adoption of improved methods of irrigation such as drip would not only save water, power, fertilizer consumption, weeding cost but also helps in controlling environmental degradation.
- **Rashtriya Krishi Vikasa Yojana- Precision farming in Banana and Vegetables:** An assistance of Rs. 45,000/acre will be given to the each beneficiary belonging to SC/ST categories to encourage the area expansion of Banana plantation and an assistance of Rs. 25,000/acre will be given to the each beneficiary belonging to SC/ST categories to encourage area expansion of vegetable cultivation.
- **Protected Cultivation:** In order to prevent farmers from incurring losses owing to adverse climatic conditions, the Horticulture Department in Chikkaballapur district is encouraging protected cultivation of vegetables and flowers under the National Horticulture Mission. This will prevent pest attacks and diseases.
 - a) **Green house:** An assistance of Rs. 4.675 lakhs /1000 Sq. m will be given to the each Beneficiary to establish high cost green house.
 - b) **Shad net house:** An assistance of Rs. 2.05 lakhs/1000 Sq. m will be given to the each Beneficiary to establish shade net house.
 - c) **Mulching:** An assistance of Rs. 10000/ha will be given to the each beneficiary for mulching of Horticulture crops (maximum of 2 ha / beneficiary will be given). Mulching helps in controlling weeds & it prevents the water evaporation from the soil.

Sericulture Drought Mitigation (structural) Measures

Depending upon water availability number of crops per annum is decided but owing to scanty rainfall during current year water table has reduced considerably and 70% borewells stopped functioning.

To manage drought remedial measures are enumerated below:

- a) Installation of micro-irrigation system.
- b) Trenching and mulching.

Integrated Watershed Management Programme taken up for Drought Mitigation:

The annual normal rain fall of the districts is 735.90mm and its occurrence and distribution is highly erratic. Most of the tanks are silted up there by reducing the water storage capacity. Dependence on bore well has led over exploitation of groundwater in all Taluks except Bagepalli.

Due to lack of major perennial source of water in the district the entire agricultural activities depends on vagaries of monsoon, thus it is imperative to have an effective integrated Watershed Management Programme in the district.

Objectives of the Programme:

- ❖ Sustainable Management of Natural Resource base to increase production & Productivity of Agricultural Land.
- ❖ To increase the Productivity of non-arable land.
- ❖ To Increase Capabilities of Local Level Institutions for sustainable Management of Natural Resource.

To reduce poverty and improve livelihoods of the people by creating alternative livelihood option for vulnerable families in the Watershed area.

Structural Mitigation measures for Drinking Water Crisis:

At present drinking water is supplied through govt and private tankers. Desilting of tanks, construction of percolation tanks, rainwater harvesting, Cleaning of Kalyani's is encouraged to increase the surface water.

There are few projects envisaged to provide drinking water to Chikkaballapur district.

❖ **Yettinahole Diversion Project:** Karnataka has been mulling over diverting waters of the west flowing rivers to the east for many years. Karnataka appointed a committee under Dr. G. S. Paramshivaiah which worked on a plan to divert waters from west-flowing rivers including Netravathi to 7 districts of Bayaleseeme region including Kolar, Bangalore, Tumkur, Ramanagara, Chikmagalore, Chikkaballapur, etc. But currently, the Karnataka Government is seriously considering Yettinahole Diversion Project which plans to divert head waters of the Gundia River (a tributary of the Kumardhara, which is a tributary of the Netravathi) in the west and transfer this water to the other end of the state, in the east. The tenders for this project have been floated already. Project Report (June 2012) is titled as Scheme for diversion of flood water from Sakleshpura (West) to Kolar/ Chikkaballapur Districts (East) "The purpose of this project is to supply drinking water to parched districts of Kolar and Chikkaballapur".

❖ **HN Valley Project:** A Lift Irrigation Scheme of Providing 210MLD of Secondary Treated Sewage from Hebbal STP-150MLD, Hennur STP -40MLD, Horamavu STP-20MLD of Bengaluru Urban to fill 65 tanks of 3 Districts (7 Taluks) which are Chikkaballapur - 44 Tanks, Bengaluru Rural -9 Tanks and Bengaluru Urban -12 Tanks, 5 Pumping Stations of which at Hebbal, Hennur, Horamavu, Bagaluru and Kandavara to lift the water to tanks with pipe line of length 114.61Km, Quantum of Water - 2.70 TMC per Year.

Ground water Conservation measures such as rainwater harvesting, pits and trenches, percolation tanks, point recharge system, dug wells/injection wells, ooranies/village ponds/traditional water bodies, and micro irrigation ponds are taken up and encouraged.

Non-structural Mitigation Measures for Mitigating Economic Risk (rural employment and livelihood) of Drought:

1. **Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGA):** The primary objective of the act is to enhance livelihood security in rural areas by providing at least 100 days of guarantee wage employment in every financial year to every house hold whose adult members volunteer to do unskilled manual work. If the work is not provided within 15 days of the demand of work by the applicant, then un-employment allowance has to be paid. Under the scheme, related objectives such as generation of capital assets, environmental protection (social forestry), drought mitigation measures, empowerment of rural women, reduction of urban migration, etc are sought to be achieved.
2. **AAJEEVIKA-NRLM:** Ministry of Rural Development has restructured SGSY (Swarna Jayanthi Grama Swarojgar Yojana) as AAJEEVIKA-NRLM (National Rural Livelihood Mission). The aim of the program is to alleviate the poverty among the rural poor. It is a holistic programme covering all aspect of self-employment like organization of the poor into self-help groups, training, credit linkage, technology, infrastructure and marketing facilities.
3. **Mahila Kisen Sashaktikarana Pariyojane(MKSP):** This is a central govt. scheme. The objective of the scheme is to train the poorest women of rural area in agriculture to make them financially empowered.
4. **Agriculture subsidy:** In form of fertilizer distribution, seed distribution and also through other schemes like Rashtriya Krishi Vikas Yojana(RKVY), Karnataka Farm Mechanization, Farm Machinery Custom Hire Service Centers.
5. **National Mission on Micro-Irrigation:** Under this mission, emphasis is given to promote the proven cost-reducing micro-irrigation technology which helps conserve water, reduce fertilizer inputs and ensures higher productivity. The scheme provides 75% subsidy to the farmers for adoption of Micro Irrigation systems. The main objective is to achieve economic and judicious use of water.

Crop Insurance:

1. **Modified National Agriculture Insurance Scheme (MNAIS):** All farmers irrespective of the size of their holdings, both loan and non-loaned will be insured against any loss of yield due to natural calamities in the scheme. The scheme is compulsory for loaned farmers and subsidised to the extent of 10%.
2. **Weather Based Crop Insurance Scheme(WBCIS):** The scheme compensates the insured farmers against the likelihood of financial loss of account of anticipated loss of crop yield resulting from incidence of adverse weather conditions and will cover the risk of weather conditions and will cover the risk of weather parameters like rainfall, relative humidity, temperature, wind velocity, etc.

3. **Bhoochetana:** Is a mission mode project of Govt of Karnataka implement to unlock the potential of rain-fed agriculture in the state which has the second largest rain-fed area amongst the states in India after Rajasthan. It is a science-leg development approach launched by the GoK to improve livelihood of farmers in the state. The overall goal of the Bhoochetana mission project was to increase average productivity of selected crops in the selected districts by 20% in four years.

❖ Mitigation Measures for Biological Disasters:

1. Animal Husbandry Mitigation Measures:

Livestock Insurance Scheme in Karnataka: It is a centrally sponsored livestock insurance scheme for insuring livestock.

Mass vaccination programmes: Against FMD and PPR in the state for livestock in pulse polio manner. Foot and mouth disease is contagious disease which affects the cloven footed animals like cattle, buffaloes, sheep, goat, pig and also wild animals like deer, bison and elephant. '0'-Zero type viruses causes the disease outbreak in the state during the month of August to November 2013. **As a preventive measure 2 times in a year mass vaccination program is being conducted since September 2011.**

Strengthening of Polyclinics at village level and veterinary hospital at Taluk level: It proposed to establish one specialty hospital in each district

2. Mitigation/Prevention Strategies for Epidemics:

District has a District Surveillance Officer who keeps track of communicable diseases in the district and advices DHO and Deputy Commissioner to take appropriate action. Stockages of medicines for communicable disease (prophylactic and curative) are maintained by DSO.

Institutional Mechanism for Epidemic Control at District Level:

District has strong epidemic infrastructure having:

Nodal Officer of District	:	District Collector.
Nodal Officer of Health	:	D.H.O.
Nodal Officer for Medical	:	District Surgeon.

At Taluk Level

Nodal Officer of Taluk	:	Tahshildar
For Panchayath	:	Taluk Development Officer
For Medical	:	Administrative Medical Officer
For Health	:	Taluk Health Officer

Prevention of water borne disease: Regular check of water quality is done. Water is chlorinated when required.

Prevention of Vector borne disease : During raining season larval survey is conducted. Larval control campaign using ASHA workers, paramedics are conducted in vulnerable areas.

Awareness is created using IEC (information education communication) materials. Door to door campaign is also planned in extremely vulnerable areas.

Mission Indradhanush: It is a Central Government Scheme with the objective to ensure that all children under the age of two years as well as pregnant women are fully immunized with seven vaccine preventable diseases.

The Mission Indradhanush, depicting seven colours of the rainbow, targets to immunize all children against seven vaccine preventable diseases, namely:

1. Diphtheria
2. Pertussis (Whooping Cough)
3. Tetanus
4. Tuberculosis
5. Polio
6. Hepatitis B
7. Measles.

In addition to this, vaccines for Japanese Encephalitis (JE) and Haemophilus influenzae type B (HIB) are also being provided in selected states.

National Vector Borne Diseases Control Programme (NVBDCP): Is the key programme for prevention/control of outbreaks/epidemics of malaria, dengue, chikungunya etc., vaccines administered to reduce the morbidity and mortality due to diseases like measles, diphtheria, pertussis, poliomyelitis etc.

Pollution Control Measures:

The Karnataka State Pollution Control Board (KSPB) is regulating the discharge of effluents and air emissions from industries through issue of consents under the Water and Air Pollution Control Acts. While issuing consents, conditions are being imposed regarding the effluent standards and also emission standards to which the industries have to comply with. Time limits will also be stipulated to install pollution control systems.

Conditions are stipulated in the consent order regarding proper maintenance of pollution control systems, periodical analysis of effluent samples and submission of analysis reports. These aspects will be closely monitored by the staff of the divisional and regional offices who also collect and analyze the samples for verification regarding compliance to consent conditions

The industries are being rigorously pursued to ensure that the pollution control systems are installed and commissioned within the stipulated time. In respect of new projects, the consent for establishment is being issued only after examining the suitability of the site and scrutiny of the pollution control proposals.

Action initiated by KSPCB for control of pollution in mining activity, water (prevention and Control of Pollution) act 1974 and Air(Prevention and Control of Pollution) act 1981. Pollution control status in stone crushers: Covering stone crushing activity under Air (Prevention and Control of Pollution) Act 1981. The state government has passed an Act “**The Karnataka Regulation of Stone Crusher Act 2011**” in January 2012”

Following rules and schemes are strictly implemented:

- ❖ **Air pollution: National Ambient Air Quality Monitoring Programme (NAAQM):** According to the revised national ambient air quality standards, 12 parameters are to be monitored including respirable suspended particulate matter (RSPM), sulphur dioxide (SO₂) and nitrogen dioxide (NO₂).

- ❖ **Hazardous Waste Management:** The board has permitted totally 135 industries in the State to reprocess their hazardous waste, two industries to incinerate their waste.
- ❖ Common Effluent treatment plant.
- ❖ **Plastic Waste Management:** The board has identified 200 plastic carry bag and recycling units. Board is creating awareness by banning units manufacturing plastic bags of less than 40 micron thickness and conducting awareness programmes regularly on its effect on environment.
- ❖ **E-waste:** Board has issued CFE to 48 units for recycling/ dismantling of E-wastes of capacity 34, 948 MT/A.
- ❖ Bio-medical Waste (Management and Handling) Rules, 1998.
- ❖ Municipal Solid Waste (Management and Handling) Rules, 2000

Mitigation Measures Undertaken to Prevent Life line Building/Vital infrastructure Damage/Collapse:

Municipal authorities, Gram Panchayath, Town Panchayath Officials are asked to monitor life line buildings and undertake retrofitting work wherever possible. Authorities are asked to evacuate people unsafe dwelling and demolish the same if retrofitting is not possible. Important laws which regulates building construction:

- ❖ **The Karnataka Town Municipalities (Building) Model Bye-laws, 1981**
- ❖ **National Building Code of India 2005 (NBC 2005):** The National Building Code of India (NBC), a comprehensive building Code, is a national instrument providing guidelines for regulating the building construction activities across the country. It serves as a Model Code for adoption by all agencies involved in building construction works is they Public Works Departments, other government construction departments, local bodies or private construction agencies. The Code mainly contains administrative regulations, development control rules and general building requirements; fire safety requirements; stipulations regarding materials, structural design and construction (including safety); and building and plumbing services.

Fire Mitigation Measures

Monitoring compliance of fire safety measures through issuing NOC for building and apartments. Conducting regular fire drills in vital installations and schools under capacity buildings, Karnataka Fire and Emergency Services has recently introduced three fire safety measures apart from NBC 2005 code for high rise building taller than 60 meters which are:

1. Water curtains in the basement.
2. Smoke screens in lobbies, staircases and other common areas.
3. Chutes on every two floors from the terrace to the ground.

Mitigation measures to prevent fall of children into open/abandoned borewells:

Government of Karnataka has issued comprehensive guidelines through Government Order No. MID 10 AJAA 2012, Bangalore, and Dated: 31-12-2012, which is annexed in this plan for prevention of the fall into open borewells the district administration has closed all the open borewells in govt land. Private Borewell owners are also instructed to close open borewell at the earliest failing which strict action will be initiated.

3. Road Accident Mitigation Measures:

1. The provisions of Motor Vehicles Act and other related legislation's and regulations are strictly enforced.
2. Adequate Highway and traffic Aid post will be created.
3. Speed monitoring equipment and computerization of movement of vehicles with adequate checkpoints on the National Highway will be introduced.
4. Identify and designate routes and fixing the time for transportation of hazardous chemicals and other materials.
5. Prohibit the parking of vehicles on National Highway and State Highway.
6. Excavation on roads will be protected well particularly in the night with barricades fluorescent signs and red lights.
7. PWD and National Highway department are directed to remove bottlenecks on National and State Highway.
8. Arrangements will be made adequate embankments/reflector/proper signs on curves.
9. Overtaking in vehicles is regulated.
10. Frequently accidents occurring spots (Black spots) are identified and precautionary measures like speed bumps will be constructed scientifically.
11. Lanes will be marked for pedestrians/Cyclists.

Accident black spots of Chikkaballapur district are annexed with plan

Mitigation and Prevention measures for Railway accidents at Un-manned Level Crossing:

The problems of mobility and accident prevention at level crossings can best be addressed by joint efforts of all concerned - Central Government, State Government, Municipalities, NGOs, educational institutions and private operators etc. Indian Railways has taken my steps in this regard to prevent/mitigate accidents.

SAFETY INFORMATION MANAGEMENT SYSTEM (SIMS): A web based system for overall Safety Management of Indian Railway has been developed in which one of the modules is over level crossing. This Level Crossing Management System monitors the data of level crossing by assigning a unique to every level crossing. The Unique ID further correlates to all the developments like pattern of Traffic, signage, condition, up gradation works, accident details linked with satellite imagery.

Policy on level crossings: Indian Railways have framed multi-pronged policy to minimise the accidents and fatalities at level crossings which is summarised below.

Elimination of the existing level crossings: Railways have decided to progressively eliminate unmanned level crossings by various means:

- ❖ Road over bridge (ROB).
- ❖ Road under bridge (RUB).

