



Government of Rajasthan

**DISTRICT DISASTER
MANAGEMENT PLAN
BIKANER**

2023

**OFFICE OF THE COLLECTOR
BIKANER DISTRICT
(RAJASTHAN)**

Prepared by~

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DISTRICT DISASTER MANAGEMENT AUTHORITY (DDMA)

S.N	Officer	Position
1	District Magistrate	Chairperson
2	Chairperson, Zila Parishad	Co-Chairperson
3	Additional District Magistrate	Member Secretary
4	Superintendent of Police	Member
5	Chief Medical and Health Officer	Member
6	Superintendent Engineer (PHED)	Member
7	Superintendent Engineer (Power)	Member
6	Superintendent Engineer (PWD)	Member

District Control Room Number - 0151-2226031

State Control Room Number - 0141-2227084

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CHAPTER 1

INTRODUCTION

1.1 THE CONTEXT

Disasters disrupt progress and destroy years of painstaking development efforts, thereby pushing nations back by several decades. The impacts of disasters are particularly strong in case of developing nations in terms of recovery therefore, both predisaster efforts in terms of preparedness, capacity building, awareness along with an efficient response mechanism, recovery and reconstruction would lessen the loss of lives and property.

India is vulnerable, in varying degrees, to a large number of natural as well as man-made disasters. About 58.6% of the land mass is prone to earthquakes of moderate to very high intensity; over 40 million hectares (12% of total area) is prone to floods and river erosions; of the 7,516 km long coastline, close to 5,700 km is prone to cyclones and tsunamis; 68% of the cultivable area is prone to drought and hilly areas are at risk of landslides and avalanches. Vulnerability, to disasters/emergencies of Chemical, Biological, Radiological and Nuclear (CBRN) origin also exists. The disaster risks in the country have further increased due to rapid population growth, urbanization and industrialization, development within high risk zones, and environmental degradation and climate change.

Within the country, Rajasthan is one of the most drought prone states. The state has also witnessed some major disasters in the recent past, like the floods in Barmer (2006), IOC Depot Fire at Jaipur (2009), the stampede at Jodhpur (2008), the serial bomb blasts, Jaipur (2008), and the collapse of Chambal bridge at Kota (2009) to name a few. Further, some parts of the state fall under seismic zones III and IV.

Bikaner district is also a drought prone area due to its low average rainfall, coupled with erratic behaviour of Monsoons. The district has experienced severe drought in 2009-10 and some other disasters like floods due to cloud burst in Loonkaransar (2001), leakage of IGNP in Gheghra village (2003), hailstorm in 2015-16, Fire in Ammunition depot in Bikaner Cantonment area (2002), fire in Bhalthori village (2016), fire in Vishal Mega Mart (2016), Fire in Pataka Factory, Bikaner City (2017), Bikaji Industries fire in Bichhwal (July 2018) etc. The district also falls under

seismic zone II and III that is a low and moderate damage risk zone.

The district has a large proportion of economically and socially weaker sections to the total population, which increase the vulnerability of population to disasters in. Within these vulnerable groups, elderly persons, women, and children – especially destitute women/orphaned children and physically challenged persons are exposed to higher risks.

Government of India passed the Disaster Management Act, 2005 and with it came a paradigm shift from response and relief centric approach to a proactive prevention, mitigation and preparedness-driven approach for preserving development gains and for minimizing loss to life, livelihood and property.

1.2 AIMS AND OBJECTIVES

The vision of the DDMP is in parlance with the DM Act 2005. The plan visualises a holistic, pro-active, multi-disaster, multi-sector, multi-stakeholders, technology driven, participatory, dynamic process to build Bikaner a safe and disaster resilient district.

A holistic, proactive and people centric approach has been adopted towards disaster management with emphasis on the following:

- Community based DM, including last mile integration of the policy, plans and execution.
- Capacity development in all spheres.
- Consolidation of past initiatives and best practices.
- Cooperation with agencies at state, national and international levels.
- Multi-sectoral synergy.

The aim of the DDMP is to ensure that the following components of DM are addressed to facilitate planning, preparedness, operational coordination and community participation:

- Promoting a culture of prevention and preparedness, so that DM receives the highest priority at all levels.
- Ensuring that community is the most important stakeholder in the DM process.

- Encouraging mitigation measures based on state-of-the-art technology and environmental sustainability.
- Mainstreaming DM concerns into the developmental planning process.
- Putting in place a streamlined and institutional techno-legal framework for the creation of an enabling regulatory environment and a compliance regime.
- Developing contemporary forecasting and early warning systems backed by responsive and fail-safe communications and Information Technology (IT) support.
- Promoting a productive partnership with the media to create awareness and to contribute towards capacity development.
- Ensuring efficient response and relief with a caring approach towards the needs of the vulnerable sections of society.
- Undertaking reconstruction as an opportunity to build disaster resilient structures and habitats.
- Undertaking recovery to bring back the community to a better and safer level than the pre-disaster stage.

1.3 STAKEHOLDERS AND THEIR RESPONSIBILITIES

At State HQ level - the State Disaster Management Authority and the Office of the Commissioner of Relief (CoR), Revenue Department, are the major institutions in the State that deal with all the phases of disaster management. All the major line departments of the State Government and the emergency support function agencies converge into SEOC during disasters.

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

Other technical institutions, community at large, local self-governments, NGOs etc. are also stakeholders of the District Disaster Management Pan. The role of the stakeholders has been prepared with the sole objective of making the concerned organizations understand their duties and responsibilities regarding disaster management at all levels and accomplishing them.

The District Collector has the following duties:

- a) To facilitate and coordinate with local Government bodies to ensure that pre and post disaster management activities in the district are carried out.
- b) To assist community training, awareness programmes and the installation of emergency facilities with the support of local administration, non-governmental organizations and the private sector.
- c) To function as a leader of the team and take appropriate actions to smoothen the response and relief activities to minimize the adverse impact of disaster.
- d) To recommend the Commissioner of Relief (CoR) and State Government for declaration of disaster.

Local Authorities have the following duties:

- a. To provide assistance to the District Collector in disaster management activities.
- b. To ensure training of its officers and employees and maintenance of resources so as to be readily available for use, in the event of a disaster.
- c. To undertake capacity building measures and awareness and sensitization of the community
- d. To ensure that all construction projects under it conform to the standards and specifications laid down.
- e. Each department of the Government in a district shall prepare a disaster management plan for the district. The local authorities need to ensure that relief, rehabilitation and reconstruction activities in the affected area, within the district, are carried out.
- f. Trust / Organisations managing Places of Worships & Congregation
 - Each establishment / organisation identified as —critical infrastructure and key resource,
 - Including places of congregation in a district shall prepare —on-site and —off-site
 - Disaster management plan. Carry out mitigation, response, relief, rehabilitation and
 - Reconstruction activities.

Private Sector:

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

Community Groups and Volunteer Agencies:

- a) Local community groups and voluntary agencies including NGOs normally help in prevention and mitigation activities under the overall direction and supervision of the DDMA or the Collector.
- b) They should be encouraged to participate in all training activities as may be organized and should familiarise themselves with their role in disaster management.
- c) 300 Apda Mitra Volunteers has been trained in Bikaner District in between month of December 2022 to March 2023 for the purpose of disaster management in coordination of SDRF & center for Disaster management technology for Animals, RAJUVAS, Bikaner.

Citizens:

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

1.4 HOW TO USE THE PLAN

1. Section 31 of DM Act 2005 makes it mandatory for every district to prepare a disaster management plan, for the protection of life and property from the effects of hazardous events within the district.
2. In significant emergencies or disasters, District Magistrate or the chairperson of DDMA will have the powers of overall supervision direction and control as may be specified under State Government Rules / State Disaster Management Plan guidelines.
3. The district EOC will be staffed and operated as the situation dictates. When activated, operations will be supported by senior officers from line departments and central government agencies; private sector and volunteer organizations may be used to provide information, data and resources to cope with the situation.
4. The DDMA may recommend for action under Sec 30 of DM Act.

5. Facilities that have been identified as vital to operation of the district government functions have been identified.
6. The DM or his designee will coordinate and control resources of the District.
7. Emergency public information will be disseminated by all available media outlets through the designated media and information officer.
8. Prior planning and training of personnel are prerequisites to effective emergency operations and must be considered as integral parts of disaster preparations.
9. Coordination with surrounding districts is essential, when an event occurs, that impacts beyond district boundaries. Procedure should be established and exercised for inter district collaboration.
10. Departments, agencies and organizations assigned either primary or supporting responsibilities in this document must develop implementation documents in order to support this plan.
11. When local resources prove to be inadequate during emergency operations, request for assistance will be made to the State or higher levels of government and other agencies in accordance with set rules and procedures.
12. District authority will use normal channel for requesting assistance and/or resources, i.e., through the District Emergency Operations Center (DEOC) to the State EOC. If state resources have been exhausted, the state will arrange to provide the needed resources through central assistance.
13. The District EOC will coordinate with the State EOC, Agencies of the Govt. of India like IMD / CWC to maintain upto-date information concerning potential flooding, cyclones etc. As appropriate, such information will be provided to the citizens of the affected areas in the district.
14. Upon receipt of potential problems in these areas, DEOC / designated officials will appropriately issue alert and notify action to be taken by the residents.
15. Disaster occurrence could result in disruption of government functions and, therefore, all levels of local government and their departments should develop and maintain procedures to ensure continuity of Government action.

It is necessary that for suo-moto activation of the agencies involved in the disaster management, the institutional trigger mechanism should be there so that every agency takes its assigned role at the time of such disaster.

1.5 APPROVAL MECHANISM OF THE PLAN

As per section 31 (1) of the DM Act 2005, it is mandatory for the district to formulate a District Disaster Management Plan. The District Plan shall be prepared by the District Authority, after consultation with the local authorities and having regard to the National Plan and the State Plan, to be approved by the State Authority. The Act lays down the broad coverage of the plan as follows:

- a) the areas in the district vulnerable to different forms of disasters;
- b) the measures to be taken, for prevention and mitigation of disaster, by the Departments of the Government at the district level and local authorities in the district;
- c) the capacity-building and preparedness measures required to be taken by the Departments of the Government at the district level and the local authorities in the district to respond to any threatening disaster situation or disaster;
- d) the response plans and procedures, in the event of a disaster, providing for—
 - allocation of responsibilities to the Departments of the Government at the district level and the local authorities in the district;
 - prompt response to disaster and relief thereof;
 - procurement of essential resources;
 - establishment of communication links; and
 - the dissemination of information to the public;
- e) such other matters as may be required by the State Authority.

1.6 PLAN REVIEW AND UPDATION

The Act provides for annual review and updating of the District Plan. The District Authority would, 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.

1.7 STATE DISASTER MANAGEMENT POLICY IN RAJASTHAN

Government of Rajasthan has undertaken a comprehensive approach towards establishing the state disaster management policy. As a first step, it has constituted the:

- State Disaster Management Authority vide notification No. F. 8(4) DN&R/DM/03 /19360 dated 6/9/2007 under the chairmanship of the Honb'le Chief Minister. The SDMA is the apex body for formulation of plans and policies of the state. It also approves Disaster Management Plans, coordinates the implementation of SDMP provides for prevention, mitigation and preparedness measures and reviews the development plans of different departments of the state government.
- Following this the State Executive Committee (SEC) has been constituted vide order no.F.8(4)DM& R/DM/03/21141 dated 15/10/2007 under the chairpersonship of Chief Secretary to assist the state authority in performance of its functions. The SEC is to coordinate/supervise the implementation of national/state policies and plans of disaster management.
- District Disaster Management Authority has been established vide notification F.8 (4)DM & R/DM/03 dated 06/9/2007 for all the districts.DDMA will formulate DM plan at the district level and ensure compliance of the NDMA/SDMA/SEC for prevention, mitigation, response at the district level by the concerned departments.
- State Disaster Response Force has been constituted and would function under the control & supervision of the Home department. Members of SDRF would be given specialised training and would be equipped with modern equipments to deal with different types of disaster like floods, earthquake, CBRN etc. Emphasis would be given to train women to take care of the special needs of women and children.
- Centre for Disaster Management (CDM) located at HCM RIPA, Jaipur and the Police training college at Kishangarh have been identified for capacity building of functionaries in disaster management.
- Besides the above, Rajasthan Rahat Kosh has also been formed vide notification no. F1(2)DM&R/misc/2000/1017-65 dated 20/01/2006 for providing relief in those natural calamities that are not covered or permissible under the Calamity

Relief Fund (SDRF). A State Level Committee has been constituted for the operation/management of this fund under the chairmanship of the Chief Secretary. ACS (Development), ACS (Finance), Principal Secretaries /Secretaries of, Medical Health, Agriculture, Animal Husbandry, Mines Departments as members and Secretary DM& R as Member Secretary of the committee.

CHAPTER 2

HAZARD VULNERABILITY AND RISK ANALYSIS (HVRA)

2.1 THE CONCEPT

It is evident from the events such as the Indian Ocean Tsunami in 2004, the Kashmir Earthquake in 2005, the Kosi Floods in 2008, the Haiti Earthquake of 2009 and the earthquake in Japan on 11 March, 2011 followed by a tsunami, which also triggered a nuclear disaster that there has been an increasing frequency of disasters and corresponding losses of human lives and property worldwide. Often, human activities multifariously are exposed to these natural events, thus making communities vulnerable to these events. For instance, the tsunami in Japan triggered a nuclear disaster by damaging the Fukushima Nuclear plant in which communities were exposed to a severe level of radiation. It is, therefore, essential to understand and study the hazards prevailing in areas and the corresponding risks and vulnerabilities caused by them. Based on these studies, strategies and action plans for preparedness, prevention and mitigation need to be made to reduce the impact of disasters.

Hazard is an event or occurrence that has the potential to cause damage to life, property and environment. Hazard assessment is the process of studying the nature of hazards determining its essential features i.e., degree of severity, duration, and the extent of the impact area.

Risk has been defined by the United Nations as a measure of the expected losses due to a hazard event of a particular magnitude occurring in a given area over a specific time period. The level of risk depends upon the nature of the hazard, the vulnerability of the elements that are affected and the economic value of those elements. Risk is also defined as a probability that negative consequences may arise when hazards interact with vulnerable areas, people, property, and environment.

Risk analysis is a methodology to determine the nature and extent of risk by analyzing potential hazards and evaluating existing conditions of vulnerability that together could potentially harm exposed people, property and environment on which they depend. Therefore, Risk assessment is a function of hazard and vulnerability and is often based on an assumption and uncertainty, which contains some degree of errors.

The vulnerability of a particular element of community is defined as the degree of loss, which it would suffer as a result of a specific hazard event. The nature

of vulnerability and its assessment vary according to whether the element involved represents people and social structures, physical structures, or economic assets and activities. Therefore, the vulnerability of an area is determined by the capacity of its social, physical and economic structures to withstand and respond to hazard events.

HVRA is considered to be the first step towards Disaster Risk Reduction (DRR). Risk assessment studies have both spatial and temporal dimensions. Thus, there is a need to decide the scale at which the risk assessment is to be conducted with reference to the timeline for it. The risk maps thus need updation on regular intervals. It is essential to develop a strong and effective plan; which would focus on the preparedness, prevention, mitigation, and response and recovery measures. The DM Act 2005 has emphasized on the importance of conducting HVRA to identify the risks and vulnerabilities.