Merger or diversion: Railways have planned construction of Diversion Roads from Unmanned crossing to nearby Manned Xing or ROB/RUB to divert road vehicles for safe passage and have permitted up to one km long Diversion Roads through Railway land or Railway Bridges.

Other Preventive Measures: Although the accidents at unmanned level crossings primarily and largely occurred due to negligence of road vehicle users is in clear violation of Section 131 of Motor Vehicle Act, Indian Railways have been taking steps to ensure additional safety at these locations. Some of these measures targeted at safety at unmanned and manned level crossing are as under:

Educating the Public: These primarily consist of educating the public en-mass so as to act as preventive measure. This is achieved by including chapters on safety at level crossings in the school syllabus of children.

Safety Campaigns: To educate road drivers about safety at unmanned level crossings, publicity campaigns are periodically launched through different media like quickies on TV, cinema slides, posters, radio, newspapers and street plays etc. Involvement of village Panchayats is also organized in railways' public awareness program.

Safety Drives and Ambush Checks: Joint Ambush Checks with civil authorities are conducted to nab errant road vehicle drivers under the provisions of the Motor Vehicles Act, 1988 and the Railways Act, 1989. Surprise checks and night inspections are regularly conducted to check the alertness of gatemen.

Signage: Proper signage along the track (Whistle Board) and road (Breaker & Stop Board) have been provided on approaches to level crossings so that road vehicle drivers become aware of the existence of a level crossing.

Speed Breaker: Speed breakers/rumble strips have been provided on approaches to level crossings so that road vehicle drivers are reminded to reduce their speed.

Speed Restrictions: Where the visibility distance is inadequate, speed restrictions for trains are imposed to allow for longer time interval for road traffic to pass in the face of approaching trains.

COMMUNICATION: Telephones are also being provided at all manned level crossing gates.

Mitigation Plan of Central Government

National Action Plan on Climate Change

On June 30, 2008, Govt. of India released India's first National Action Plan on Climate Change (NAPCC), outlining existing and future policies and programs addressing climate mitigation and adaptation.

Earthquakes

National Earthquake Risk Mitigation Project (NERMP): Understanding the importance of the management of such hazardous situations caused by the earthquake, the Government of India has taken a national initiative for launching a project of 'National Earthquake Risk Mitigation Project (NERMP). The proposed project aims at strengthening the structural and non-structural earthquake mitigation efforts and reducing the vulnerability in the high risk districts prone to earthquakes.

Drought

The Department of Agriculture & Cooperation, under the Ministry of Agriculture, Government of India released a manual for drought management in November, 2009. The manual suggests for looking beyond the traditional drought management through famine codes for dealing with situations of mass hunger and collective penury. It focuses on plans which take into account all capabilities of the state to address the impact of drought i.e., focus on mitigation measures, tapping newer technologies, enabling the systems adapt to the new legal framework and including improvement and area development programmes in drought mitigation.

Fire Accidents

The overall objective of the scheme is to strengthen fire and emergency services in the country and progressively transform it into Multi-Hazard Response Force capable of acting as first responder in all types of emergency situations.

Oil Industry related accidents

In the oil industry, the disaster management plan is maintained at the area level and covers a wide aspect (since their activities are likely to affect local people also). Oil companies have established their Crisis Management Plan at the company level and at the HQ level also with specialist to deal with fires and other identified hazards.

Chemical Disasters

The MoEF has taken the following measures towards developing a Regulatory Framework for Chemical Safety:

- i. The Environment (Protection) Act was enacted in 1986. Under the Act, two rules have been notified for ensuring chemical safety, namely,
 - a) The Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989 (MSIHC) amended in 1994 and 2000;
 - b) The Chemical Accidents (Emergency, Planning, Preparedness, and Response) Rules, 1996 (EPPR) under the Environment (Protection) Act, 1986
- ii. The Public Liability Insurance Act 1991, amended in 1992 and the Public Liability Insurance.

Mainstreaming of Disaster Risk Reduction in Developmental Strategy

Prevention and mitigation contribute to lasting improvement in safety and should be integrated in the disaster management. The Government of India has adopted mitigation and prevention as essential components of their development strategy. The plan emphasises the fact that development cannot be sustainable without mitigation being built into the developmental process.

CHAPTER 6
CAPACITY BUILDING AND TRAINING
MEASURES

6.1. Introduction

As per the Disaster Management Act (2005), capacity-building includes:

1. Identification of existing resources and resources to be acquired or created;
2. Acquiring or creating resources identified under sub-clause (i);
3. Organization and training of personnel and coordination of such trainings for effective management of disasters.

The primary purpose of capacity-building in disaster management is to reduce risk and thus make communities safer. This can be done by increasing resilience and enhancing coping capacities. Effective capacity-building at the district level requires the active participation of all those who are tasked with it. It must, therefore, include maintaining a comprehensive and up-to-date District Disaster Management Resource Inventory, awareness generation, education, Research and Development (R&D) and systematic and systematized training. The Deputy Commissioner should ensure the following capacity-building activities of the entire district, and the various Heads of Departments should ensure capacity-building of their respective departments. DDMA will work towards capacity building of the district to disasters by doing the following activities:

- Awareness generation and sensitization of public by trainings, mock drills, print media, mass media and street plays.
- Organizing mock drills at regular intervals in schools and government buildings.
- Organizing marathons, slogan writing, painting etc. in different sub division so as to ensure participation of people from different spheres.
- Organizing specific trainings for masons and engineers for making disaster resistant buildings.
- Distribution of IEC material to government offices, schools, colleges and panchayats.
- Organizing trainings for stake holders and other employees of state government.
- Ensuring that all villages/Panchayats have an active DM plan and DM task forces.
- Ensuring that all line departments have an active DM plan and DM task forces.
- Updating resource list of all line department at least twice a year.

6.2. Trainings and Capacity Building

The approach for the capacity analysis should eye the short term, medium term and long term timeline for policy and cutting edge level with a multi-layer approach. The trainings must target the stakeholders responsible to fill in the gaps in capacity identified in chapter 2. These trainings should leverage upon the local capacity of the district to facilitate various programs. The programs to work on the capacity gaps must target the stakeholders at the policy level with training of officials at DDMA, at cutting edge level with training of civil defense, home guard and police. These trainings should eye both response and mitigation centric approach to build upon the existing capacity of the district. To enhance capacity for disaster management the following training plan is proposed:

Table 6.1: Short –Team and Long-Term Capacity Building Programmes for the Stakeholders

Nature of training	Responsible departments	Potential training institutes	Frequency	Approach
Training for DDMA and Senior Executives on Policies	DDMA	DDMA,SDMA	Annually	Short term
Emergency Operation Center staff training	DDMA	<ul style="list-style-type: none"> • Home Guards • NDRF 	Quarterly	Short Term
Advanced search & Rescue training	Police , Home guards, Fire Department, DDMA	<ul style="list-style-type: none"> • NDRF, • Karnataka Police Academy, 	Quarterly	Medium to long Term
Training to Police for Crowd Management and emergency Response	Police Service	Police Academy, NDRF, Home guards,	Quarterly	Long Term
Training on Applicable Wireless Communication (Walkie Talkie/ Wireless/ HF/ UHF/ VHF/ Ham Radio)	Police and Home Guards	SDMA, Police	Quarterly	Short Term to Medium Term
Training of Doctors on Mass casualty Management	DMO	Medical , DDMA	Quarterly	Medium Term
Training of Asha Workers Mass casualty Management	Health and Family Welfare	DHO	Quarterly	Medium Term
Training of ASHA, ANM for medical first response / psychosocial care	Health and Family Welfare	SDMA, Red Cross	Quarterly	Short Term
Training doctors on emergency response	Health and Family Welfare	Red cross, SDMA/DDMA	Quarterly	Long term / existing institutions
Training of ASHA, ANM for medical first response / psychosocial care	EMRI, District hospital Una	District hospital	Biannually	Long term
Teacher Sensitization	Education Departments	DIET	Bimonthly	Medium to Long Term
Training to teacher of Special Needs Children (Old Age, Orphan,) for evacuation and rescue	Education Departments	NDRF/ Home guards/ Education Departments	Quarterly	Medium to Long Term
School safety training	Education	PWD, Engineers ,DM specialist from NDRF/	Quarterly	Long term using local

		DDMA/SDMA, Civil defence, Home guard, Police		institutions
Comprehensive training for NCC, NSS	DDMA and district authority	SDMA and DDMA, UNDP	Annually	Medium to Long term
Municipal Corporation training on DRR and disaster preparedness	DDMA and district administration	DDMA, UNDP	Annually	Medium to Long term
Basic training on GIS remote sensing and disaster mapping for DEOC staff	DDMA	DDMA,SDMA, KSNDMC, ISRO,NIDM	Annually	Medium to Long term

Table 6.2: Roles and Responsibilities of the Departments with regard to Capacity Building

SN	Dept.	Roles and Responsibilities pertaining to Capacity Building
1.	Revenue & Disaster Management Department	<ul style="list-style-type: none"> • DEOC to be functional and active. • Ensure regular training of DEOC staff • DEOC to be equipped with emergency resources, maps and well non-interrupted communication network. • Develop trained human resource as mountain rescuers, swimmers, divers and boat-operators in view of vulnerability of the district and tourist destination. • Train rescue teams in first aid, search and rescue and basic life saving techniques. • Maintain data base of the trained personnel's in different fields of Disaster Management and revenue with the district administration. • Adequate stocking/replenishing of SAR equipment, first aid kits public addressable system, blankets, tarpaulins, etc. • Train officers of revenue in first aid and basic SAR at the ground level. • Development of District Disaster Response Force on lines of NDRF
2.	Police Dept.	<ul style="list-style-type: none"> • The trained police personnel should be placed on record within a district-level database of persons trained in disaster management. • Trainings of police personnel for capacity-building in respect to new techniques and modern technologies used to manage disasters and SAR operations. • Refresher courses for District police officials under the guidance of NDRF • Training in Psycho- socio care of the teams formed to help prevent human trafficking which is increasingly becoming common in the aftermath of disasters • Ensure availability of required SAR equipment for the teams of disaster management.

3.	Home Guards	<ul style="list-style-type: none"> • Provision of trainings for volunteers in search and rescue (SAR), first aid, traffic management, dead body management, evacuation, shelter and camp management, mass care and crowd management. • Home Guards companies would be equipped with SAR items to deal with and respond to emergencies.
4.	Fire Services	<ul style="list-style-type: none"> • Network of fire services would be increased and they would be equipped to deal with other emergencies too. • Database of fire personals trained in disaster management should be placed on record at district-level with the DEOC. • Regular Mock drills conducted by firefighting staff and personnel for dealing with hazardous materials and accidents involving the same. • Conduct of regular refreshers course for staff within department from national and state level training institutes. • Providing awareness regarding fire safety to the society and community on the large. • Formation of Task force for checking industrial units and offices for fire safety norms twice a year. • Procurement of specialised equipment's for SAR, hydraulic platform, HAZMAT van, motorcycle fire tenders and other advanced rescue tender, etc.
5.	Health Dept.	<ul style="list-style-type: none"> • Trainings of paramedics staff, mobile medical teams, psycho-social care teams and Quick Response Medical teams (QRMTs), for health attendants and ambulance staff in first aid and life-saving techniques • Procurement / stock availability of portable equipments for field and hospital diagnosis triage, etc. • Training of members of local communities, PHC, CHC, Anganwadies, Asha Workers in new techniques and procedures for health, WASH practices, trauma counseling, psycho – socio care, dealing with PWD. • Capacity building at the institutional level should be done by carrying out various activities under the Hospital Emergency Preparedness Programme (HEPP). • Coordinate and liaison with Red Cross, NCC, NSS, NYKS and Civil Defense volunteers to spread awareness among the community • Developing awareness material for the community. • Creation of a core group of master trainers at district level. • Evolve a mechanism for community outreach education programmes. • Maintain a data base of the trained officials and provide the same to DEOC
6.	Irrigation Dept.	<ul style="list-style-type: none"> • Training of Staff in irrigation and Public Health related problems under a disastrous situation • Procurement of early warning and communication equipments through appropriate channels of the District Administration and providing trainings to all human resources with regard to early-warning especially for floods within district • Awareness regarding Participatory Irrigation Management for farmer staff.

7.	Agriculture Dept.	<ul style="list-style-type: none"> • Formation and training of a Weather Watch Group for the purpose of monitoring crops in the district. • Putting in place disaster management protocols for the hazards of drought, flood, hailstorm, etc. • Training of farmers in alternate cropping techniques and mixed cropping. • Awareness of farmers with regards to various diseases and their management. • Awareness and Training to farmer's regarding fodder management, seed banks and fodder banks. • Formation of Rapid Damage Assessment Teams who will be capable of assessing the condition of soil, fields, irrigation systems and any other damage to crops in post-disaster situations.
8.	Animal Husbandry	<ul style="list-style-type: none"> • Awareness regarding various diseases that different livestock within district can be effected with and their proper management especially the nomadic population. • Training of people regarding maintenance of livestock and increasing the capacity of their livestock. • Formation of Rapid Damage Assessment teams capable of examining and assessing damage caused to livestock, feed and fodder, and other things within the domain of animal husbandry.
9.	Rural Development and Panchayat Dept.	<ul style="list-style-type: none"> • Formation of Task Forces at village level to spread awareness with regards to issues of hygiene and sanitation (WASH) and disaster management at the village level through the Gram Panchayats. • Formation and training of Village Level Disaster Management Plans and Committees • Conducting of meetings at village levels every year quarterly and maintain the record. • Maintaining data base of the trained community at the village level and share the same with the district administration • Provision of training of teams regarding relief distribution, shelter & camp management as per IRS.
11.	Education Dept. (Government and Private)	<ul style="list-style-type: none"> • Education and awareness programs on disaster management to be incorporated within educational curriculum of school/college and made mandatory. • Conducting of Mock Exercises like "Drop, Cover, Hold" on regular bases. • Development of Emergency Evacuation Plans for the schools and place in school building for all to see. • Formation and training of damage and needs assessment teams within the department.

12.	BESCOM	<ul style="list-style-type: none"> • Training of Staff in disaster management and its related preparedness and maintenance needs. • The timely purchase of electric equipment's necessary for maintaining a state of adequate preparedness and for speedy and efficient disaster response, through the appropriate channels of the District Administration. • Forming of Task Force for dealing with power problems and to provide awareness on electrical safety to departments and community.
13.	Forest Dept.	<ul style="list-style-type: none"> • Training of department officers/ officials in disaster with regards to related forest fires and wild/escaped animals who could pose a threat to human safety. • Generate awareness among the community with regards to forest fire/wild animals and maintenance of green belt • Formation of Task Force teams to watch over trackers / tourist in forested areas of the district both in winters and summers
14.	KSRTC	<ul style="list-style-type: none"> • Training to drivers, conductors and staff in basic first aid and life saving techniques • Adequate stocking/replenishing of First Aid kits and maintenance of fire extinguishers in all vehicles and depots in the district. • Spreading awareness among public with regards to driving norms and safety measures to avoid disasters.
15.	Media (<i>electronic and print</i>)	<ul style="list-style-type: none"> • Training of the Staff for sensitization towards reporting during Disaster • Ensure timely community awareness, early warning and its dissemination by the concerned personals both pre and post disasters • Developing means of spreading awareness through social media and latest techniques and technologies • The DPRO in consultation with DDMA would educate the community in disaster management.