2.2 HAZARD ANALYSIS

Bikaner district has experienced only few disasters in the past. But it is exposed to various kinds of hazards because of its geographical location, climate and population configuration. Major hazards that have occurred in the past are listed in table 2.1

Table 2.1: Hazards/Disasters in Bikaner District (past 20 years)

S. No.	Disaster/Hazard	Year of Occurrence	Loss/impact due to the Hazard/disaster
1	Fire in SBBJ PP Branch Bikaner	1997	Loss of records
2	Lalgarh Loco Shade Railway	2000	Loss of Infrastructure
3	Water inundation and Floodlike situation due to cloud burst in Loonkaransar	2001	Waterlogging, loss of land, vegetation and livestock
4	Fire in Ammunition Depot Army Area, Bikaner	2002	Loss of ammunition and 2 deaths
5	Leakage of IGNP in Gheghra village	2003	Loss of livestock, 1 death
6	Drought in District	2009	Loss of Livestock and crops
7	Fire in PBM Hospital Pediatric Ward	2013	Loss of infrastructure
8	Fire Sadar Bazar, Nokha	2013	Loss of goods/ Infrastructure
9	Fire in Fad Bazar, Bikaner	2014	Loss of goods/ infrastructure
10	Hailstorm	2015	Loss of crops of Rs. 122 crores, Loss of livestock and damage of kacha house
11	Fire in Ganpati Plaza, Bikaner	2015	Loss of goods/ Infrastructure
12	Cyclone	2015	Loss of trees, electricity and communication system and loss of birds
13	Fire in Bhaloori Village, Kolayat	2016	Loss of 42 Family/houses

14	Fire in Vishal Mega Mart, Bikaner	2016	Loss of goods/ Infrastructure
15	Leakage of Amonia Gas in Dairy Plant	2016	Degradation of environment
16	Fire and Explosion in Patakha Factory, Songiri Kua and Khajanchi Market, Bikaner	2017	Damage of houses, 7 deaths, 9 serious injuries
17	Flood in Sujrada and Lakhasar near Gajner, and Kolayat	2017	Damage to canal and water inundation and heavy rain
18	Fire in Bikaji Industries, Bichwal	2018	Loss of goods/ Infrastructure
19	Fire in Ratan Bihari Park Wollen Market	2022	Loss of one Human and 22 Wollen Shops destroyed by fire.

Source: DDMP, Bikaner

1. Droughts

Low rainfall coupled with erratic behaviour of the monsoon in the district makes Bikaner the most vulnerable to drought. Droughts are very common in Bikaner district and it has occurred once in every 4 years in the past. The frequency of droughts remained 50% during the period of 1932-2005. Among these droughts, 7-15% were very severe droughts. Rainfall does not take place for several years at end. There have been hard droughts during 1999-2005. The frequency of droughts causes very heavy loss to crops and livestock. The state has faced 3 very hard, 9 hard, 20 normal and 8 light droughts during last 75 years.

Table 2.2: Droughts and their frequency in Bikaner District (1931-2005)

Type of Drought (%)	Frequency (%)	Drought Year	No. of Years
Light -0.1 to -25	10.66	1937, 47, 62, 70, 71, 87, 94 and 1996	08
Normal -25 to -50	26.66	1932, 40, 41, 43, 46, 51, 52, 53, 57, 58, 60, 61, 63, 65, 72, 80, 85, 91, 93 and 2004	20
Hard -50 to -75	12.0	1938, 39, 48, 69, 84, 99, 2000, 01 and 2005	09
Very Hard -75 to -100	4.0	1968, 2002 and 2003	03

Source: Computed data obtained from Agriculture and Landuse Department, Rajasthan

Of all the natural disasters, drought can have the greatest impact and affect the largest number of people and livestock. Drought invariably has a direct and significant impact on food production and the overall economy. Drought, however, differs from other natural hazards. Because of its slow onset nature, its effects may accumulate over time and may linger for many years. The impact is less obvious than for events such as earthquakes or flood but may be spread over a larger geographic area. Because of the pervasive effects of drought, assessing its impact and planning

assistance becomes more difficult than with other natural hazards.

The District Drought Monitoring Cell (DDMC) in collaboration with the Agriculture, Animal Husbandry, and Water Resources departments, and the National Crop Forecasting Centre (NCFC) would carry out assessment of expected damage which would include impact on agricultural production, depletion of water resources, impact on livestock population, land degradation and deforestation as well as human health.

2. Cold Wave/Frost and Drought

Besides drought, cold wave/Frost and Drought cause heavy damage to crops and vegetation. Secondary hazards like snapping of electric poles due to uprooting of trees, disruption of communication links etc are also attributed to cold wave/Frost. The cold wave/Frost and Drought are not very common feature in the district but it has occurred and damaged crops in the past.

Damage to crops and vegetation are the major impact of drought and cold wave/Frost and Drought in the district. The table 2.3 and Table 2.4 show damage of crops in the district during Kharif and Rabi seasons respectively for the year 2021 and 2022-23. These tables show that 34.34 per cent of total villages were affected during Kharif season but only 13.62 per cent population affected due to destruction of crops. Whereas only 83.61 per cent villages and 61.96 per cent population was affected during Rabi season in 2021.

Table 2.3: Villages and Population Affected due to Crop destruction during Kharif Season, 2021 due to Drought

S.N.	Tehsil	No. of Villages		Population 2011 (in Lakhs)			Affected Population (in Lakhs)		
		Total	Affected	Urban	Rural	Total	Urban	Rural	Total
1	Bikaner	138	17	6.63	2.57	9.2	0	0.41	0.41
2	Loonkarnsar	144	106	0	2.14	2.14	0	0.79	0.79
3	Nokha	145	30	0.63	3.74	4.37	0	0.90	0.90
4	Kolayat	165	45	0	1.79	1.79	0	0.31	0.31
5	Pugal	60	0	0	0.67	0.67	0	0	0
6	Khajuwala	60	60	0	0.89	0.89	0	0.15	0.15
7	Chattargarh	64	64	0	0.82	0.82	0	0.30	0.30
8	Sri Dungargarh	98	07	0.53	2.41	2.94	0	0.36	0.36
9	Bajju	85	0	0	0.82	0.82	0	0	0
	Total	958	329	7.79	15.85	23.64	0	3.22	3.22

Source: Office of District Collector (Land Records), Bikaner

Table 2.4: Villages and Population Affected due to Crop destruction during Rabi Season, 2022-23 due to Cold Wave & Frost

S.N.	Tehsil	No. of Villages		Population 2011 (in Lakh)			Affected Population (in Thousand)		
		Total	Affected	Urban	Rural	Total	Urban	Rural	Total
1	Bikaner	138	103	6.63	2.57	9.2	0	11991	11991
2	Loonkarnsar	144	102	0	2.14	2.14	0	178000	178000
3	Nokha	145	134	0.63	3.74	4.37	62721	356313	419034
4	Kolayat	164	106	0	1.79	1.79	0	85000	85000
5	Pugal	60	60	0	0.67	0.67	0	64070	64070
6	Khajuwala	60	57	0	0.89	0.89	0	76899	76899
7	Chattargarh	64	56	0	0.82	0.82	0	70000	70000
8	Sri Dungargarh	98	98	0.53	2.41	2.94	0	0	0
9	Bajju	85	85	0	0.82	0.82	0	78000	78000
	Total	958	801	7.79	15.85	23.64	62721	920273	982994

Source: Office of District Collectore (Land Records), Bikaner

3. Earthquakes

As per the BMPTC Atlas, Bikaner district falls under earthquake zones II and III and corresponds to MSK intensity VII, making it prone to Earthquakes. The dense urban population and weak structures in old Bikaner city make it highly vulnerable to seismic hazards. Although no major earthquake has occurred in Bikaner district in the past, yet tremors have been felt during Bhuj (2001), Uttarakhand (2017) and Afganistan (2016) earthquake and other high intensity earthquakes that have occurred in the northern India as well as neighboring countries.

Table 2.5 : Siesmic Zones including Adjacent District

S. No.	Seismic Zone	Intensity MSK	Magnitude	Magnitude District
1	IV [High Damage Risk Zone]	VII-VIII	6.0 - 6.9	Some parts of Barmer [Chohtan Block], Jalore [Sanchoe
2	III [Moderate Damage Risk Zone]	VI-VII	5.0 - 5.9	Some parts of Udaipur, Dungarpur, Sirohi, Barmer, Jaisalmer, Bikaner, Jhunjhunu, Parts of Sikar, Jaipur, Dausa, and Bharatpur
3	II [Low damage Risk Zone]	IV-VI	4.0 - 4.0	Ganganagar, Hanumangarh, Churu, Jodhpur, Pali, Rajasamand, Chittorgarh, Jhalawar, Baran, Kota, Bundi, Sawai Madhopur, Karauli, Dholpur, Banswara, some areas of Bikaner, Udaipur, Jhunjhunu, Sikar, and Jaipur.

Source: SDMP

The **Medvedev–Sponheuer–Karnik (MSK) scale**, also known as the **MSK** or *MSK-64*, is a macroseismic intensity scale used to evaluate the severity of ground shaking on the basis of observed effects in an area of the earthquake occurrence.

While earthquakes cannot be predicted, a detailed mapping of seismic fault systems and seismic source regions, quantification of probability of experiencing various strengths of ground motion at a site in terms of return period for intensity will be carried out and appropriate regulations put in place to decrease the vulnerability of built environment.

4. Floods

Bikaner district receive scanty rainfall and there is no perennial river flowing in the district, however, a number of Barsati Nallahs cross the entire district. The Indira Gandhi Canal (IGNP) flows through the district and reservoirs have been built in various parts of the district which can be a source of hazard. The district has a history of floods and Inundations because of the following reasons:

- Excess rain in the catchment
- Sudden release of large quantities of water from Dams/ water reservoirs
- Breach/ damage in major reservoirs/ dams
- Limited holding capacity

Besides changes in rainfall patterns have also increased the risk of flash floods in many areas that were not flood prone historically. The Loonkaransar flood in 2001 was a revelation and made disaster managers and policy makers take a fresh view of the risks and vulnerability from floods in the district.

Urban Flooding

Rapid urbanisation has led to an emerging concern of urban flooding. In urban areas, flooding is primarily due to drainage failures and increased run-off loads on hard surfaces. Filling up of natural drainage channels, urban lakes, storm water drains contribute towards flooding. Besides this, poor water and sewerage management leads to outbreak of epidemics in case of flooding. For example, in 1982 heavy rainfall caused flooding in Bikaner, and caused extensive damage to property and life. Since

then it is a regular feature of the district especially in the low-lying areas such as Old Ginnani, Gangashahar, etc.

5. Cloudbursts

Cloudbursts, though not a regular phenomenon in the district, lead to exceptionally heavy rainfall and sudden flash floods. The district has experienced hazard of cloudburst in the past for example in 2001 cloudburst in Loonkaransar has inundated a large area and affected a large population. Such hazardous incidents can occur in future also due to erratic nature of rainfall in the district. Hence DDMA will take appropriate measures to decrease the vulnerability and restrict construction to elevated places in the cloudburst prone areas.

6. Fire

Fires may be caused due to earthquakes, explosions, electrical malfunctioning and various other causes. Prolonged dry weather and over exploitation of limited forests have resulted in increased frequency of forest fires in the district. Recurrence of fire incidents decreases the green cover by preventing regeneration of forests. In summers, the incidence of forest fires increases due to high wind velocity and various other reasons. However, there is no history of major casualties in this type of incidents. The district is highly vulnerable to fire hazards because of old buildings, narrow streets in cities and lack of fire awareness and ignorance of about the probable damages are the causes of lack of investment in fire safety measures.

Table 2.6: Fire Incidence in Bikaner District in Past 20 Years

Year	Number of FIRE incidents
1998-1999	96
1999-2000	131
2000-2001	148
2001-2002	169
2002-2003	158
2003-2004	134
2004-2005	108
2005-2006	117
2006-2007	147
2007-2008	154
2008-2009	198
2009-2010	150
2010-2011	131
2011-2012	119

Year	Number of FIRE incidents
2012-2013	137
2013-2014	129
2014-2015	148
2015-2016	139
2016-2017	168
2017-2018	252
2018-2019	103
2019-2020	89
2020-2021	105
2021-2022	102
2022-2023	95

Source: Fire Station, Bikaner

7. Chemical, Biological, Radiological, and Nuclear (CBRN) Hazard

Chemical Hazard: Chemical hazards can emanate from various sources such as the hazardous chemical manufacturing industry, hazardous waste generating units, transportation of hazardous materials and improper handling and disposal of hazardous materials.

Bikaner district has 3 units of industries manufacturing or using one or more hazardous chemicals. The major hazardous chemicals manufactured and stored in these units are: Liquefied Petroleum Gas (LPG- 2 units), Propane gas. Table 2.7 gives details of these industries

Table 2.7: Industries using Hazardous chemicals with capacity in Bikaner District

Name of the Industry / Factory	Location with contact detail	Type of Industry	Major Productions	No. of People Working	Any disaster management plan available with the Industry (both on site & Off site)	Any other related information of Industry / Factory	Hazard Profile
M/s. Indian Oil Corporation Ltd.	Village- Bichhwal, Bikaner Mr.Prahlad Bairwa Mo. 9414040263 0151-2250850 0151-2250239	Petroleum	L.P.G. Bottling (960 MT)	96	Yes		Fire & Bleve
M/s. Bharat Petroleum Corporation Ltd.	SPL-308 Riico I.G.C., Khara, Bikaner Mr. P.L.Kannan Mo. 9482180828 01522-260161 01522-260160	Petroleum	L.P.G. Bottling (450 MT)	76	Yes		Fire & Bleve

M/s. Lucid Colloids Ltd	Khasra No. 740/1 Village- Kanasar, Jaisalmer Bypass Road, Bikaner	Agro	Guar Split		No (on trial mode)	Using Propane as a fuel (50 MT)	Fire & Bleve
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Other hazardous chemicals that are used in the district in small quantity include use of ammonia and chlorine as well as transportation of hazardous material such as petroleum, ammonia etc. passing through the district from refineries in Rajasthan and Gujarat to the Northern districts and states.

Besides Major oil companies have their terminals and depots in the district, i.e., bulk storage depots and terminals, 2 LPG bottling plants, 106 petrol pumps, where fire disaster can happen any time. Table 2.8 gives details of petrol pumps according to tehsils.