6.3 Community Capacity Building

Communities are not only the first to be affected in disasters but also the first responders. Community participation ensures local ownership, addresses local needs, and promotes volunteerism and mutual help to prevent and minimize damage. The community participation for DM would be promoted on the moto of “self-help”, “help the neighbour” and “help the community”. The Community Based Approaches or community participation in disaster management is also referred to as Community Based Disaster Management (CBDM) or Community Based Disaster Risk Management Capacity (CBDRM) with the essential feature of reducing vulnerability and disaster risk. Community Capacity Building includes formation and strengthening of the community disaster response or preparedness structures, awareness, training, public information campaigns, sustainable livelihood activities, through skill development, formation of task teams for SAR, WASH, Early Warning, First Aid, Shelter Management. The needs of the elderly, women, children and differently able persons require special attention. Networking of youth and women based organisation would be done and they will be trained in the various aspects of response such as first aid, search and rescue,

management of community shelters, psycho-social counseling, distribution of relief and accessing support from government/agencies etc. Community plans will be dovetailed into the Panchayat, Block and District plans. DDMA will coordinate with volunteers and social organizations like Home Guards, NCC, Red Cross, Market Trade Associations, Youth Clubs, Self Help Group (SHGs), CBO's, NGO's and Anganwadi centres, etc. play a vital role in spreading mass scale community awareness. Media equally plays an important role in raising awareness and educating people. Skill- development at the community level can be done on the Public Private Partnership (PPP) model to ensure sustainability of the community against disasters. Public awareness can be brought about through:

- Traditional modes of promoting knowledge and awareness would be adopted such as use of folk songs, nuked natak, etc.
- Community would be targeted through local fairs and festivals.
- Documentaries in local language would be screened through local cable networks etc. and mass media would be roped to promote education and awareness.

Community-based Disaster Risk Reduction (CBDRR) and Village Contingency Planning (VCP) are critical aspects for capacity building at the community-level and will be managed by the concerned departments in the district. Multiple responsibilities within the arena of capacity-building and training will be delegated to local authorities, PRIs and ULBs under the overall guidance of the District Administration.

Table 6.3: Community Capacity Building Strategies

Sl No	Tasks	Mode of conduct	Nodal Agencies	Supporting Agencies
1	Priority-wise information dissemination of various hazards and their do's and don'ts. Also preparation of community based disaster management plans shall be promoted in these areas. First priority needs to be given to the schools, industrial clusters, slums and resettlement colonies Second Priority shall be given to the communities living in the outer part of the district especially villages.	Through Nukkad Natak, Film Shows, Rallies, Media, Newspaper Media, Posters and Pamphlets, Group discussions and workshops etc	District Administration	NGOs, Schools and colleges volunteers, NSS, NCC, Sports groups, etc.
2.	Constitution of Community Based Disaster Management Committees and Taskforces	Through community level meetings	District Administration	Members, Local Volunteers etc.

3.	Capacity Building of Community Members	Through mock-drills, preparation of community plans, trainings and workshops on disaster specific topics	District administration	108 Ambulance and NGOs
4.	Trainings to the taskforces and committee members <ul style="list-style-type: none"> • First-Aid and Trauma Counseling • Search and rescue and fire-fighting • Warning Dissemination etc. 	Trainings and workshops	Revenue Department along with Health, Police and Fire Dept.	Home Guard, 108 Ambulance and NGOs
5.	Post disaster epidemic problems	Seminars and community meetings	Health dept.	Local health dept., and NGOs
6	Trainings for construction of seismic resistant buildings and retrofitting of the buildings. Target groups are contractors, masons, engineers, architects and local communities	Showing Films, videos, distributing posters and brochures, reading materials, etc in trainings and workshops.	District administration	PWD, Private contractors and NGOs etc

Table 6.4: Setting Up Of Disaster Volunteer Force - Identification & Training

<p>Block level Task Force G.P. Level Task Force Village Level Task Force</p>	<ul style="list-style-type: none"> • Early Warning Group- Warn the community of the impending danger. • Rescue & Evacuation Group- To be put into task immediately after abatement of calamity. • Water & Sanitation Group- Ensured safe drinking water in the shelter camps, MCS • Shelter management Group- Shall remain overall charge of managing the evacuees in shelter camps. • First Aid & Medical Group- Shall take care of the minor elements in the rescue camp. • Patrolling and Liaison Group- Shall watch & Word belongings of the inmates in the shelter camps & keep liaison with Govt.
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6.4. Capacity Building of Persons with Disabilities (PWD)

It is important to consider the special/specific needs of persons with disabilities in every phase of disaster management and risk reduction planning. Specialist Services to empower PWD's by promoting access to following can reduce vulnerability and increase their capacity:

- Functional rehabilitation: eg., Physiotherapy, occupational therapy, prosthetic and orthotic services
- Corrective surgery
- Assistive devices
- Information leaflets in Braille
- Sign language for early warning systems
- Disabled Peoples Organisations.
- Support services: care taker, sign language interpreter, adapted transportation services, etc.

Not all organizations can focus on disability issues to the same extent; every organization has to choose its level of involvement and accordingly obtains the appropriate education/training/skilled personnel.

6.5 India Disaster Resource Network (IDRN)

India Disaster Resource Network (IDRN) is an online inventory designed as a decision making tool for the Government administrators and crisis managers to coordinate effective emergency response operations in the shortest possible time. The Ministry of Home Affairs, Government of India has developed a web-based database of resource named India Disaster Resource Network (IDRN). This database contains information about **Equipments** (such as boats, bulldozers, chain saw, etc), **Manpower** (divers, swimmers, etc) and **Critical supplies** (oxygen cylinder, fire fighting foams, etc) required during response. IDRN can be accessed by anyone and its direct link is **idrn.gov.in**. IDRN for Chikkaballapur district is being updated.

The resources available in the district with both private and Government are being compiled and are being updated in IDRN.

6.6 Mock Exercise: Conducted Mock Exercise on the Fire Accident & Building Collapse by the NDRF team and Fire department of the district.



CHAPTER-7
RESPONSE AND RELIEF MEASURES

7.1. Introduction

The post disaster phase of Disaster Management looks into Relief, rehabilitation, reconstruction and recovery. The effective disaster management strategy aims to lessen disaster impacts through strengthening and reorienting existing organizational and administrative structure from district – state to national level. Relief on the contrary, is viewed as an overarching system of facilitation of assistance to the victims of disaster for their rehabilitation in States and ensuring social safety and security of the affected persons. Relief needs to be prompt, adequate and of approved standards. It is no longer perceived only as gratuitous assistance or provision of emergency relief supplies on time. Emergency response plan is, thus, a first attempt to follow a multi-hazard approach to bring out all the disasters on a single platform, incorporating disaster resilient features to ‘build back better’ as the guiding principle. It provides a framework to the primary and secondary agencies and departments, which can outline their own activities for disaster response. Response process begins as soon as it becomes apparent that a disastrous event is imminent and lasts until the disaster is declared to be over. Disaster response is aimed at: Saving Life-Minimising the Loss- Stabilising the Situation.

7.2. Response Planning

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

Table 7.1: Response planning phases during the early warning

Pre-Disaster	Responsible Dept.	Post-Disaster	Responsible Dept.
Activate control room if necessary	DDMA will activate the control room at district level. Control room at Sub-Division and Taluk level will be activating by concerned disaster management authority.	Quick Damage and Need Assessment	Multi-Sectoral committees encompass all line departments constituted by DDMA
Review situation	DDMA will review all the situation on the basis of data and reports provide by the line departments	Search and rescue	Home Guard/Civil Defense/Fire with coordination with Police and NDRF (if required)

Communicate warning (Inform community likely to be affected by the impending disaster Inform line departments/agencies to mobile resources/teams for quick deployment)	DEOC will communicate the warning to all potential affected areas with support of district information officer, Police, Home Guard, Fire and Local Administration.	Activate Line Departments/Agencies to Quick restoration of basic utilities and critical infrastructure e.g. Roads, Life Line Buildings i.e. Hospital, Blood Bank, Schools and Banks, Admin Building, Electricity, Water/Sanitation,	DDMA will coordinate with all line departments for quick restoration
Coordination with all line departments	Chief Executive officer appointed by DDMA will coordinate	Activate all Quick response Team QRTs/ First Responder Team	DDMA will coordinate with all available QRTs in the District
Stocking of Essential and basic life line Items and materials	All frontline departments i.e. Medical, Food and Civil Supplies, PWD, BESCO, Police	Sharing, reporting and communicating the info to the State and National Level and Requisition for assistance to prompt response or relief	Chief Executive officer appointed by DDMA will coordinate
Identification of temporary shelter	Revenue Department will identify the shelter with support of PWD, Municipalities and Education	Activate and deploy the Incident Response Teams	DDMA Chairman
Evacuate people to temporary shelter with necessitated facilities	Police and Home guard will evacuate the people to safer place or identified temporary shelter in support of Fire Dept., NCC,NGO	Provide temporary shelter and basic necessitate facilities to people	Revenue Department will coordinate with all line departments
Remove assets from dangerous areas	PWD will facilitates all these activities in coordination with RTO, KSRTC	Make sure the functioning of all communication networks	RTO, KSRTC, NHAI will further help

Table 7.2: Response planning phases during the no early warning

Activities	Responsible Dept.
Activate control room and forward the report to state and national level	DDMA will activate the control room at district level. Control room at Sub-Division and Taluk level will be activating by concerned disaster management authority. CEO of DDMA will report to higher Authority
All heads of the departments will report to the Control Room	DDMA will coordinate with line departments
Activation of damages and needs assessment teams to undertake damages and needs assessment	Multi-Sectoral committees encompass all line departments constituted by DDMA will undertake an assessment of damages to assets and infrastructure and assess the needs of the community.
Restoration of Critical and life line infrastructure	PWD, Irrigation, BESCO, Health and family Welfare, Food and Civil Supplies will initiate efforts to restore the infrastructure starting especially with the most critical infrastructure that could assist relief
Activate and deploy the Incident Response Teams	Chief Executive officer appointed by DDMA will coordinate
Provide relief to the affected communities	DDMA will coordinate with food and civil supplies, health and family welfare, Police, RTO, KSRTC, PWD and Irrigation
Coordinate relief operations	DDMA and Revenue Dept. coordinate with Incident response team at Hierarchical admin level e.g. Taluk, ZP
Request for possible help from external sources/ Resource's Mobilization	Chief Executive officer appointed by DDMA will coordinate

7.3. Disaster Response Functions to be carried out:

7.3.1. Early Warning Phase

1. Activation of Control Room/EOC: As soon as EW Message/Information is available through IMD/CWC/GSI/KSNDMC/ DDMA will activate EOC/CR
2. Inform Community likely to be impacted
3. Inform Line Departments/Agencies
4. Hold Meetings of DDMA
5. Requisition of NDRF
6. Requisition of Paramilitary

7.3.2. Immediate Post Disaster Phase

1. Search & Rescue: Home Guard/Civil Defense/Fire will carried out the search and rescue with coordination with Police and NDRF (if required) and the existed Paramilitary Forces within or near by the district.

2. Quick Damage Assessments: DDMA will constitute a multi-sectoral damage and need assessment team which will carry out the process of damage and need assessment and report to the DDMA for further action. The multi-sectoral teams will be constituted and its members having local knowledge and will comes from different expertise to do the synthesis damage and need assessment compressively. The team will conduct damage assessment in the special following sectors

Table 7.3: Damage assessment in context to Response

Sl. No	Damages
1	Roads and Bridges
2	Life Line Buildings
3	Food and Civil Supplies
4	Houses
5	Water lines and Tanks
6	Electricity
7	Communication
8	Medical Infrastructure
9	Monuments
10	Agriculture Crops and Horticulture
11	Livestock
12	Forest

7.4. Quick Need Assessments

Need assessment will be undertaken by a multi-sectoral team with a special focus on the following sectors mentioned in table 7.4.

Table 7.4: Need assessment in context to Response

Sl. No.	Sector of Need
1.	Temporary Shelter
2.	Food and Civil Supplies
3.	Medical/health
4.	WASH
5.	Special Needs
6.	Psychosocial care
7.	Security needs in context to varying social groups
8	Restoration of essential services like, roads, water facilities, power ,communication

7.5. Resource Mobilization

Resource mobilization is one of the most important and crucial activity when any disaster occurs in the district for responding to disaster in an efficient manner. The IDRN portal has information regarding the different kind of resources available for multi-hazard, with the various departments along with their location across district. It can lead to quick and immediate procurement of the required resources from the nearest available site and department for response to any disaster. Various resources required in the damages and needs assessment will be mobilized by the concerned departments. Following is the list of the departments which are responsible for mobilizing various needs identified in the damages and needs assessment:

Table 7.5: Resource Mobilization and Responsible Department

Sl No	Identified Need	Action	Nature of resources	Responsibility
1	Temporary Shelter	DDMA/Revenue Department will arrange relief camps/shelters. Wherever required Tents will be pitched in to accommodate affected people. Departments of Education, Health and Family Welfare will provide support	Tents, sleeping bags blankets and clothing's, Sanitizer and sanitary pads, stretchers	Revenue Dept./ DDMA/ Health/
2.	Food and Civil Supplies	Food and Civil Supplies Dept. will Provide food, Fuel, and Drugs	Essential food items and fuel	Food and Civil Supplies Dept.
3.	Medical	Medical Dept. will arrange the lifesaving medicines, blood, Doctors, Paramedical staff	Medicines, doctors, ANM, nurses, Asha Workers	Health and Family Welfare Dept./ Red Cross
4.	WASH	IPH will provide chlorine tables for water purification, drinking portable water, sanitation kits	Drinking water, sanitation	Irrigation Dept.
6.	Psychosocial care	Health and Family Welfare Dept./Red Cross will take care the reported Physco and Mental Trauma cases	Psychosocial care	Health and Family Welfare Dept./Red Cross
7.	Security needs in context to varying social groups	Maintain the Law and Order and security of Social group and tackle the human trafficking situation	Trained personnel	Police/Home Guard, Civil Defense
8.	Road clearance	To restore the road function, remove the debris and clearance of any blockage	Earth removers and man power	PWD

9.	Power storage	To restore the power, provide the temporary chargeable generators and batteries	DG sets, wires, manpower, batteries, search lights,	BESCOM
10	Communication	To restore the communication network	Network restoration, v-sets, satellite phones, walkie talkie	BSNL, NIC, Police

7.6. Response Management

7.6.1. Activation of EOC

The DEOC will function to its fullest capacity on the occurrence of disaster. The district DEOC will be fully activated during disasters. The activation would come into effect either on occurrence of disaster or on receipt of warning. On the receipt of warning or alert from any approved agency which is competent to issue any early emergency warning, all community preparedness measures including counter-disaster measures will be put into operation. The Deputy Commissioner will assume the role of the Chief of Operations for Disaster Management. All line departments' senior official will be immediately reported to the DEOC. The DDMA will expand the Emergency Operations Centre to include Branch arrangements with responsibilities for specific tasks depending on the nature of disaster and extent of its impact. All the occurrences report would be communicated to the SEOC/SDMA, NEOC/NDMA and Supporting Agencies by means of telephone and subsequently fax periodically. The occurrence of disaster shall be immediately communicated to the stakeholders such as NGOs, trained volunteers through SMS gateway (or telephonic in case of communication exist or any available communication network) for which specific provision of group mobile directory would be made.

Main Roles of DEOC after activation:

- a. Assimilation and dissemination of information.
- b. Liaise between Disaster site and State Head Quarter.
- c. Monitoring, coordinate and implement the DDMP.
- d. Coordinate actions and response of different departments and agencies.
- e. Coordinate relief and rehabilitations operations
- f. Hold press briefings.

7.6.2. Relief distribution

Relief distribution will be coordinated by sub divisional, taluk and respective disaster management committees. The onsite distribution will be done by incident response team. The updated needs will be communicated to the DDMA and the DDMA will ensure the regular supply of the required items. The relief distribution will include essential items which serves the basic needs of the affected community like LPG , medicines, clothes, food items, drinking water, soaps, blankets, items of special needs for women's, children's, handicapped and old aged.

7.6.3. Search and rescue management

Search and Rescue activities include, but are not limited to, locating, extricating, and providing immediate medical assistance to victims trapped in exigency situation. People who are trapped under destroyed buildings or are isolated due to any disaster need immediate assistance. The District Commissioner, in conjunction with local authorities will be responsible for the search and rescue operations in an affected region. At present, Nodal department for this activity is NDRF and Home Guard/civil Defense Department. The helping departments for search and rescue are P.W.D., ZP/MCC, Self-help groups, N.C.C, NGO and PRED. There are other bodies too that help these departments in this work, like, Health department, Fire department. In doing so, the DC will be guided by relevant disaster management plans and will be supported by Government departments and local authorities.

7.6.4. Information management and Media management

Media has to play a major during disaster. They will aid in information dissemination about help-line, aid-distribution camps, emergency phone number or the needs of the people. Further, they will also help in quashing rumours, for crowd management and prevent panic situation. Media will also help in mobilizing resources [money, volunteers etc.] from other areas. To disseminate information about various hazards in the district and the relevant dos and don'ts during and after a disaster encompass under the media management. This will be done through various media such as newspapers, television, radio, internet, media and information van, street theatre, etc. The DDMA will establish an effective system of collaborating with the media during emergencies. At the District Emergency Operation Centre (DEOC), a special media cell will be created during the emergency. Both print and electronic media are regularly brief by some senior official designated from DDMA at predetermined time intervals about the events as they occur and the prevailing situation on ground. The District information Officer in consultation with the DDMA would take appropriate steps in this direction also too.

7.6.5. VIP management

It may be possible that the scale of a disaster may in addition prompt visits of the VVIPs/VIP which further requires the active management to ensure the effortlessly ongoing response and relief work without any interruption. DDMA will be designated senior official to handle the VVIPs/VIPs visits to the affected areas and further to brief the VVIP/VIP beforehand about the details of casualties, damage and the nature of the disaster. The Police and Home guard will be handled all the security of VVIPs/VIP during their visit. It would be desirable to restrict media coverage of such visits, in which case the police should liaise with the government press officer to keep their number to minimum.

7.6.6. NGO Coordination and Management

Non-governmental organizations (NGOs) will play as one of the most effective alternative means of achieving an efficient communications link between the disaster management agencies and the effected community due to their outreach at the grassroots level.

As per the section 35 and 38 of the DM Act 2005 stipulates that the DDMA shall specifically emphasize the coordination of actions with NGOs. In typical disaster situation, DDMA with the support of DRDA, will coordinate the NGOs/CBO's and further manage their work in prompt response, relief and rescue. It will also monitor and take feedback at grassroots level by the agreeable community participation.

7.6.7. Disposal of dead bodies and carcass

District administration will coordinate to arrange the mass cremation burial of the dead bodies with support of police & forest department after observing all codal formalities & maintain the video recording of such unclaimed dead bodies after properly handing over the same to their kith or kin. Department of animal husbandry in association with the local administration shall be responsible for the disposal of the animal carcass in case of mass destruction.

7.6.8. Seeking external help for assistance

1. Procedure for Provision of Aid:

i. The Armed Forces are conscious of not only their constitutional responsibility in-aid to civil authority, but also, more importantly, the aspirations and the hopes of the people. Although such assistance is part of their secondary role, once the Army steps in, personnel in uniform whole heartedly immerse themselves in the tasks in accordance with the Army's credo-“SERVICE BEFORE SELF”.

ii. Assistance during a disaster situation is to be provided by the Defense Services with the approval and on orders of the central government. In case, the request for aid is of an emergency nature, where government sanctions for assistance is not practicable, local military authorities when approached for assistance should provide the same. This will be reported immediately to respective Services Headquarters (Operations Directorate) and normal channels taken recourse to, as early as possible.

2. Requisition Procedure:

Any state unable to cope with a major disaster situation on its own and having deployed all its resources will request Government of India for additional assistance. Ministry of Defense will direct respective service headquarters to take executive action on approved requests. The chief secretary of state may initiate a direct request for emergency assistance, for example, helicopter for aerial reconnaissance, or formation of local headquarter (Command/Area Headquarters) or naval base or air force station.

3. The Armed Forces may be called upon to provide the following types of assistance:

- Infrastructure for command and control for providing relief. This would entail provision of communications and technical man power.
- Search rescue and relief operations at disaster sites.
- Provision of medical care at the incident site and evacuation of casualties.

- Logistics support for transportation of relief materials
- Setting up and running of relief camps
- Construction and repair of roads and bridges to enable relief teams/material to reach affected areas.
- Repair, maintenance and running of essential services especially in the initial stages of disaster relief.
- Assist in evacuation of people to safer places before and after the disaster
- Coordinate provisioning of escorts for men, material and security of installations,
- Stage management and handling of International relief, if requested by the civil ministry

4. Disaster Relief Operation

Important aspects of policy for providing disaster relief are as under:

- Disaster relief act can be undertaken by local commanders. However, HQ Sub Area is to be informed at the first opportunity and then flow of information to be maintained till completion of the task.
- Effective and efficient disaster relief by the army while at task.
- Disaster relief tasks will be controlled and coordinated through Commanders of Static headquarters while field units Commanders may move to disaster site for gaining first-hand knowledge and ensuring effective assistance.
- Once situation is under control of the civil administration, army aid should be promptly de-requisitioned.
- Adequate communication, both line and radio, will be ensured from Field Force to Command Headquarters.

5. Procedure to Requisition Army, and Air Force:

a. It will be ensured by the local administration that all local resources including Home Guards, Police and others are fully utilised before assistance is sought from outside. The District Magistrate will assess the situation and projects his requirements to the State Government. District Control Room will ensure that updated information is regularly communicated to the State Control Room, Defense Service establishments and other concerned agencies.

b. District Magistrate will apprise the State Government of additional requirements through State Control Room and Relief Commissioner of the State.

c. Additional assistance required for relief operations will be released to the District Magistrate from the state resources. If it is felt that the situation is beyond the control of state administration, the Relief commissioner will approach the Chief Secretary to get the aid from the Defense Services. Based on the final assessment, the Chief Secretary will project the requirement as under while approaching the Ministry of Defense, Government of India simultaneously for clearance of the aid:

6. Co-Ordination between Civil and Army:

For deployment of the Army along with civil agencies on disaster relief, co-ordination should be carried out by the district civil authorities and not by the departmental heads of the line departments like Police, Health & Family Welfare, PWD and PHED etc.

7. Overall Responsibility When Navy and Air Force are also being employed:

When Navy and Air Force are also involved in disaster relief along with the Army, the Army will remain over all responsible for the tasks unless specified otherwise.

8. Principles of Deployment of Armed Forces

Judicious Use of Armed Forces: Assistance by Armed Forces should be requisitioned only when

- a) **It becomes absolutely necessary** and when the situation cannot be handled by the civil administration from within its resources. However, this does not imply that the response must be graduated. If the scale of disaster so dictates, all available resources must be requisitioned simultaneously.
- b) **Immediate Response:** When natural and other calamities occur, the speed for rendering aid is of paramount importance. It is clear that, under such circumstances, prior sanction for assistance may not always be forth coming. In such cases, when approached for assistance, the Army should provide the same without delay. No separate Government approval for aid rendered in connection with assistance during natural disaster and other calamities is necessary.
- c) **Command of Troops:** Army units while operating under these circumstances continue to be under command of their own commanders, and assistance rendered is based on task basis.
- d) **No Menial Tasks:** While assigning tasks to troops, it must be rendered that they are not employed for menial tasks e.g. troops must not be utilised for disposal of dead bodies.
- e) **Requisition of Aid on Task Basis:** While requisitioning the Army, the assistance should not be asked for in terms of number of columns, engineers and medical teams. Instead, the-civil administration should spell out tasks, and leave it to Army authorities to decide on the force level, equipment and methodologies to tackle the situation.
- f) **Regular Liaison and Co-ordination:** In order to ensure that optimum benefits derived out of Armed Forces employment, regular liaison and coordination needs to be done at all levels and contingency plans made and disseminated to the lowest level of civil administration and the Army.
- g) **Advance Planning and Training:** Army formations located in areas prone to disaster must have detailed plans worked out to cater for all possible contingencies. Troops should be well briefed and kept ready to meet any contingency. Use of the Vulnerability Atlas where available must be made.
- h) **Integration of all Available Resources:** All available resources, equipment, accommodation and medical resources with civil administration, civil firms and NGOs need to be taken into account while evolving disaster relief plans. All the resources should be integrated to achieve optimum results. Assistance from outside agencies can be super imposed on the available resources.

- i) **Early De-requisitioning:** Soon after the situation in a disaster-affected area has been brought under control of the civil administration, Armed Forces should be de-requisitioned.

7.7 Relief Measures:

Once the rescue phase is over, the district administration shall provide immediate relief assistance either in cash or in any kind to the victims of the disaster. The District Disaster Management Authority, of district & its Emergency Support Functionaries shall enter in to pre-contract well in advance and procure materials required for life saving. The office of Deputy Commissioner is responsible for providing relief to the victims of natural & manmade disasters like fire, lightning, earthquakes, accidents etc.

REVISED LIST OF ITEMS AND NORMS OF ASSISTANCE FROM STATE DISASTER RESPONSE FUND (SDRF) AND NATIONAL DISASTER RESPONSE FUND (NDRF)

(Period 2015-20, MHA Letter No. 32-7/2014-NDM-I Dated 8th April, 2015)

Sl. No	Items	Norms of Assistance
	GRATUITOUS RELIEF	
1	a) Ex-Gratia payment to families of deceased persons	Rs. 4.00 lakhs per deceased person including those involved in relief operations or associated in preparedness activities, subject to certification regarding cause of death from appropriate authority.
	b) Ex-Gratia payment for loses of a limb or eyes(s).	Rs. 2.00 lakhs/- per person, when the disability is more than 60%. Subject to certification by a doctor from a hospital or dispensary of Government, regarding extent and cause of disability.
	c) Grievous injury requiring hospitalization	Rs. 12,700/- per person requiring hospitalization for more than a week. Rs. 4,300/- per person requiring hospitalization for less than a week.
	d) Clothing and utensils/house-hold goods for families whose houses have been washed away/fully damaged/severely inundated for more than a week due to natural calamity	Rs. 1,800/- per family, for loss of clothing. Rs. 2,000/- per family, for loss of utensils/household goods
	e) Gratuitous relief for families whose livelihood is seriously affected	Rs. 60/- per adult and Rs. 45/- per child, not housed in relief camps. State Govt. will certify that identified beneficiaries are not housed in relief camps. Further State Government will provide the basis and process for arriving at such beneficiaries district-wise. Period for providing gratuitous relief will be as

		per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period of assistance will up to 30 days, which may be extended up to 60 days in the first instance, if required, and subsequently up to 90 days in case of drought/pest attack. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year.
	SEARCH & RESCUE OPERATIONS	
2	(a) Cost of search and rescue measures/ evacuation of people affected/ likely to be affected.	As per actual cost incurred, assessed by SEC and recommended by central Team (in case of NDRF). - By the time the central Team visits the affected area, these activities are already over. Therefore, the State Level Committee and the Central Team can recommend actual / near-actual costs.
	(b) Hiring of boats for carrying immediate relief and saving lives.	As per actual costs incurred, assessed by SEC and recommended by the Central Team (in case of NDRF). The quantum of assistance will be limited to the actual expenditure incurred on hiring boats and essential equipment requiring for rescuing stranded people and thereby saving human lives during a notified natural calamity.
3	RELIEF MEASURES	
	a) Provision for temporary accommodation, food, clothing, medical care etc. for people affected/ evacuated and sheltered in relief camps.	As per assessment of need by SEC and recommended of the Central Team (in case of NDRF), for a period of up to 30 days. The SEC would need to specify the number of camps, their duration and the number of persons in camps. In case of continuation of a calamity like drought or widespread devastation caused by earthquake or flood etc., this period may be extended to 60 days, and up to 90 days in case of severe drought. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year. Medical care may be provided from National

		Rural Health Mission (NRHM).
	b) Air dropping of essential supplies	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF). - The quantum of assistance will be limited to actual amount raised in the bills by the Ministry of Defence for airdropping of essential supplies and rescue operations only.
	c) Provision of emergency supply of drinking water in rural areas and urban areas.	As per the actual cost based on the assessment need by NEC and recommended by the Central Team (in case of NDRF), up to 30 days and may be extended up to 90 days in case of drought. Depending on the ground situation, the State Executive Committee can extend the time period beyond the prescribed limit subject to that expenditure on this account should not exceed 25% of SDRF allocation for the year.
	CLEARANCE OF AFFECTED AREAS	
4	a) Clearance of debris in public areas.	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central Team for assistance to be provided under NDRF.
	b) Drainage of flood water in affected areas	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central Team(in case of NDRF).
	c) Disposal of death bodies/ Carcasses	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF).
5	AGRICULTURE	
(i)	Assistance to farmers having landholding up to 2 ha	
A	Assistance for land and other loss	
	a) De-silting of agriculture land (where thickness of sand/ silt deposit is more than 3", to be certified by the competent authority of the State Government)	Rs. 12,200/- per hectare for each item
	b) Removal of debris on agriculture land in hilly areas.	(Subject to the condition that no other assistance/subsidy has been availed of by/is eligible to the beneficiary under any other Government Scheme.)
	c) De-silting/ Restoration/ Repair of fish farms	
	d) Loss of substantial portion of land	Rs. 37,500/- per hectare to only those small and

	caused by landslide, avalanche, change of course of rivers.	marginal farmers whose ownership of the land is legitimate as per the revenue records.
B.	Input subsidy (where crop loss is 50% and above)	
	a) For agriculture crops, horticulture crops and annual plantation crops	Rs 6,800/- per hectare in rainfall areas and restricted to sown areas. Rs. 13,500/- per hectare in assured irrigated areas, subject to minimum assistance not less Rs.1000/- and restricted to sown areas.
	b) Perennial Crops	Rs. 18,000/- hectare for all types of perennial crops subject to minimum assistance not less than Rs. 2000/- and restricted to sown areas.
	c) Sericulture	Rs. 4,800/- per hectare for Eri, Mulberry, Tussar Rs 6000/- per ha. For Muga
(ii)	Input Subsidy to farmers having more than 2Ha of landholding	Rs. 6,800/- per hectare in rainfall areas and restricted to sown areas. Rs. 13,500/- per hectare for areas under assured irrigation and restricted to sown areas. Rs. 18,000/- per hectare for all types of perennial crops and restricted to sown areas. - Assistance may be provided where crop loss is 33% and above, subject to a ceiling of 2 hectare per farmer.
	ANIMAL HUSBANDRY - ASSISTANCE TO SMALL AND MARGINAL FARMERS	
6	i) Replacement of milch animals, draught animals or animals used for haulage.	Milch animals – Rs. 30,000/- Buffalo/cow/camel/yak/Mithun etc. Rs. 3,000/- Sheep/goat/pig. Draught animal – Rs. 25,000/- Camel/horse/bullock etc. Rs. 16,000/- Calf/Donkey/Pony/Mule - The assistance may be restricted for the actual loss of economically productive animals and will be subject to a ceiling of 3 large milch animal or 30 small milch animals or 3 large draught animal or 6 small draught animals per household irrespective of whether a household has lost a large number of animals. (The loss is to be certified by the Competent Authority designed by the State Government). Poultry:- Poultry @ Rs. 50/- per bird subject to a ceiling of assistance of Rs. 5000/- per beneficiary household. The death of the poultry

		birds should be on account of natural calamity. Note:- Relief under these norms is not eligible if the assistance is available from any other Government Scheme. e.g. loss of birds due to Avian Influenza or any other diseases for which the Department of Animal Husbandry has a separate scheme for compensating the poultry owners.
	(ii) Provision of fodder/ feed concentrates including water supply and medicines in cattle camps.	Large animals – Rs. 70/- per day. Small animals - Rs. 35/- per day. Period for providing relief will be as per assessment of the State Executive Committee (SEC) and the Central Team (in case of NDRF). The default period for assistance will be upto 30 days, which may be extended upto 60 days in the first instance and in case of severe drought up to 90 days. Depending on the ground situation, the State Executive Committee can extend the time. Period beyond the prescribed limit, subject to the stipulation that expenditure on this account should not exceed 25% of SDRF allocation for the year. Based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF) consistent with estimates of cattle as per Livestock Census and subject to the certificate by the competent authority about the requirement of medicine and vaccine being calamity related.
	iii) Transport of fodder to cattle outside cattle camps	As per the actual cost of transport, based on assessment of need by SEC and recommendation of the Central team (in case of NDRF) consistent with estimated of cattle as per Livestock Census.
	FISHERY	
7	i) Assistance to Fisherman for repair/ replacement of boats, nets - damaged or lost --Boat --Dugout-Canoe --Catamaran --Net (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/assistance, for the instant calamity, under any other	Rs. 4,100/- for repair of partially damaged boats only Rs. 2,100/- for repair of partially damaged net. Rs. 9,600/- for repair of fully damaged boats. Rs. 2,600/- for repair of fully damaged net.