Table 2.8: Number of Petrol Pumps In Bikaner District 2013-15

Tehsil	2013	2014	2015	2023
Bikaner	24	24	24	77
Loonkarnsar	13	13	13	22
Nokha	22	22	22	46
Kolayat	18	18	18	33
Pugal	4	4	4	7
Khajuwala	8	8	8	8
Chhattargarh	3	3	3	10
Sri Dungargarh	14	14	14	32
Bajju	-	-	-	07
Total	106	106	106	242

Biological / Human Epidemics: Although, Bikaner district has a history of disease outbreaks such as Cholera, Gastroenteritis, Acute Diarrhoea/ Dysentery, Infective Hepatitis, Encephalitis, Poliomyelitis, Typhoid and recently H1NI; the district is particularly prone to Malaria. World Health Organisation (WHO) reports major incidents of Malaria in Bikaner District in 1994, 1996, 2001, 2003, and 2006. During the year 2011 and 2012 cases of PV - 1745, PF – 91 and 2 deaths were reported in Kolayat block. High Risk Area - Diyatara, Gadhiyala, Gajner, Kotdi, Chaani were identified in the Block Kolayat. As such in the Block Khajuwala there has reported caes of PV - 1627, PF – 74 and Death in the year 2011 and 2012. High Risk Area - Chhattargarh, Kakadwala, 2KWM, Ballar, 2 KLD, Aduri, Siyasar Panchkosa, Amarpura, were identified in Block Khajuwala. This may be attributed to climatic conditions, and poor sanitary environment and hygiene practices.

Intensive efforts were taken by medical department in Block Kolayat between 2013 and 2016 (Approx 4 Years). This resulted in reduction of malaria cases and only 282 PV and 11 of PF cases and no death were reported during this period. In Khajuwala Block 848 PV and 14 PF cases and no death were reported during the same period.

There were 446 Swine Flu positive cases were found during 2009 to 2017 (approx. 8 years), out of which 38 patient died in the district. In the year 2015, 25 case of suspected Dengue case were reported from Bhagat Singh colony, Nokha. In May 2014 cases of cholera were reported from Karni Industrial Area Bikaner City.

COVID-19 – possibly the largest pandemic the world has ever seen - led to an economic crisis probably more radical and global than ever before; as well as disruption on an unprecedented scale. The Covid-19 is a highly contagious disease which became a serious global health concern. Therefore, on 11th March 2020, World Health Organisation (WHO) declared it a pandemic. First case of COVID-19 was reported in India on 30th January 2020. WHO and Ministry of Health and Family Welfare (MoHFW), Govt. of India reports 45 millions confirmed COVID cases and 531918 deaths till 3rd August 2023 in India and 1.3 million cases 9736 deaths in Rajasthan. However, a total of 835 deaths occurred in Bikaner district till July 2023. Highest COVID cases and deaths were reported during the 2nd wave of COVID in the month of May in 2021. The detailed report of COVID sample testing and cases since the beginning of COVID cases in Bikaner district are given in the table: 2.9

Table 2.9: COVID-19 Sample Testing and results in Bikaner District 2020-2023**CHIEF MEDICAL & HEALTH OFFICER, BIKANER****Covid-19 Reporting Status**

Year And Month Wise Fraction Report				23 July 2023		
S.NO.	Year2020	Year2021	Year2022	Jan to May 2023	July 2023	Year 2023
Total Samples Taken	262845	357152	204670	24702	1751	26453
Total Positive	18995	21451	10707	644	0	644
Total Discharge	18759	21097	10715	639	0	639
Total Death	166	380	51	5	0	5
Active Case	0	0	0	0	0	0
Average Sample	720	978	561	797	83	131
Average Positive	52	58.77	5	5.37	0	0
Monthwise	7.23%	6.01%	5.23%	2.61%	0.00%	0.02%

The country's public healthcare system was severely and adversely affected due to COVID pandemic. Hence, Focus was given on strengthening medical and healthcare infrastructure in the country as well as in the state. Efforts were made to strengthen the core capacities in terms of laboratory, hospital infrastructure, R & D on diagnostics etc., along with the development of indigenous capacities in terms of essential logistics including personal protective equipment, diagnostics, ventilators and oxygen generation plants, among others. Measures were taken to keep the citizens at the centre of the Government's efforts. The table 2.10 demonstrates the medical bed facilities upgraded and available in the hospitals, CHCs and PHCs and table 2.11 shows the oxygen generation plants in Bikaner district.

Table 2.10: Type and Availability of Medical Beds in Bikaner District, 2023

Type of Facility	Oxygen Bed	General Bed	ICU Bed			NICU	PICU
			Ventilator	Non Ventilator	Total		
Medical College	477	156	100	0	100	25	25
District Hospital	50	30	-	-	-	10	10
CHC	150	84	07	0	07	54	36
PHC	270	-	-	-	-	-	-
Private Hospital	125	161	15	52	67	--	--
Total	1072	431	122	52	174	89	71

Table 2.11: Availability of Oxygen Plants in Bikaner District

Place of Facility	Oxygen Plant	
	Sanction	Working
Medical College	11	08
District Hospital	01	-
CHC	07	06
PHC	-	-
UPHC	-	-
Total	19	14

To contain the disease, India launched the world's largest vaccination programme covering the entire length and breadth of the country. According to MoHFW more than 2206 million COVID vaccinations in India, 115 million in Rajasthan and 0.37 million in Bikaner district were administered till 3rd August, 2023. In the district 95 % of eligible population (12+) has received at least one shot and 88 % of the eligible population (12+) is fully vaccinated. This has increased the immunity of the citizens. Besides, the district administration along with various NGOs has incessantly worked on guidelines of national and state governments during and after the two dangerous waves of COVID-19 to safeguard the citizens. The district administration has received a fund of Rs. 8.3 millions from PM CARES Fund and Rs. 65.16 millions from the state government. These funds have been utilised to

bring and send migrant workers to their place of residence, to distribute sanitizers and food packets among migrant workers, poor and destitute population of the district. A strong IEC Campaign was carried out to sensitize and teach the people about proper hygienic behaviour to safeguard the population from the disease. All the above measures have helped in phasing out of the disease from the district. The lessons learnt from the COVID-19 were of immense importance and can be a guideline for combating any forthcoming other outbreak of disease, epidemic or pandemic.

8. Terrorism

Bikaner district shares an international border of 170 kms with Pakistan. The district is also in close proximity to New Delhi, which is the national capital. Moreover, cities in the district are major tourist destinations. Hence, the possibility of the district being a soft target to terrorist attacks cannot be ruled out.

Apart from the above mentioned, there are oil pipelines spread across the district, important public offices in cities, numerous tourist spots and religious places and a large presence of foreign tourists can be soft targets for terrorist activities.

9. Stampedes

There are many places of religious importance in Rajasthan where lakhs of people gather at a particular time of the year for a fair (mela). Some of these places witness large number of visitors all the year round. There is always a risk of stampede and chaos in such a large gathering if it is not managed properly. Government of Rajasthan has constituted the State Fair Authority to manage large gatherings like Dangals, Hela Khyals, local festivals, exhibitions, etc. Some of the places, which are particularly vulnerable to stampede and chaos are -

- **Fair of Karni Mata in Deshnok:** Runs 09 days during Navratras in October November every years. This fair is attended by lakhs of devotees every day. Hence chances of stampede or chaos are there if management is not proper or any untowering environmental or climatic incident occurs.
- **Fair of Kapil Muni in Kolayat:** This is organized every year for three days during the month November. Almost 2-3 lakhs people gather here every year.
- **Fiar of Baba Ramdeo in Sujandesar:** Every year during the month of August 50-60 thousand devotees gather here.

- **Fair of Guru Jambheshwar in Mukam:** This fair is organized by the Bishnoi community two times in a year during August and October. Almost 2-3 lakhs of followers assemble here.
- **Fair of Hanumanji in Punrasar:** The fair is organized two times during August and October every year in Punrasar near Seruna. Almost 1-1.5 devotees conglomerate here for their prayers.
- **Fair of Gemna Peer in Gajner:** organized once every year at the Dargah of Gemna Peer in Gajner where devotees of Muslim community assemble to offer their prayers.
- ***Paidal Yatra* to Baba Ramdeo Temple in Ramdeora:** There are lacs of devotees from Haryana, Delhi, Punjab, UP, Madhya Pradesh and Rajasthan who pass through Bikaner during the mela season of August-September every year. They move on foot in large groups by covering major parts of the National and State Highways that invite road accidents and fatal casualties.

10. Accidents

The traffic circulation pattern within Bikaner city was designed for a smaller population. Over the last two decades, due to explosive growth in infrastructure, improved road system such as flyover, state and national highways, the number of vehicles has increased exponentially. In 2014-15, 2957 private cars, 877 taxis, 62 private buses, 21092 motor cycles and autos, 2897 public and private heavy vehicles and 3419 tractors were registered. Smooth infrastructure also allows the public to speed up leading to more number of accidents. Around 504 road accidents have occurred resulting in deaths of around 364 persons. The total number of road accidents in the district during 2012 and 2023 is as below:

Table 2.12 : Number of Road Accidents

Year	Accidents	Persons Dead	Persons Injured
2012	528	361	643
2013	579	314	618
2014	535	318	649
2015	465	301	488
2021	435	335	416
2022	504	364	551
2023 (Upto June 2023)	271	182	291

There are almost 30 railway stations in the district. Though no large-scale train disaster is experienced by the district but there is possibility of rail accidents. Accidents are also possible by negligence of people who are not following rules at railway crossings or who let their cattle roam and graze near railway track.

2.3 HAZARD SEASONALITY

Hazards like flood, drought and extreme temperatures have a seasonal occurrence while hazards like earthquake along with various man-made hazards can occur at any point of time of a year. Though hazards like road and railways accidents can occur at any time of year, they become more common during month of December and January due to low visibility during fog period.

Thus hazard seasonality map of Bikaner district is made based on the history of occurrence of various disasters in district and also on the possibility of occurrence of hazards in future. Table 2.10 displays possibility of occurrence of these hazards. The table also differentiates month-wise occurrence of these hazards by a scale of high, moderate and low/ negligible probability.

Table 2.13: Hazard Seasonality Chart, Bikaner

Hazard	Probability											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Earthquake	Moderate											
Flood	Low					Mod	High			Mod	Low	
Drought	Low					Mod	High			Mod	Low	
Epidemics	Moderate				High					Moderate		
Food Poisoning	Low			High				Low				
Heat Wave	Low			High			Mod	Low				
Cold Wave	High	Mod	Low									High
Hailstorm	Mod	High		Low								Mod
Fire	Moderate			High			Moderate					
Industrial hazards	Moderate											
Radiations	Moderate											
Accidents	Moderate											
Terrorist Attack	Low											

2.4 VULNERABILITY ANALYSIS

For the last two decades, Bikaner district has been on the faster pace of the development. There are multiple types of vulnerabilities present in Bikaner district owing to varied roots causes like high population growth, rapid-urbanization, increasing industrialization, rapid development within moderate risk seismic zone, environmental degradation, etc. These vulnerabilities have been categorized in four major types, namely, physical, social, economic and environmental vulnerability.

1. Physical Vulnerability

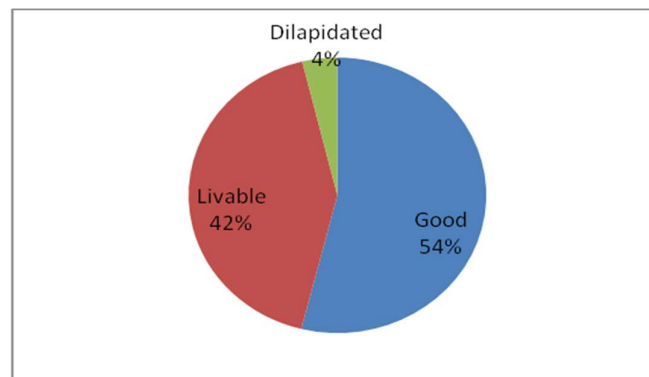
Geographical location of communities in and near the hazardous locations or infrastructures gives rise to their physical vulnerability. These locations include flood prone area, communities residing in and around MAH units and other chemical installations, etc. Apart from location, improper condition of infrastructures and inappropriate materials used for construction further adds to physical vulnerability. Table 2.11 shows conditions of houses in the district. Considering a family size of 5 persons, out of 251900 people 116126 (46 per cent) is residing in dilapidated and livable condition in a district which is prone to multiple hazards and lie in moderate risk seismic zone III.

Table 2.14: Conditions of Houses in Bikaner

Condition	Rural	Urban	Total
Good	44.5	71	53.9
Livable	50.6	27.3	42.3
Dilapidated	4.9	1.7	3.8
Total	100	100	100

Source: Census 2011

Fig 2.1: Condition of Houses in Bikaner



Source: Census 2011

According to 2011 Census, close to 31 per cent houses are made of grass, thatch, bamboo, plastic, polythene, mud, unburnt brick, stone not packed with mortar and sheet. These are type A building and are extremely prone to building collapse, earthquake and extreme weather conditions. Owing to presence of district in seismic zone III with shaking intensity VII, such structures are prone to damages which include destruction gaps in walls, collapse of parts of buildings, loss of cohesion in separate parts of the buildings and collapse of inner walls.

2. Social Vulnerability

There are various conditions determined by social factors or processes prevalent in Bikaner district which increase the susceptibility of a community to the impact of hazards. These include gender, age, caste and disabilities.

Age:

The vulnerable age groups are that of 0-6 years and old age people. According to 2011 census, 0-6 age group population was 16.94% of the district population. Children of this age group along with adolescent girls have their special needs for diet, sanitation, hygiene, safety and security. These needs aggravate further during disaster situation, particularly post disaster during relief and response. Children, particularly, adolescent girls also become further vulnerable to human trafficking and forced prostitution.

Old age people are also vulnerable because of their limited physical strength, possible dependence on their families. Old age people also have their special needs like that of special medicines, spectacles and other aids, special diet. The dependence on others for these needs make this age group vulnerable during normal and particularly disaster situation.

Gender:

Females of all age groups are part of vulnerable population because of safety and security reasons. The district has cases of rapes and molestation. Therefore, safety and security of females is also of great concern in post disaster situations when relief camps are over-crowded, law and order conditions are under stress, etc. These make females vulnerable to human trafficking, forced prostitutions, rapes, molestation and sexual abuse.

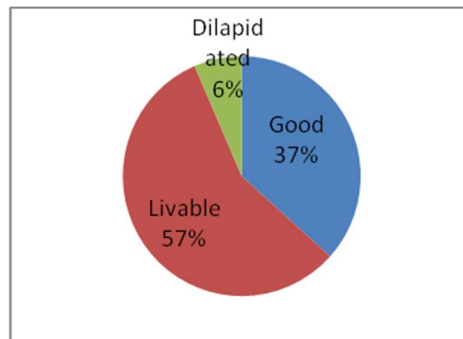
Another alarming issue is low sex ratio of the district. According to 2011 census, the sex ratio of the district is 905. This is low in comparison to sex ratio of Rajasthan state which is 928 which itself is lower when compare with other Indian states. Sex ratio in 0-6 age group is further low at 908. The same is 909 in rural areas while 906 in urban areas. Hinting at poor situation in urban areas of the district and thus also highlighting number of illegal cases of female feticide taking place in urban areas.

Female literacy rate of 53.2 % is also much low compared to male literacy rate of 75.9%. This is a major factor of females being a vulnerable group as far as financial dependence on their male counterpart is concerned. Out of a total number of 3,75,970 households in the Bikaner district, only around 23,917 (6.3%) are female headed households. This also highlights dependence of female on their male counterparts and is a point of concern as the compensation and relief usually is given on the name of head of households.