	Government Scheme.)	
	ii) Input subsidy for fish seed farm	Rs. 8,200/- per hectare. (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/assistance, for the instant calamity, under any other Government Scheme, except the one time subsidy provided under the Scheme of Department of Animal husbandry, Dairying and Fisheries, Ministry of Agriculture.)
	HANDICRAFTS/HANDLOOM - ASSISTANCE TO ARTISANS	
8	i) For replacement of damaged tools/ equipment	Rs. 4,100/- per artisan for equipments. - Subject to certification by the competent authority designated by the Government about damage and its replacement.
	ii) For loss of raw-materials/ goods in process/ finished goods.	Rs. 4,100/- per artisan for raw material. - Subject to certification by the competent authority designated by the State Government about loss and its replacement.
	HOUSING	
	a) Fully damaged/ destroyed houses	
	i) Pucca house	Rs. 95,100/- per house, in plain areas
	ii) Kutcha house	Rs. 1,01,900/- per house, in hilly areas including Integrated Action Plan (IAP) districts.
	b) Severely damaged houses	
	i) Pucca house	
	ii) Kutcha house	
	c) Partially Damaged Houses	
9	i) Pucca (other than huts) where the damage is at least 15%	Rs.5,200/- per house
	ii) Kutcha (other than huts) where the damage is at least 15%	Rs.3,200/- per house.
	d) Damaged/destroyed huts:	Rs. 4,100/- per hut (Hut means temporary, make shift unit, inferior to Kutcha house, made of thatch, mud, plastic sheets etc. traditionally recognized as huts by the State/District authorities.) Note:-The damaged house should be an authorized construction duly certified by the Competent Authority of the State Government.
	e) Cattle shed attached with house	Rs. 2,100/- per shed.
10	INFRASTRUCTURE	
	Repair/restoration (of immediate nature) of damaged infrastructure. (1) Roads & bridges, (2) Drinking water Supply works,	Activities of immediate nature: Illustrative of activities which may be considered as works of an immediate nature is given in the Appendix.

<p>(3) Irrigation, (4) Power (only limited to immediate restoration of electricity supply in the affected areas), (5) Schools, (6) Primary Health Centre, (7) Community assets owned by Panchayat.</p> <p>Sectors such as Telecommunication and Power (except immediate restoration of power supply), which generate their own revenue, and also undertake immediate repair/restoration works from their own funds/resources are excluded.</p>	<p>Assessment of requirements: Based on assessment of need, as per States' costs/rates/ schedules for repair by SEC and recommendation of the Central Team (in case of NDRF).</p> <p>- As regards repair of roads, due to consideration shall be given to Norms for Maintenance of Roads in India, 2001, as amended from time to time, for repair of roads affected by heavy rains/floods, cyclone, landslide, sand dunes, etc. to restore traffic. For reference these norms are</p> <p>* Normal and Urban areas: up to 15% of the total of Ordinary repair (OR) and Periodical repair (PR). * Hills: up to 20% of total of OR and PR</p> <p>- In case of repair of roads, assistance will be given based on the notified Ordinary Repair (OR) and Periodical Renewal (PR) of the State. In case OR & PR rate is not available, then assistance will be provided @ Rs.1 lakh/km for State Highway and Major District Road and @ Rs.0.60 lakh/km for rural roads. The condition of "State shall first use its provision under the budget for regular maintenance and repair" will no longer be required, in view of the difficulties in monitoring such stipulation, though it is a desirable goal for all the States.</p> <p>- In case of repairs of Bridges and Irrigation works, assistance will be given as per the schedule of rates notified by the concerned States. Assistance for micro irrigation scheme will be provided @ Rs.1.5 lakh per damaged scheme. Assistance for restoration of damaged medium and large irrigation projects will also be given for the embankment portions, on par with the case of similar rural roads, subject to the stipulation that no duplication would be done with any ongoing schemes.</p> <p>- Regarding repairs of damaged drinking water schemes, the eligible damaged drinking water structures will be eligible for assistance @ Rs.1.5 lakh/damaged structure.</p> <p>- Regarding repair of damaged primary and secondary schools, primary health centres,</p>
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		<p>Anganwadi and community assets owned by the Panchayats, assistance will be given @ Rs.2 lakh/damaged structure.</p> <p>- Regarding repair of damaged power sector, assistance will be given to damaged conductors, poles and transformers up to the level of 11 kV. The rate of assistance will be @ Rs.4000/poles, Rs.0.50 lakh per km of damaged conductor and Rs.1.00 lakh per damaged distribution transformer.</p>
11	PROCUREMENT Procurement of essential search, rescue and evacuation equipments including communication equipments, etc. for response to disaster.	<p>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</p> <p>- The total expenditure on this item should not exceed 10% of the annual allocation of the SDRF.</p>
12	CAPACITY BUILDING	<p>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</p> <p>- The total expenditure on this item should not exceed 5% of the annual allocation of the SDRF.</p>
13	State specific disasters within the local context in the State, which are not included in the notified list of disasters eligible for assistance from SDRF/NDRF, can be met from SDRF within the limit of 10% of the annual funds allocation of the SDRF.	<p>- Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC).</p> <p>- The norm for various items will be the same as applicable to other notified natural disasters, as listed above. Or</p> <p>- In these cases, the scale of relief assistance against each item for 'local disaster' should not exceed the norms of SDRF.</p> <p>- The flexibility is to be applicable only after the State has formally listed the disasters for inclusion and notified transparent norms and guidelines with a clear procedure for identification of the beneficiaries for disaster relief for such local disasters', with the approval of SEC.</p>
APPENDIX Illustrative list of activities identified as of an immediate nature		
1	Drinking Water Supply	<ol style="list-style-type: none"> 1. Repair of damaged platforms of hand pumps/ring wells/spring-tapped chambers/public stand posts, cisterns. 2. Restoration of damaged stand posts including replacement of damaged pipe lengths with new pipe lengths, cleaning of clear water reservoir (to make it leak proof). 3. Repair of damaged pumping machines, leaking overhead reservoirs and water pumps including damaged intake - structure, approach gantries/jetties.

2	Roads: 1. Filling up of breaches and potholes, use of pipe for creating waterways, repair and stone pitching of embankments. 2. Repair of breached culverts. 3. Providing diversions to the damaged/washed out portions of bridges to restore immediate connectivity. 4. Temporary repair of approaches to bridges/embankments of bridges, repair of damaged railing bridges, repair of causeways to restore immediate connectivity, granular sub base, over damaged stretch of roads to restore traffic.	
3	Irrigation: 1. Immediate repair of damaged canal structures and earthen/masonry works of tanks and small reservoirs with the use of cement, sand bags and stones. 2. Repair of weak areas as piping or rat holes in dam walls/embankments. 3. Removal of vegetative material/building material/debris from canal and drainage system. 4. Repair of embankments of minor, medium and major irrigation projects.	
4	Health: Repair of damaged approach roads, buildings and electrical lines of PHCs/community Health Centres.	
5	Community assets of Panchayat a) Repair of village internal roads. b) Removal of debris from drainage/sewerage lines. c) Repair of internal water supply lines. d) Repair of street lights. e) Temporary repair of primary schools, panchayat ghars, community halls, anganwadi, etc.	
6	Power • Poles/Conductors and transformers upto 11 kv.	
7	The assistance will be considered as per the merit towards the following activities:	
	Items/ Particulars	Norms of assistance will be adopted for immediate repair
i)	Damaged primary school building Higher secondary/middle/ college and other educational institutions building	Up to Rs. 1.50 lakh/unit not covered
ii)	Primary Health Centre	Up to Rs. 1.50 lakh/unit
iii)	Electric poles and wires etc.	Normative cost (upto Rs.4000 per pole and Rs.0.50 lakh per km)
iv)	Panchayat Ghar/Anganwadi/ Mahila Mondal/ Yuva Kendra/ Community Hall	Up to 2.00 lakh/unit
v)	State Highways/Major District road	Rs.1.00 lakh/km
vi)	Rural road/bridge	Rs.0.60 lakh/km
vii)	Drinking water scheme	Up to 1.50 lakh/unit

viii)	Irrigation Sector: Minor Irrigation schemes/Canal Major irrigation scheme Flood control and anti Erosion Protection work	up to Rs.1.50 lakh/scheme Not Covered Not Covered
ix)	Hydro Power Project/HT Distribution systems/ Transformers and subs stations	Not Covered
x)	High Tension Lines (above 11 kv)	Not Covered
xii)	State Govt Buildings viz. departmental/office building, departmental/residential quarters, religious structures, patwarkhana, Court premises, play ground, forest bungalow property and animal/bird sanctuary etc.	Not Covered
xiii)	Long terms/Permanent Restoration Work incentive	Not Covered
xiv)	Any new work of long term nature	Not Covered
xv)	Distribution of commodities	Not Covered (However, there is a provision for assistance as GR to families in dire need of assistance after a disasters)
xvi)	Procurement of equipments/machineries under NDRF	Not Covered
xvii)	National Highways	Not Covered (Since GOI born entire expenditure towards restoration work activities)
xviii)	Fodder seed to augment fodder production	Not Covered

7.8 Minimum Standards of Relief:

DDMA shall rendered relief to the Disaster Victims as per Minimum Standards of relief suggested by NDMA:

Sl No	In respect of Relief Camps	Steps to ensure Minimum Standards
1	Shelters	<ul style="list-style-type: none"> ➤ Identification of the Relief Centers in each Block of the District. Each relief centers shall be temporary in nature and must have 3.5 Sq.m of covered area per person. ➤ Each centers have basic facilities like Toilets, water Supply, Electricity Supply as well as power back up with fuel etc ➤ Safety of inmates and special arrangements to differently able persons, old and mentally serious patients should be giving top most priority.

2	Food	<ul style="list-style-type: none"> ➤ Each relief centre must have adequate quantity of food especially for Aged & Children ➤ Arrangements of Milk and Other Dairy Products shall be provided to the Children & lactating mothers. ➤ Hygiene at community & at camp kitchens. ➤ Date of manufacturing and date of expiry on the packaged food items shall be kept in view before distribution. ➤ Supplied food with calorie of 2400 kcal per day for adult and 1,700 Kcal per day for infants
3	Water	<ul style="list-style-type: none"> ➤ Sufficient quantity of water shall be provided in the relief camps for personal cleanliness and had wash. ➤ Minimum supply of 3liters of water per person per day is made available in the relief camps. ➤ In case of safe drinking water is not possible at least double chlorination of water needs to be ensured. ➤ Maximum distance from the relief camp to the nearest water point shall be not being more than 500 mts.
4	Sanitation	<ul style="list-style-type: none"> ➤ 1 toilet for 30 persons may be arranged or built. ➤ Separate toilet and bath area for women and children. ➤ 15 liters of water per person needs to be arranged for toilets/ bathing. ➤ Hand wash facilities in the toilets should be ensured. ➤ Dignity kits for women shall be provided with sanitary napkins and disposable paper bags with proper labeling. ➤ Steps may be taken for control of spread of diseases. ➤ Toilets shall not be more than 50 m away from the relief camps. ➤ Pit Latrines and Soak ways shall be at least 30m from any ground water source and the bottom of any latrine has to be at least 1.5m above the water level. ➤ Drainage or spillage from the defection system shall not run towards any surface water source or shallow ground water source.
5	Medical Cover	<ul style="list-style-type: none"> ➤ Steps shall be taken to avoid spread of any communicable diseases. ➤ Helpline should be set up and contact number and details shall be adequate publicized. ➤ For Pregnant women, arrangement of basic arrangements for safe delivery ➤ All the hospitals, doctors and paramedical staff are available in short notice. Doctors and paramedical staff should be available on 24x7 basis in the relief centers. In case of referral cases to the hospitals suitable transportation shall be arranged. ➤ Medical emergency/contingency plan should be activated in case of mass casualty.

6	Relief for Widows & Orphans	<ul style="list-style-type: none"> ➤ Separate register duly counter signed by officials having complete details women who are widowed and for children who are orphaned due to disaster shall be maintained and kept in permanent record. ➤ Special care shall be given to widow and orphaned who are separated from the family.
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Important social schemes/acts which will make the community more resilient towards adversity of drought and other disasters

- **THE KARNATAKA GUARANTEE OF SERVICES TO CITIZENS Act, 2011(Sakala):** A Bill has been passed by the Karnataka State Legislature to provide guarantee of services to citizens in the State of Karnataka within the stipulated time limit and for matters connected therewith and incidental thereto. This Act is called the Karnataka Guarantee of Services to Citizens Act, 2011. According to this Act, the designated officers who fails to provide citizen related services (services coming under the GSC Act) to the citizens within the stipulated time as mentioned in this Act shall be liable to pay the compensatory cost to the citizen in accordance with the provisions of this Act.

Services pertaining to Disaster Management under the ambit of Sakala Act

1. Natural calamity relief claims for crop damage.
2. Natural calamity relief claims for house damage.
3. Natural calamity relief claims for animal loss.
4. Natural calamity relief claims for loss of life.

CHAPTER-8
RECONSTRUCTION, REHABILITATION
AND RECOVERY

8.1. Sector specific approach and processes for Reconstruction, Rehabilitation and Recovery

Reconstruction, Rehabilitation and Recovery process demands co-ordinate focus on multi disciplinary aspects of reconstruction and rehabilitation for recovery and is essential to understand disaster reconstruction, rehabilitation under the holistic framework of post disaster recovery. It will be in the form of recommendation rather than the rule. Rehabilitation and reconstruction are primarily carried out by the local bodies (Gram Panchayats, District, Talukas, Municipal Corporations, Municipalities, etc.) and different Government departments and boards. The reconstruction and rehabilitation plan is designed specifically for worst case scenario. Post disaster reconstruction and rehabilitation should pay attention to the following activities for speedy recovery in disaster affected areas. The contribution of both government as well as affected people is significant to deal with all the issues properly. Immediate and Long Term recovery plan includes following broad activities:

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

Table 8.1: Sector specific approach and processes for Reconstruction, Rehabilitation and Recovery are as follows:

Sector	Approach	Process
Public assets: <ul style="list-style-type: none"> • Roads and bridges • Culverts • Public buildings like hospitals and schools 	Multi hazard resistant construction to be followed while reconstruction of public assets. For example <ul style="list-style-type: none"> • Hazard resistant buildings to be made with the help of certified engineers. • Use of non-shrinking mortar • Evacuation plans to be made for the public buildings • Non-structural mitigation measures to be taken into consideration Risk sensitive development will be	<ul style="list-style-type: none"> • Detailed damages and needs assessment: Multi sectoral/ multi-disciplinary teams are to be made which can do a detailed damage and need assessment of the entire area. • Develop a detailed recovery plan through multi departmental participation. Specific recovery plan through consultative process of different line department are to be made. • Arrange for funds from Central

	<p>ensured in each of the reconstruction Programme.</p> <p>For example:</p> <ul style="list-style-type: none"> • landslide and flood zone mapping to be implemented • Detailed geological survey of the land to be used for reconstruction. • Recommendations from PDNA report to be considered. 	<p>government, state government, multi-lateral agencies (World Bank or ADB)”</p> <ul style="list-style-type: none"> • Multi sectoral Project Management Unit to be made. • The process of monitoring and manipulation is to be done by SDMA
<p>Utilities</p> <ul style="list-style-type: none"> • Water supply • electricity • communication 	<p>Multi hazard resistant construction to be followed. For example:</p> <ul style="list-style-type: none"> • Water pipelines, communication equipment used can be of such material which can resist impact of certain hazards Risk sensitive development will be ensured • Electric and communication junctions to be installed after considering landslide and flood zonation. • Recommendations from PDNA report to be considered. 	<ul style="list-style-type: none"> • Detailed damages and needs assessment: Multi sectoral/multi-disciplinary teams are to be made which can do a detailed damage and need assessment of the utilities of the entire area. • Develop a detailed recovery plan through multi departmental participation including specific line departments and other stake holders. • Arrange for funds from Central government, state government, multi-lateral (World Bank or ADB)” • Multi sectoral Project Management Unit to be made. • Monitoring and evaluation: The process of monitoring and manipulation is to be done by SDMA.
Housing	<ul style="list-style-type: none"> • Multi hazard resistant construction to be followed. • Risk sensitive development will be ensured • Owner driven approach will be preferred. For example: • National and State schemes like Pradhan Mantri Awas Yojna (rural/urban) and Mukhya Mantri Awas Yojna can be included in 	<p>Detailed damages and needs assessment: Multi sectoral/ multi-disciplinary teams are to be made which can do a detailed damage and need assessment of the entire area.</p> <p>Develop a detailed recovery plan through multi departmental participation: Specific recovery plan through consultative process of different line department are to be</p>

	<p>construction of the individual houses.</p> <ul style="list-style-type: none"> • Non-structural mitigation measures to be taken into consideration • Use of non-shrinking mortar • Further loans can be sourced through banks and other financial institutions. 	<p>made.</p> <p>-Arrange for funds from Central government, state government and multi-lateral (World Bank or ADB)”</p> <p>-Multi sectoral Project Management Unit to be made.</p> <p>-Monitoring and evaluation: The process of monitoring and manipulation is to be done by SDMA.</p>
<p>Economic restoration</p> <ul style="list-style-type: none"> • Agriculture • Horticulture • Industry • Allied sectors • Tourism etc. 	<ul style="list-style-type: none"> • Multi sectoral assessment • Assess direct and indirect losses. • Develop sectoral strategies the sectors that affected the most poor. • the sectors which are most critical for district’s economy • Risk sensitive development will be ensured • Owner driven approach will be preferred • Provision of single window insurance claim system • Promote insurance facility for all sectors through government and private institutions 	<p>-Detailed damages and needs assessment: Multi sectoral/ multi-disciplinary teams are to be made which can do a detailed damage and need assessment of the entire area.</p> <p>-Develop a detailed recovery plan through multi departmental participation: Specific recovery plan through consultative process of different line department are to be made.</p> <p>-Arrange for funds from Central government, state government, multi lateral (World Bank or ADB)”</p> <p>-Multi sectoral Project Management Unit to be made.</p> <p>-Monitoring and evaluation: The process of monitoring and manipulation is to be done by SDMA.</p>
<p>Livelihood restoration</p>	<ul style="list-style-type: none"> • Nature, number and types of livelihoods affected • Interim and long term strategies • Focus on livelihood diversification • Issues related to most poor, women, and marginalized sections • Livelihoods of people without assets (labor) • Role of NGOs 	<p>Detailed damages and needs assessment: Multi sectoral/ multi-disciplinary teams are to be made which can do a detailed damage and need assessment of the entire area.</p> <p>Develop a detailed recovery plan through multi departmental participation: Specific recovery plan through consultative process of different line department are to be made.</p> <p>Arrange for funds from Central government, state government, multi</p>

		lateral (World Bank or ADB)” Multi sectoral Project Management Unit to be made. Monitoring and evaluation: The process of monitoring and manipulation is to be done by SDMA.
Psychosocial restoration	<ul style="list-style-type: none"> • Provisions like trainings from institute like NIMHANS, Mental hospitals and other specialized institutes • Spiritual leaders can help the community to cope up from the trauma 	Arrange for funds from Central government, state government, multi-lateral (World Bank or ADB)”

CHAPTER 9

FINANCIAL RESOURCES FOR IMPLEMENTATION OF DDMP

9.1. Existing sources of Funds for Disaster Management in the District:

State Disaster Response Fund (SDRF):

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

Calamities Covered under SDRF:

The SDRF shall be used only for meeting the expenditure for providing immediate relief to the victims of cyclones, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanches, cloud burst and pest attack.

National Disaster Response Fund (NDRF):

NDRF is a fund constituted under section 46 of the Disaster Management Act 2005. These Guidelines are issued under section 46 (2) of the Disaster Management Act, 2005 (hereinafter DM Act, 2005), to supplement funds from the State Disaster Response Fund (SDRF) of a State, to facilitate immediate relief in case of calamities of a severe nature.

Calamities Covered under NDRF:

Natural Calamities of Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, avalanches, Cloud burst and pest attack considered being of severe nature by Government of India and requiring expenditure by a State Government in excess of the balances available in its own State Disaster Response Fund (SDRF), will qualify for immediate relief assistance from NDRF.

Flexi-funds under Centrally Sponsored Schemes:

NITI Aayog has issued instructions for Rationalization of CSS, vide OM No. O-11013/02/2015-CSS & CMC dated 17th August, 2016. These instructions are applicable for Centrally Sponsored Schemes with one of the key objective "To undertake mitigation/restoration activities in case of natural calamities, or to satisfy local requirements in areas affected by internal security disturbances. Therefore the CSS mentioned in Chapter 4 of this plan are one potential source of funding for mitigation/restoration activities.

9.2. Funds to be created under DM Act 2005

District Disaster Response Funds (DDRF)

DDRF is proposed to be created at the District Level as mandated by Section 48 of the DM Act. The disaster response funds at the district level would be used by the DDMA towards meeting expenses for emergency response, relief, rehabilitation in accordance with the guidelines and norms laid down by the Government of India and the State Government.

District Disaster Mitigation Funds (DDMF)

District Disaster Mitigation funds would be created at the District Level as mandated under Section 48 of the DM Act 2005.

9.3. Responsibilities of the State Departments and Agencies

All State Government Departments, Boards, Corporations, PRED and ULBs have to prepare their DM plans under Section 40 of The DM Act 2005. These Departmental DM Plans are already under preparation at the State Level including the financial projections to support these plans. The necessary financial allocations will be made as part of their annual budgetary allocations, and ongoing programmes. They will also identify mitigation projects and project them for funding in consultation with the SDMA/DDMA to the appropriate funding agency.

9.4. Techno-Financial Regime

Considering that the assistance provided by the Government for rescue, relief, rehabilitation and reconstruction needs cannot compensate for massive losses on account of disasters, new financial tools such as catastrophe risk financing, risk insurance, catastrophe bonds, micro-finance and insurance etc., will be promoted with innovative fiscal incentives to cover such losses of individuals, communities and the corporate sector. In this regard, the Environmental Relief Fund under the Public Liability Insurance Act, 1991, enacted for providing relief to chemical accident victims is worth mentioning. Some financial practices such as disaster risk insurance, micro-finance and micro-insurance, warranty on newly constructed houses and structures and linking safe construction with home loans will be considered for adoption.

9.5. Other Financing Options

DDMA in coordination with the departments will identify other financing options for restoration of infrastructure/livelihoods, like utilization of flexi fund within Centrally Sponsored Scheme for mitigation/restoration activities in the event of natural calamities in accordance with the broad objective of the Central Sector Scheme.

Opportunities of Corporate Social Responsibility (CSR) & Public-Private Sectors funds investments would also be explored and elaborated by the DDMA for increasing disaster resilience.

CHAPTER 10

PROCEDURE AND METHODOLOGY FOR
MONITORING, EVALUATION, UPDATION AND
MAINTENANCE OF DDMP

10.1. Introduction

The District Disaster Management Plan is the sum and substance of the Horizontal and the Vertical disaster management plans in the district. District Disaster Management Plan is a public document which is neither a confidential document nor restricted to any particular section or department of administration. The underlying principal of disaster management is that it has to be part of all departments and none can fold fingers against it.

10.2. Authority for maintaining & reviewing the DDMP

The District Disaster Management Authority (DDMA) will update the DDMP annually and circulate approved copies to the entire stakeholder in District. DDMA, will ensure the planning, coordination, monitoring and implementation of DDMP with regards to the mentioned below clauses of the DM Act, 2005:

- Section 31, Clause (4) of DM Act 2005, mentions that the District Plan shall be reviewed and updated annually.
- As per sub-section (7) The District Authority shall, review from time to time, the implementation of the Plan and issue such instructions to different departments of the Government in the district as it may deem necessary for the implementation thereof.

10.3. Proper monitoring & evaluation of the DDMP

Half-yearly meeting will be organized by the DDMA under the chairmanship of the Chairman, DDMA, to review disaster management activities in the district and updating the DDMP accordingly. All concerned departments and agencies have to participate and give recommendations on specific issues on Disaster Management and submit their updated reports quarterly.

10.4. Post-disaster evaluation mechanism for DDMP

The DDMA Chairman shall make special arrangements to collect data on a particular disaster irrespective of size and vulnerability. This post disaster evaluation mechanism shall be set up with qualified professions, experts and researchers and the collected data shall be thoroughly cross checked and documented in the EOC for further reference. The DDMA will evaluate the DDMP by conducting meetings and consultation with all stakeholders.

10.5. Schedule for updation of DDMP:

Besides the above (2 and 3) procedure of updating the DDMP shall be updated by:

1. Regular data collection system from the district Emergency Operations Centre (EOC)
2. Analysis of data
3. Review by Chairperson, DDMA
4. Updating and disseminating the updated plan

The updated data of DDMP will also be maintained at the DEOC website, ready for use in any situation under the supervision of DDMA.

The Chairman, DDMA will ensure regular updation of the DDMP by consulting the nodal officers of the frontline departments will update it on a biannual basis taking into consideration:-

- Inventory of equipment in the district (DDMRI),
- Human Resources, their addresses and contact details (DDMRI),
- Valuable inputs from actual disasters and updating Matrix of past disasters and HVCRA within the District
- Major change in the operational activities and location through SOPs & Checklists
- Lessons learnt from training, near-missed incidents
- Inputs from mock drills/ simulation exercises
- Changes in disaster profile
- Technological developments/ innovations in identifying potential hazards
- Updation of databases using new technologies like GIS
- Change in demography of surrounding population
- Changes in geo-political environment

10.6. Uploading of updated plans at DDMA/SDMA websites:

District Disaster Management Plan of the district is a public document & should be uploaded at the DDMA/SDMA websites under the supervision of the District Information Officer after each updation with prior approval of the Chairman DDMA.

10.7. Conducting of Mock Drills:

Section 30 (2) (x) of DM Act 2005, states that “District Authority shall review the state of capabilities for responding to any disaster or threatening disaster situation in the district & give directions to the relevant departments or authorities at the district level for their up gradation as may be necessary”. Similarly, Section 30 (2) (xi) of DM Act 2005, also states that “District Authority shall review the preparedness measures & give directions to the concerned departments at the district level 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”. Mock-drills help in evaluating disaster preparedness measures, identify gaps and improving coordination within different government departments, non-government agencies and communities. They help in identifying the extent to which the disaster plan, ESF’s, and SOPs are effective and help in revising the plan through lessons learnt and gaps identified. These drills enhance the ability to respond faster, better and in an organized manner during the response and recovery phase.

10.7.1. The Responsible parties for organizing district drills

Mock Drills will be conducted within District at various levels:

Level 1: District Level

Conducting of District level Mock drills will be the responsibility of the Deputy Commissioner, along with Additional Deputy Commissioner, in association with ***Key Participants Involved in Conducting a Mock drill*** as the incident of disaster may be :-

- DDMA comprising of DC, ADC, SP, CEO, President Zila Panchayath.
- Revenue Department
- Assistant Commissioner
- Tahsildar, Block Officer

- Elected representatives of Panchayath
- DD Factories and Boilers
- Chief Fire Officer
- District Health Officer
- Home Guards, Volunteers.
- District Information Officer
- Transport Department
- Food and Civil Supply Department
- NDRF, SDRF as the situation of the incident may demand
- Rest as per the IRS framework.

Level 2: Sub Divisional Level

The Sub Divisional Magistrate (Civil) will be the concerned authority to conduct mock exercise at the Sub-Division level.

10.7.2. Schedule for organizing drills

District administration shall hold mandatory mock drill **twice annually** for the monitoring, evaluation, updation and maintenance of DDMP. First Mock drill will be held before the beginning of the tourist season in the Month of March or April as the case may for checking the efficiency of the departments for any unforeseen incidence from taking place.

All the above mentioned levels will conduct mock drills at least **once in every six months** to evaluate their disaster management plans.

10.8. Monitoring & gap evaluation:

10.8.1. Check on Personnel's involved in Execution of DDMP are trained with latest skills

The District Authority shall check whether all the personnel involved in execution of DDMP are trained & updated on the skills necessary in line with the updated SOPs. As per Section 30 (2) (xii) of DM Act 2005, the District Authority shall organize & coordinate specialized training programmes for different levels of officers, employees & voluntary rescue workers in the district.

Half yearly meeting for DDMP updation shall be organized by DDMA, under the chairmanship of Deputy Commissioner. DC should ensure for maintenance of DDMP and analysis the identified gaps. All concerned departments and agencies have to participate and give recommendations on specific issues of District Disaster Management Plan, and submit their plans.

10.8.2. Check on-site / off site Plans of Major Accidental Hazard Units

All industrial units within district will submit their on-site/ off-site plans, after regular updation and maintenance to the DDMA for review and evaluation. They will regularly conduct on-site / off- site mock exercises annually or biannually as the case may be, to review, evaluate, and update their plans.

CHAPTER 11
COORDINATION MECHANISM FOR
IMPLEMENTATION OF DDMP

11.1. Introduction

The Coordination between District and Local governments is vital for the proper disaster management. It requires both inter departmental and intra departmental coordination with all the stakeholder line departments and local bodies like, PWD, BESCOM, Health and Family Welfare, Fire and Home guards, Police, BSNL, Food and Civil Supply, Forest, Revenue, Education, Agriculture, Horticulture, KSRTC, Red Cross, Municipalities, NGO's. Community Based Organisation and other local authorities. These partnerships recognize that each level of the disaster management arrangements must work collaboratively to ensure the effective coordination of planning, services, information and resources necessary for comprehensive disaster management.

The DDMP of the district is a three tier disaster management coordination based on bottom to top approaches i.e. taluk level, Sub-Division level and District level. This system enables a progressive escalation of support and assistance. The arrangements comprises of several key management and coordination structures. The principal structures that make up the Arrangements are:

- (A) Disaster management committees are operational at taluk, Sub-Division and district level. The above committees are responsible for planning, organising, coordinating and implementing all measures required to mitigate, prevent, prepare, respond and recover from disasters the affected area under their jurisdiction.
- (B) Emergency Operation Centers at taluk, Sub-Division and district level supports disaster management groups while coordinating information, resources, and services necessary for disaster operations.
- (C) Functional agencies of district administration, DDMA are responsible to coordinate and manage specific threats and provide support to other agencies on and as require

11.2. Intra-Departmental Coordination:-

Each stake holder department i.e., PWD, Irrigation, BESCOM, Health and Family Welfare, fire and home guards, police, BSNL, Food and Civil Supply, forest, Education, Agriculture horticulture, KSRTC, Red Cross will constitute departmental level disaster management committee headed by a gazetted officer pertaining to that department. The committees will organise quarterly meetings of the committee members to analyses the preparedness level of the department in regard to disaster management. The committee will also decide the measures to be taken for reducing the gaps in their capacities and keep the proper record of the same.