Caste:

According to 2011 census, Bikaner district has 20.9 per cent SC population of the total district population. Vulnerability of SC population is further aggravated by physical vulnerabilities the population is residing in. Fig 2.2 shows that more than 63 % of the SC population lives in livable and dilapidated structures. This is alarming considering the fact that Bikaner district lies in high risk seismic zone III.

Fig 2.2: Condition of SC Households



Source: Census 2011

Disabilities

Disability adds to vulnerability of a person as it reduces or limits the physical ability of the person to certain extent. Sometimes they also face social stigma and non-acceptance in the society. During a disaster situation, their conditions become worse if their aids (hearing, visual, etc) get lost or damaged. They also have special needs in order to access public utilities and other facilities. Table 2.12 provides details of disabled population of the district.

Table 2.15: Disabled Population in Bikaner

Type of Disability	Number	Number
	AS per Census 2001	As per SJE Department on 24-07-2023
Sight related disability	12334	1703
Speech related disability	1919	28
Hearing related disability	1918	1045
Movement related disability	8362	9659
Mental disability	2775	1852
Total	27308	14287

Source: Census 2011

3. Economic Vulnerability

The low-income group population faces challenges to live a life of dignity with all daily needs well met. Their low-income status sometimes also forces them to choose cheap housing in vulnerable areas or occupation in hazardous units. According to 2001 census, around 158548 people which is around 6.7 % of total population and 20 per cent of urban population of the district resides in slums. This population has limited opportunities for education, occupation, and health facilities. It makes the population also vulnerable to various health and hygiene hazards, making them socially vulnerable.

During 2011, income of agricultural labourers to plough is Rs 300, to sow is Rs 350, and to harvest is Rs 450. Apart from this a large number of people are also involved in unorganized sector for their living. Such population becomes highly vulnerable during disaster due to any damage or impact on market condition, production units, road or logistics network support, equipments, etc.

2.5 CAPACITY ANALYSIS

Capacity refers to the resources that are present in the district and can be used during peace time or disaster situation for various activities and services like that of search and rescue, first aid, medical response, etc. These capacities include trained human resources, equipments, critical life saving facilities and infrastructure, etc. available in the district. The detailed database of resources in District Disaster Management Resource Inventory, Bikaner in annexures.

Thus, the capacity gives an insight on the capability of the District Administration to deal with any disaster or emergency situation using the locally available resources within district. It also helps the administration to strengthen its capacity by identifying or procuring resources which are important but not available within district. A brief of key resources available within district is displayed in table 2.16.

Table 2.16: Capacity Analysis in Bikaner District

Infrastructure	Quantity
Health	
District Hospital	02
Yog and Prakrit Hospital	01
CHC	20
PHC	65
Sub-Health Centres	462
Major Private Hospital	05
Major Clinics	70
Ambulance Services	39
Blood Banks	01
Ayurvedic Hospitals	01
Veterinary Services	
Veterinary Polyclinic	01
Mobile veterinary van	03
First Grade Hospital	29
Veterinary Hospital	75
Veterinary Dispensaries	00
Veterinary Sub Centres	198
Education	
Primary Schools	1452
Middle School	1118
Senior Secondary Schools	662
Colleges – General and Technical (51+24)	75
Police	
Circle	No. of Police Stations

CO Sadar	03
CO City	04
CO GANGASHAHAR	03
CO SIUCAW	01
CO CYBER CRIME	01
CO Loonkaransar	04
CO Khajuwala	04
CO Nokha	04
CO Kolayat	05
CO Sri Dungargarh	02
CO Traffic	01
Fire	
Govt. Fire Stations	04
Roads	
National Highway	330.80 KM
Gravel Roads	303.81 KM
No. of villages connected with roads	796 KM
Communication	
Post Offices	267
E Mitra	2346
Miscellaneous	
Petrol Pumps	242
PDS Shops	862
SDRF Batallion	01
Military Station	01
Air Force Station	01
BSF Sector HQ	01
GRP Police Station	01
RPF Police Station	01

Source: Data collected from various departments

DETAILS OF GOVT AND PRIVATE COLLEGES OF BIKANER DISTRICT UPDATED ON 26-07-2023					
S. NO	GOVT/PRIVATE COLLEGE NAME	ADDRESS	PRINCIPAL NAME	MOBILE NO.	E-MAIL ID
1	Govt . Dunder College Bikaner	Sagar Road bikaner	DR. Inder singh Rajpurohit	941432 4456	dungarcollegebikaner334001@gmail.com
2	Govt M. S Girls College Bikaner	New Gajner Road Bikaner	DR. INDRA GOSWAMI	797654 1827	mscollege.bkn@gmail.com
3	Govt LAW College Bikaner	Opposite PHED office Sector 4 jnv colony bikaner	Dr. Bhagvanaram Vishnoi	946000 0929	pglcbikaner@yahoo.com
4	Govt College Lunkaransar	national highway 15 lunkaransar	Dr. Antaryami kaushik	800596 5221	govt.collegelksr@rediffmail.com govt.collegelksr@gmail.com

5	Govt College Khajuwala	Inside senior higher sec. school	FATEH CHAND SINGH	966735 8136	gckhajuwala@gmail.com
6	Govt M L B College Nokha	opposite krishi mandi bikaner road nokha	DR. DIGVIJAY SINGH	941445 2369	mlbgcnokha@gmail.com
7	GOVT. GIRLS COLLEGE NOKHA	opposite krishi mandi bikaner road nokha	DR. DIGVIJAY SINGH	982999 6906	ggcnokha@gmail.com
8	Govt college Dungargarh	bigga bass ward no. 18 Govt daga school building	Mahaveer Nath	982910 2363	gcdungargarh@gmail.com
9	GOVT GIRLS COLLEGE DUNGARGARH	Daga primary school building bigga bass	DR. INDRA GOSWAMI Tejkaran Chouhan	952973 8120 797654 1827 946190 4088	ggcdungargarh@gmail.com
10	Govt College Kolayat	kolayat	Dr. MUKESH SIYAG	977279 7827	gckolayat334302@gmail.com
11	GOVT COLLEGE HADAN	VOP Hadan Tehsil kolayat 334302	SURENDR A GUPTA	701416 4410 963657 3714	govtcollegehadan@gmail.com
12	Govt college Chhattargarh	RCP Colony Chhattargarh	Ashok Kumar	941463 2321	gcchhattargarh@gmail.com
13	Govt college Bajju	GOVT. SENIOR SECONDARY SCHOOL BUILDING main Road Bajju	Dr. Rahul Saxena	941425 6992	gcbajju@gmail.com
14	Govt College Deshnok	Primary School Building	DR. MANISH KUMAR	946103 9422 800584 4067	gcdeshnok@gmail.com
15	GOVT GIRLS COLLEGE KOLAYAT	Ignp Colony madh road kolayat	Rajendra kumar suthar	941400 3365	ggckolayat@gmail.com
16	GOVT COLLEGE PUGAL	Behind Police station	DR. SATISH GUPTA	935120 1557	drsatisgh1@gmail.com
17	GOVT GIRLS COLLEGE MURLIDHAR VYAS COLONY BIKANER	SAMUDAIK BHAWAN MDV COLONY BIKANER	DR. RAJNI RAMAN JHA	941419 3564	<u>GGCMDV.BKN@GMAIL.COM</u>
18	GOVT COLLEGE GANGASHAHAR BIKANER	JWAHAR SENIOR SECONDARY SCHOOL BUILDING GANGASHA	DR. BABITA JAIN	946147 2085	jainbabita28@gmail.com