11.3. Sub division level coordination mechanism:-

As per the institutional mechanism, sub divisional officer (Civil) will call for the quarterly meeting the sub division level disaster management committee to review the preparedness level and plan to reduce the gaps identified. The chairperson will further report the situation to the DDMA and send the requisition of resources if required.

11.4. Taluk level coordination mechanism:-

As per the institutional mechanism, tahsildar will call for the quarterly meeting at the taluk level disaster management committee to review the preparedness level and plan to reduce the gaps identified at Taluk level.

11.5. Arrangements at local level

It is the local level that manages disasters within their own communities. Taluk, sub division and district levels are to provide additional resources, support, assistance and expertise as required. Local government is the key management agency for disaster events at local level. Local government achieves coordinated disaster management approach through Local Disaster Management committees.

11.6. Coordination system with inter departments and at district level

The District Magistrate/DC is the head of the District administrative set up and chairperson of the DDMA as per the DM Act, 2005. She / He has been designated as the responsible officer in the District. The heads of different departments in the District will have separate roles to play depending on the nature and kind of disaster. The roles and responsibilities of the members of the DDMA will be decided in advance in consultation with the concerned members.

Pre Disaster coordination: Minimum Annual meetings for review of preparedness and discussing the roles and responsibilities of the line departments, taluks and Sub Divisions. The meeting agenda would be discussing the capacity of each department in terms of SAR equipment's and manpower and regular updation of the same.

Disaster phase coordination: Coordination through phone or any other mode of communication in a disaster phase is not possible hence all the line departments and training institutes in the district should report to the DEOC as soon as the disaster strikes. After loss/damage assessment at the DEOC, the RO (D.C) would direct various stake holders to deploy their resources and task forces in the affected areas. Relief camps would be setup at a pre-defined location.

Post disaster coordination: In the post disaster phase, the RO would take updates on the conditions of basic amenities like water, food, roads, law and order etc. from the respective departments. An assessment of relief given and need of rehabilitation would also be taken in the post disaster phase.

11.7. Coordination mechanism with community:

The community will be coordinated through the village disaster management committees. The mentioned committees generally comprises of

Frequency of local Committee meetings

Local Committee meetings must be held at least once in every six months at particular time and place decided by the chairperson of the group. In addition, the chairperson of a Local Committee must call a meeting if asked, in writing, to do so by:

- a) The District Authority for the Disaster district in which the Local Committee is situated;
or
- b) At least one-half plus one of the members of the Local Committee.
- c) To help the Local government to prepare a local disaster management plan for its area;
- d) To identify, and provide advice to the relevant District Authority about support services required by the Local Committee to facilitate disaster management and disaster operations in the area;
- e) To ensure the community is aware of ways of mitigating the adverse effects of an event, and preparing for responding to and recovering from a disaster;
- f) To manage disaster operations in the area under policies and procedures decided by the district Authority;
- g) To provide reports and make recommendations to the relevant District Authority about matters relating to disaster operations;
- h) To identify, and coordinate the use of resources that may be used for disaster operations in the area;
- i) To establish and review communication systems in the Local Committee, and with the relevant District Authority and other Local Committees in the situation of disaster.
- j) To ensure that information about a disaster in the area is promptly given to the relevant District Authority, and
- k) To ensure risk management and contingency arrangements of essential services within the Local government area. Further information about the functions of the Local Authority may be found under sections 41 of the DM Act 2005

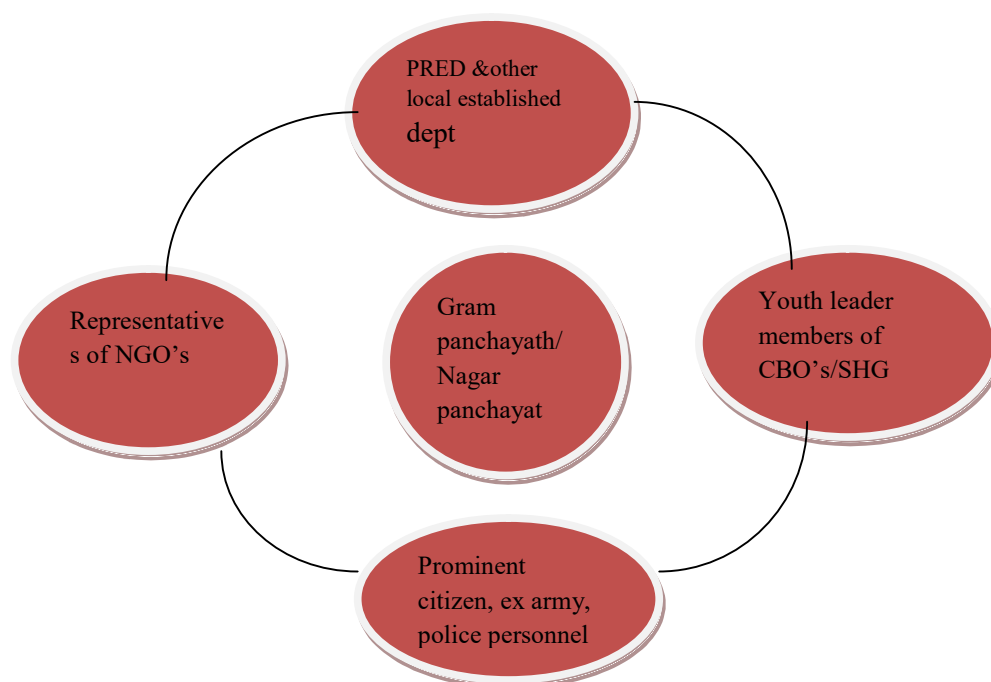


Figure 12.1: Coordination mechanism with community

11.8. Coordination mechanism with NGOs, CBOs, Self Help Groups (SHGs),

The strong linkages which NGOs CBOs have with grassroots communities can be effectively harnessed for creating greater public awareness on disaster risk and vulnerability, initiating appropriate strategies for strengthening the capacity of stakeholder groups to improve disaster preparedness, mitigation and improving the emergency response capacities of the stakeholders. In addressing the emerging concerns of climate change adaptation and mitigation, NGOs can play a very significant role in working with local communities and introducing innovative approaches based on the good practices followed in other countries. NGOs can bring in the financial resources from bi-lateral and multilateral donors for implementing pragmatic and innovative approaches to deal with disaster risk and vulnerability, by effectively integrating and converging the various government programs, schemes and projects to create the required synergy in transforming the lives of at-risk communities. The DDMA will maintain a proper record of the NGO's and CBO's working in the district and also map the available resources for them. The DDMA will appoint a Nodal officer for coordination with NGO's, CBO's and SHG's. The DDMA will call annual meeting of NGO's, CBO's & SHG's for mapping their resources. The meeting will be coordinated by the designated Nodal officer.

11.9. Coordination with other districts and state:

The DDMA will call annual meeting with neighboring district authorities pertaining to Disaster risk reduction and capacity building by reducing the existing gaps through regular coordination. The DDMA will participate in the meetings called by SDMA or other State level authorities to promote coordination with other districts and state authorities.

Chapter 12
STANDARD OPERATING PROCEDURES
(SOPs) AND CHECK LIST

12.1 STANDARD OPERATING PROCEDURES (SOPs)

The following SOPs are designed to guide and initiate immediate action. The DDMA and the district administration will initiate action and build and expand the scope of these actions based on unfolding situation.

12.2 Early Warning Management

Actions	Responsibility
Obtain early warning inputs from IMD, CWC, MHA / NDMA / SDMA control rooms, GSI	In charge – DEOC
Notify the early warning to Chairman and the members of the DDMA, Nodal officers of the line departments, ADCs, ACs, Dy SPs	In charge - DEOC
Disseminate early warning to divisions, blocks and Panchayats	ACs/ Tahsildars
Flash warning signals on all television and radio networks	District Information Officer
Establish disaster dash board on the official district website	District Information Officer
Inform communities / public / villagers about the disaster warning using vehicles mounted with loudspeakers	Tahsildars
Use PA systems facilities at Temples, Mosques and Churches to announce about the impending disasters	Tahsildars
Share early warning information with educational information and instruct closure of institutions if required	Tahsildars

12.3 Evacuation when there is early warning

Actions	Responsibility
Obtain early warning inputs from IMD, CWC, MHA / NDMA / SDMA control rooms, GSI	In charge – DEOC
Notify the early warning to Chairman and the members of the DDMA, Nodal officers of the line departments, ADCs, ACs, Dy SPs	In charge - DEOC
Hold meeting to assess situation and make a decision whether to evacuate specific communities / population	Chairman DDMA
Communicate decision regarding evacuation to concerned Revenue and Police officers	Chairman DDMA
Evacuating people to safer places	Concerned ACs and Tahsildars
Deploy teams for law and order maintenance, traffic management as wells as cordoning specific areas	Superintendent of Police
Establish routes, shelters and other logistics arrangements	Revenue department
Establish information desk	Revenue department
Establish helpline numbers	BSNL

12.4 Evacuation when there no early warning

Actions	Responsibility
Activation of the DEOC	In charge DEOC
Notify about the disaster event to Chairman and the members of the DDMA, Nodal officers of the line departments, ADCs, ACs, Dy SPs	In charge - DEOC
Hold a meeting to assess situation and make a decision whether to evacuate specific communities / population	Chairman DDMA
Communicate decision regarding evacuation to concerned Revenue and Police officers	Chairman DDMA
Evacuating people to safer places	Concerned ACs and Tahsildars
Deploy teams for law and order maintenance, traffic management as wells as cordoning specific areas	District Superintendent of Police
Establish routes, shelters and other logistics arrangements	Revenue department
Establish information desk, helpline etc	BSNL

12.5 Search and Rescue

Actions	Responsibility
Activation of the DEOC	In charge DEOC
DDMA to review disaster situation and make a decision to deploy search and rescue teams in anticipation of a disaster	Chairman DDMA
Deploy district level search and rescue teams in identified locations	Chairman DDMA
Deploy Fire & Emergency Service teams for search and rescue	District Fire Officer
Deploy Home Guards rescue teams	District Commandant – Home Guards
Requisition of NDRF	Chairman DDMA
Establish on site coordination mechanism	ADCs / ACs
Assign area of search and rescue responsibility for different teams deployed on site	ADCs / ACs
Establish Staging Area for search and rescue resources	ADCs / ACs
Establish Camps for the responders with adequate food, water, sanitation facilities	ADCs/ ACs
Deploy teams for law and order maintenance, traffic management as wells as cordoning specific areas	District Superintendent of Police
Identify nearest helipad and ensure it is in operating condition	ADCs ACs

Establish triage	DHO/MO
Transport critically injured	DMO/MO / 108 Ambulance service / Red Cross
Establish onsite medical camps or mobile camps for first aid	CMO/MO
Establish information desk and dead body identification	ADCs / ACs
Evacuating people to safer places	Concerned ACs and Tahsildars
Deploy volunteers for supporting auxiliary functions such as crowd management, route management, first aid, information management	ADCs /ACs
Rescue animals in confined spaces	Assistant Director – Animal Husbandry

12.6 Relief Operations

Actions	Responsibility
Undertake sub division wise / block wise / taluk wise relief needs assessment in terms of food, water, shelter, sanitation, clothing, utensils, medical and other critical items	ADCs /ACs
Identify suitable and safe facilities and establish relief camps	ADCs /ACs /Tahsildar
Establish adequate lighting arrangement at the relief camps	BESCOM
Ensure adequate security arrangement at the relief camps and for the affected communities	District Superintendent of Police
Ensure adequate water and sanitation facilities in relief camps and other affected communities	EE – Irrigation
Set up RO plants / water purification plants or other suitable facilities for immediate water supply	EE-Irrigation
Supply, procure and provide food to the affected communities	EE-Irrigation
Airdrop dry and un-perishable food to inaccessible location safe drinking water	DCs/ ADCs /ACs
Provide essential items lost due to disasters such as utensils	ADCs /ACs
Supply, procure and provide water to the affected communities	EE – Irrigation
Make required shelter arrangements including temporary camps	ADCs /ACs /Tahsildar
Establish medical facilities at relief camps and at communities	DHO/MO / Red Cross / 108 Ambulance
Ensure suitable vaccination to prevent disease outbreak	DHO/MO
Arrange for psychosocial support for victims at the camps	DHO/MO

Ensure child friendly food for the children in the camps	DD Food
Ensure nutritious food for pregnant and lactating mothers in the camps	DD Food
Ensure medical care facility for pregnant women for safe delivery	DHO/MO
Involve and coordinate NGO participation	ACs / Tahsildar
Put in place grievance handling mechanism to prevent discrimination	ACs /Tahsildar
Ensure adequate availability of daily need items such as food, medicine, consumables etc to ensure their access to affected communities	ACs / DD Food
Provide adequate and weather, gender, culture appropriate clothing to the affected communities and especially address the needs of women, children, aged and physically challenged	ACs /Tahsildar
Ensure adequate transportation facility to transport relief items	District RTO
Maintain proper records of and documents of beneficiaries and relief distribution	ACs /Tahsildar
Ensure adequate and appropriate heating facilities depending on the weather situation	DFO
Supply fire wood, cooking gas, POL for the kitchen	DD Food
Record and maintain documents of ex-gratia payments	ACs /Tahsildar
Provide first aid and medical treatment to the injured animals	Veterinary Officer
Establish animal shelters wherever required	DD Animal Husbandry
Arrange fodder for animals	DD Animal Husbandry
Wherever required involve Animal Welfare Board and the Civil Society Organisations	DD Animal Husbandry
Establish banking facilities for people to withdraw cash	District Lead Bank

Guidelines for setting and running the Relief Camps:

- On receipt of report from Revenue officials, the DC/ACs will order to set up a relief camp at pre-decided location as per District/ Sub-divisional disaster management plan
- In case new location is to be selected for the camp due to Man dividable circumstances, following points should be considered for arriving at a decision.
 - Camp should preferably be set up in an existing built up accommodation like a community hall.
 - It should be located at a safe place which are not vulnerable to landslides, flood etc.

- It should be accessible by motor vehicles, if possible.
- Adequate space for roads, parking's, drainage, should also be there.
- The area should not be prone to endemic disease like malaria.
- Wide publicity should be given about the location of the camp and affected people should be evacuated and brought to the camp directly.
- Emergency relief materials which include drinking water, food, bedding (mattress, sheets & blankets), baby food, mosquito repellents etc. should be arranged as early as possible.
- Control room/ help desk should be setup in the relief camp immediately.

Shelter

- The shelter should be such that people have sufficient space for protection from adverse effects of the climate.
- Ensure sufficient warmth, fresh air, security and privacy for their health and wellbeing.
- Tents should not be constructed too closely together and reasonable distance should be kept between the camps to provide some form of privacy.
- Priority should be given to widows and women headed households, disabled and elderly people in tent/room distribution.

General Administration of the Camp

One responsible officer preferably Chief Officer/ASO should be designated as Camp Officer by the DC/ACs who will ultimately be responsible for general management of the Relief Camp. She/he will co-ordinate & supervise the works of other officers in the camp. Administrative structure of the camp should be as follows:

One help desk/ control room/ officer room should be designated where inhabitants can register their complaints

Basic Facilities

Lighting Arrangement and Generator Set

- A technical person, preferably from electricity or PWD (E) department should be detailed to supervise the proper lighting arrangement in and around the camp and operation and maintenance of the generator set.
- One big candle and one match box should be provided in every room/tent.
- Petromax or emergency light should be arranged in sufficient numbers in the camp.
- Approach to toilet and water source should properly be illuminated

Water Facilities

- Total requirement of drinking water, water for toilets, bath & washing of clothes and Utensils should be assessed and proper arrangement should be made accordingly
- One Sr. Officer of Irrigation Dept. should be detailed for maintaining water supply in the camp.
- Separate bathing units must be constructed for male & female

Sanitation, Food- Storage & Distribution, Clothing

Toilet should be minimum 10 m and maximum 50 m away from shelter/tent/room sufficient stock of bleaching powder, Harpic and others item should be maintained

Food- Storage & Distribution

- As far as practicable and as per available space cooked food may be served in hall or at one place for convenience of cleaning, hygiene, disposal of waste and smooth arrangement.
- Food should be culture specific and as per food habits of the community. People of rural area may not like bread & butter
- Packed food like biscuit, tinned food, ready to eat meals, noodles etc. should be properly checked that they are not expired before distribution.
- Separate queue may be allowed for women infirm & elderly people to collect relief aid.

Clothing

- People in the camp should be provided sufficient clothing to protect themselves from the adverse effects of the climate
- Culturally appropriate clothing should be made available.
- Women and girls should be provided necessary sanitary protection

Medical Facilities & Psycho-social Support

- One Doctor along with team of paramedical staff should be detailed on roster system around the clock in the camp
- A separate room or tent should be made available for the medical team.
- A rapid health assessment of all the inhabitants in the camp should be done on weekly basis
- Cases of snake bites are also reported from relief camp. Necessary arrangement should be made in nearest health institution for adequate stock of anti-venom injection.
- Psychological support is best obtained from the family. Therefore, even in abnormal conditions, family should be kept together

Special Arrangement for women, Children, and Physically Challenged and Elderly persons

- Since women are more vulnerable during disaster, their specific needs must be identified and taken care of.
- Female gynecologist and obstetrician should be available at hand to take care of maternity and child related health concern.
- Ensure that children inoculated against childhood disease within the stipulated time period.
- For safety and security of the women and children vigilance committees should be formed consisting of women.
- Women Police Officer should be stationed within the camp to record and redress any complaints made by women.
- Security measures should be taken in the camps to prevent abduction of women, girls and children.

Vermin control

- Insect and rodents are the most dividable pests in the relief camp. They spread diseases, spoil foods and other material
- Fogging may be arranged to prevent mosquitoes and other flying insects.
- Waste segregation should be promoted and collected on daily basis

Security

- Security, peace and order must be maintained in the relief camp. The youths in the camp may be involved for providing better security environment.
- Police personnel should be detailed on roster basis.
- Adequate employment of force should be ensured on the boundary and gate of the camp.

Entertainment, Recreation & Information Education Communication Programme

- Literary clubs/ Organizations may be promoted to arrange books & magazines for camp populations.
- Camp population may be kept engaged by providing entertainment & recreational facilities to them.
- Temporary Anganwadi centers may be opened in the camp with the help of ICDS project officers for small children.
- Temporary schools may be setup in the camp involving volunteers from the campaign habitants. SSA may provide free textbook, stationary, Siksha-Mitra etc.
- Reputed NGOs may also be allowed to run temporary schools in the camp.

12.7 Restoration of essential services

Actions	Responsibility
Assess, priorities and develop work plan for debris removal and road clearance	SE / EE –PWD
Constitute teams with equipment for debris removal and road clearance	SE / EE PWD
Assess and priorities and develop work plan for restoration of power supply	SE/ EE BESCO
Constitute teams / crew to undertake restoration of power supply	SE / EE BESCO
Assess, priorities and develop work plan for restoration of water supply	SE/EE - Irrigation / Concerned ULB
Constitute teams / crew to undertake restoration of water supply	SE/EE - Irrigation
Assess, priorities and develop work plan for restoration of telecommunication services	SE/EE - BSNL
Constitute teams / crew to undertake restoration telecommunication services	SE/EE - BSNL

Deploy temporary / portable exchanges in critical locations for immediate restoration of telecommunication services	SE/EE – BSNL
Assess, priorities and develop work plan for restoration of road network	SE/EE – PWD
Constitute teams / crew to undertake restoration of road network	SE/EE - PWD
Constitute teams / crew to undertake restoration of road network in rural areas	SE / EE Rural Development
Coordinate with Army / SDMA for erection of bailey bridges / temporary road links where bridges are washed out	DC/ADC

12.8 Dead Body Disposal

Actions	Responsibility
Establish village / ward level committee for identification of dead bodies	AC/ ULB
Prepare a record of details of the bodies retrieved in the Dead Body Inventory Record Register, allocate individual Identification Number, photograph, and prepare Dead Body Identification Form	Tahsildar / AC
Identification of the dead bodies and handing over to the next of kin	Village level / ward level committee
Transport unidentified dead bodies to the nearest hospital or mortuary at district / sub division / block level	ADCs /ACs
Make public announcement for establishing identity	ADCs /ACs
Handover the identified dead bodies to the next of kin	ADCs /ACs /Tahsildar
In case of unidentified dead bodies – prepare inventory, allocate individual identification number, photograph, finger print, obtain DNA sample if possible and fill Dead Body Identification Form	ADCs /ACs Tahsildar
Preserve the information recorded as forensic information	ADCs /ACs /Tahsildar
Undertake last rights of unclaimed / unidentified dead bodies as per established religious practices	ADCs /ACs /Tahsildar
Coordinate with NGOs and obtain their support	ADCs /ACs /Tahsildar
Preserve the bodies of foreign nationals (if any) by embalming or chemical methods and then placed in body bags or in coffins with proper labeling for handing over and transportation of such bodies to Ministry of Extern Affairs, or to the Consular offices of the concerned countries and other actors such as International Committee of the Red Cross	ADCs /ACs /Tahsildar

**Annexure - 1
Details of Fire Station**

SI No	Name of the Fire Station	Telephone
1	Chikkaballapur	08156-277052
2	Chintamani	08154-250006 08154-250008
3	Gauribidanur	08155-284101
4	Bagepalli	08150-283101
5	Sidlaghatta	08158-25488
6	Gudibande	08156-261101

**Annexure – 2
Ambulance Services**

SI No	Taluk	Hospital Name	Vehicle No.	No. of Vehicle	Contact Numbers
1	Chikkaballapur	PHC Mandikal	KA 40, G 0624	1	8762432917
2		District Hospital	KA 40 G 375	4	9945678366/ 8618855788 9449885518
3			KA 40 G 382		
4			KA 40 G 368		
5			KA 40 G 557		
6	Bagepalli	GH Bagepalli	KA 40 G 556	3	6363989225
7			KA 40 G 2562		9008024033
8			KA 40 G 416		
9		CHC Guluru	KA 40, G 0576	1	9606693762
10		PHC Mittemari	KA 40 G 209	1	9845206159
11		PHC Cheluru	KA 40 G415	1	9611182812
12		PHC G Maddepalli Cross	KA 40 G0622	1	9008024033
13	Chintamani	PHC Bhatlahalli	KA 40 G202	1	9001184495
14		PHC Burudugunte	KA 40 G6070	1	9008970427
15		PHC Murugumalla	KA 40 G179	1	8197276887
16		PHC Irgampalli	KA 40 G0620	1	8553536006

17		PHC Kaiwara	KA 40 G617	2	9740766832
18		GH Chintamani	KA 40 G 385	3	9743324850
19			KA 40 G 291		
20			KA 40 G 0077		9449610962
21	Gudibande	PHC Yallogu	KA 40 G 0623	1	9008946958
22		GH Gudibande	KA 40 G 298	1	9606115993
23			KA 40 G 381	2	6360373330
24	Sidlaghatta	GH Sidlaghatta	KA 40 G 577	2	988094199 & 9972009029
25			KA 40 G 148		9449390562
26		PHC Jangamakote	KA 40 A 6069	1	8197654439
27		PHC Sadali	KA 40 A 6068	1	9480912260
28		PHC E Thimmasandra	KA 40 G 0622	1	9980479795
29	Gowribidanur	PHC Idaguru	KA 07 G219	1	7829203898
30		PHC Hosuru	KA 40 G 614	1	9611461100
31		PHC Allipura	KA 40 G 558	1	8970572506
32		PHC Nagaragere	KA 40 G414	1	8310370590
33		PHC D Palya	KA 40 G 613	1	9902257075
34		GH Gowribidanur	KA 40 G 51	5	9449678395
35			KA 40 G 679		9916642832
36			KA 40 G 679		9242908655
37			KA 40 G 380		8105810527
38			KA 40 G 0631		8861333998

Annexure - 03
Important Blood Banks Phone Number

Sl No	Particulars	Phone Nos.
1	Indian Red Cross Blood Bank, Old District Hospital Chikkaballapur	08156-272118

Note: 5 Blood storage unit in all taluk level hospital functioning.

Annexure – 04
Private Hospital List

SINo	Taluk	Hospital	Beds	Contact Numbers
1	Chikkaballapur	Jeevan Hospital	30 to 50	08156-271222
2		Manasa Hospital	11 to 30	08156-275313
3		Pathi Hospital	30 to 50	9448435747
4		GS Hospital	11 to 30	08156-275577
5		G S Hospital	30 to 50	08156-275577
6		Swomy Eye Hospital	11 to 30	9845222245
7		Murali Krishna Eye Hospital	11 to 30	-
8		Ananya Speciality Hospital	11 to 30	9343611870
9		Manjunath Hospital	11 to 30	08156-273110
10		Kadham Hospital	11 to 30	9448155588
11		Vishwanath Hospital	30 to 50	9980772982
12		Ramu Hospital	11 to 30	9845796543
13		Suraksha Super Speciality Hospital	30 to 50	9945217310
14	Chintamani	Mysore Hospital	30 to 50	9845257892
15		Mathrushree Hospital	30 to 50	9845027385
16		People Surgical and Maternity Hospital	30 to 50	9663800000
17		Danush Hospital	30 to 50	9845333882
18		Deccan Hospita	30 to 50	9972829988
19		Venkatareddy Memorial Hospital	30 to 50	9986181710
20		Radhakrishna Multi speciality Hospital	30 to 50	
21	Sidlaghatta	Srushti Hospital	30 to 50	-
22	Bagepalli	SLV Maternity Hospital	30 to 50	9880951230
23		Manasa Hospital Lab	30 to 50	08150-283466
24		Spandana Hospital	30 to 50	9591962620
25		Peoples hospital	30 to 50	9663811860
26	Gowribidanur	ManasaHospital	30 to 50	08155 284150
27		SriSairamHospital	30 to 50	9448771443
28		ApoorvaHospital	30 to 50	9449678590
29		PrasadHospital	30 to 50	9448141371
30		ParinidiHospital	30 to 50	08155 286429

**Annexure – 05
Nursing Homes List**

SI No	Taluk	Nursing Homes	Beds	Contact Numbers
1	Chikkaballapur	Murthy Nurshing Home	30 to 50	08156-272242
2	Chintamani	R K Nurshing Home	30 to 50	8971308116
3		Danush Hospital	30 to 50	
4		Rama Rukmini Nurshing Home	30 to 50	
5		Gurukrupa Nursing home	30 to 50	
6		SLV Nursing Home	30 to 50	
7		Gurukrupa Nurshing Home	30 to 50	
8		Ramu Nurshing Home	30 to 50	
9		Dhanalakshmi Nursing Home	30 to 50	9880292857
10		Prabhu Nursing Home	30 to 50	9066537557
11		Nidi Child Health Center	30 to 50	
12		Samu Nursing Home	30 to 50	9945738447
13	Gowribidanur	RKNursingHome	30 to 50	

**Annexure – 06
Poly Clinic List**

SI No	Taluk	Poly Clinic	Beds	Contact Numbers
1	Chikkaballapur	Kadham Health care center	10 to 20	9448155588
2		Shriyas Paly Clinic	10 to 20	-
3	Chintamani	E.N.T & Ganaral clinic	11 to 20	
3		Suraksha Super Spacality Hospital	11 to 20	
4		Raghava Diagnostic Center	11 to 20	
5		Shree Raksha Clinic	11 to 20	
6		Amogha Clinic	11 to 20	
7		Ram Shushotra Clinic	11 to 20	
8		Ohm Paly Clinic	11 to 20	
9		Vinayaka Memorial Clinic	11 to 20	
10		Poorna Eye Clinic	11 to 20	
11	Brundavan Clinic	11 to 20		

**Annexure – 07
Allopathic List**

SI No	Taluk	Allopathic Clinic	Beds	Contact Numbers
1	Chikkaballapur	Raju Clinic	5 to 10	
2		Sathya Clinic	-	9448169964
3	Chintamani	Shree Clinic	11 to 20	
4		Shanta Clinic	11 to 20	
5		Deepak Clinic	11 to 20	
6	Sidlaghatta	Sushrutha Clinic	11 to 30	9980901675
7		Anand Clinic	11 to 30	9741024464/ 9743559659
8		Vandana Clinic	11 to 30	9591495744
9	Bagepalli	Bindu Clinic	-	9448886688
10		Parthasarathi Clinic		
11	Gowribidanur	SriRaghavendra Clinic	11 to 30	
12		Sri Nidi Health Center	11 to 30	9379012188
13		Sharada clinic	11 to 30	9242151039
14		Padmamba Clinic	11 to 30	9448535175

**Annexure – 08
Allopathic List**

SI No	Taluk	Ayush Clinic	Beds	Contact Numbers
1	Chikkaballapur	Pasha Ayurveda Clinic	-	
2		T. M clinic	-	
3	Chintamani	Kushi Clinic	-	9986937901
4		A.S. clinic	-	
5		Nandini Homeopathi Clinic	-	
6		Saye Clinic	-	
7		Manasa Clinic	-	
8		Lakshmi Clinic	-	
9		manjunatha Clinic	-	
10		Geetha Homeyopathi Clinic	-	
11		Dirupha Clinic	-	
12		Ohmkar Homeopathi Clinic	-	
13		Pathima Perdos Health care center	-	
14		Bharath Ayurveda Clinic	-	
15		M.R. Homeopathi Clinic	-	
16		Krupa Clinic	-	
17		A.S Clinic	-	
18		Vasu Clinic	-	8549950230
19		Sidlaghatta	Venkateshwara Clinic	
20	Bagepalli	Sai Ganesh Medical Lab		9739031330

**Annexure – 08
LABS List**

SI No	Taluk	LABS	Contact Numbers
1	Chikkaballapur	Raju's Blooms Diagnostics	08156-271855
2		PVR Diagnostics	9740858522
3		Raghavendra Diagnostics	9901894163
4		Shiva Lab	9343601092
5		Kiran lab	9343517163
6		Shriram Lab	-
7	Chintamani	Whital Diagnostic Center	
8	Sidlaghatta	Manya Lab	8951284280
9		SLN Lab	08158 254108
10	Gowribidanur	Sri Sai Medical lab	9448570012
11		Parinidi Lab	9739547140
12		Manasa Lab	8095372779
13		ManjunathaDiagnostic Lab	9986767462
14		Prasad Lab	7676667232
15		Srinivas Lab	8453005073
16		RKHospital Lab	08155 286965
17		Shiva Lab	9743527101
18		SK Lab	9632600089
19		Abhi Lab	9743527101
20		Nobal Lab	9663772039
21		N R Diagnostics	8892307864
22		Mahamave Diagnostics	7760661984
23		Neha Diagnostics	9986767462
24		Gowribidanur Medical Center lab	9972257682
25		Sai Ram lab	9448570012
26	Gudibande	Anusha Lab	9900799458