		HAR BIKANER			
19	GOVT GIRLS COLLEGE NAPASAR	GEETA DEVI BAGDI SCHOOL BUILDING	DR PUSHPEN DRA SINGH	800387 0119	GGCNAPASAR@GMAIL.COM
20	GOVT COLLEGE MOMASAR	GOVT PRIMARY SCHOOL MOMASAR	Mahaveer Nath	982910 2363	
21	GOVT GIRLS COLLEGE BAJJU	BAJJU BIKANER	Dr. Rahul Saxena	941425 6992	GGCBAJJU@GMAIL.COM
21	GOVT COLLEGE GODU	OLD PANCHAYA T BHAWAN GODU	Dr. Rahul Saxena	941425 6992	
22	GOVT COLLEGE JASRASAR	JASRASAR	DR. DIGVIJAY SINGH	982999 6906	
23	BJS RAMPURIYA JAIN COLLEGE , BIKANER	BIKANER	Dr. Pankaj Jain	941414 1042	bjrjaincollege@gmail.com
24	Seth B.J.S.Rampuria Jain Law College, Bikaner	BIKANER	Dr. Anant Joshi	982979 1393	drreeteshvyas@gmail.com
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27	GYAN VIDHI MAHAVIDYALA YA, BIKANER	BIKANER	DR. B.L. BISHNOI	941408 4505	GYANVIDHI29@YAHOO.COM
28	BINANI KANYA MAHAVIDYALA YA, BIKANER	BIKANER	Dr. Chitra Panchariya	946084 9987	binanigirlscollege@gmail.com
29	N.S.P. (P.G.) COLLEGE, BIKANER	BIKANER	Dr. Prashant Bissa	982928 0717	nspcollegebikaner@gmail.com
30	SETH RAWAT MAL BOTHRA GIRLS COLLEGE, BIKANER	BIKANER	DR SUNITA PRABHAK AR	941368 4262	bothracollege@gmail.com
31	BASIC COLLEGE, BIKANER	BIKANER	Dr. Suresh Purohit	926141 5660	drsureshpurohit79@gmail.com
32	BHARTI NIKETAN MAHAVIDYALA YA, SRIDUNGARGAR H, BIKANER	SRIDUNGAR GARH, BIKANER	SANJAY VYAS	701489 5978	bhartiniketancollege@gmail.com

33	SHRIDUNGARGA RH MAHAVIDYALA YA, SRIDUNGARGAR H	SRIDUNGAR GARH, BIKANER	VINOD SUTHAR	774281 3333	sdcollege95@gmail.com
34	BALAJI DEGREE COLLEGE, LOONKARANSAR, BIKANER	LOONKARA NSAR, BIKANER	DR. MIRZA HEDAR BEG	992890 4670	<u>MDCOLLEGE2017@GMAIL.COM</u>
35	EKKISSH COLLEGE,LUNK ARANSAR	LOONKARA NSAR, BIKANER	Dr. H.M.Sarswat	941409 0492	21ekkiss@gmail.com
36	JAGDAMBA P.G. COLLEGE, KHAJUWALA	KHAJUWAL A BIKANER	RATAN SINGH	941327 8168	<u>jagdambapgcollegekhajuwala bkn@gmail.com</u>
37	S.D. COLLEGE, KHAJUWALA	KHAJUWAL A BIKANER	Dr. MANISH YADAV	838706 9464	sdcollege2008@gmail.com
38	S.K.S. CHANDI MEMORIAL COLLEGE, KHAJUWALA	KHAJUWAL A BIKANER	DHRAMP AL	766582 5825	skschandi@gmail.com
39	SHIVA GIRLS COLLEGE, KHAJUWALA	KHAJUWAL A BIKANER	Dr. LAXMI BOHRA	902488 0831	shivagirlscollage2010@gmail.com
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43	PRANAYRAJ DEGREE COLLEGE, BAJJU	BAJJU BIKANER	Dr. DALIP KUMAR	963610 4755	<u>parnayrajbkn16@gmail.com</u>
44	RAJASTHAN COLLEGE DAMOLAI, CHHATARGARH	CHHATARG ARH BIKANER	Dr. Rajesh kumar	982986 5530	<u>Murarimothsra@gmail.com</u>
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46	J D ARTS & SCIENCE COLLEGE	CHHATARG ARH BIKANER	DR. SHRIKRIS HAN	900197 2929	<u>santoshswami888@gmail.com</u>

	CHHATARGARH		SWAMI		
47	M G D GIRLS COLLEGE GHARSISAR	GHARSISAR BIKANER	DR. BHARTI TALDAR	982961 5911	mgdgirls804@gmail.com
48	MAHARSHI VYAS COLLEGE PUGAL	PUGAL BIKANER	DR. ASHOK KUMAR PUROHIT	982998 2900	maharshivvyascollegepugal@gmail.com
49	MN COLLEGE AND RESEARCH INSTITUTE	BIKANER	DR. SAPNA TYAGI	900127 5282	MNIAS_BIK@YAHOO.COM
50	KEEN COLLEGE BIKANER	BIKANER	ANUPAM A CHOUDHARY	982979 3540	keencollegebikaner@gmail.com
51	B.L MOHATA WOMENS COLLEGE SINTHAL	SINTHAL BIKANER	DR. VIJAY ACHARYA	894970 7001	GBLMWCSINTHAL@GMAIL.COM

2.6 RISK ANALYSIS

When hazard strikes at vulnerable areas or amidst vulnerable population, it leads to disasters and pose risk to the affected area or population. At this juncture, the capacity or resources available within the area or with the population help them cope with or reduce this risk. The possible hazards in the district pose different level of risk depending on various factors such as frequency of occurrence, probable impact, etc. Table 2.17 categories hazards based on the level of risk they pose (high, medium and low). It also shows major elements at risk and the vulnerable areas for these hazards.

Table 2.17: Risk Analysis

Hazard	Major Elements at Risk	Vulnerable Areas
High Risk Hazards		
Drought	Crops, cattle, human livelihood and environment	Entire district is prone to drought situation
Fires	Human, cattle, agricultural produce, kutcha houses, property, official records	a. MAH Units: Indian Oil Corporation Ltd. Bichhwal, Bharat Petroleum Corporation Ltd. Khara, Lucid Colloids Ltd, Kanasar b. Old city area c. Old market place d. Jhuggies and other high-density areas e. High rise buildings

Road Accidents	Human	Major accident – prone spots: Kirti Stambh, Urmul Circle, Sophia School, Dudi petrol pump, National Highway near village Naurangdesar, Seruna, Gusainsar, Sri Dungargarh, Palana, Rasisar, Sri Balaji, Nokha, Kolayat Phanta, Bichhwal Industrial Area etc.
Moderate Hazards		
Earthquake	Human, cattle, public infrastructure	The entire district falls in moderate seismic zone III and corresponds to MSK intensity VII.
Floods and water inundation	Human, cattle, crops, livelihood, property and other public infrastructure	Old Ginnani, Gangashahar, Police Line, Vallabh Garden, BSF Colony, Kolayat, Main Market Dungargarh, Bus Stop Nokha, Main Market Khajuwala, Lunkaransar
Chemical Accidents	Human, environment	Bikaner City, Bichhwal, RIICO I.G.C., Khara, Kanasar, Jaisalmer Bypass Road, Bikaner-Ganganagar Highway
Biological (Epidemic)	Human	Urban Bikaner, Jasusar gate, Pabu Bari, Idgah Bari, Station Road, Bada Bazar, Hamalon ki bari, Rani Bazar Industrial Area, Karni Industrial Area, Loonkaransar, Sahaniwala, Karni Industrial area, Nokha, Kolayat, Diyatra, Gadiyala, Gajner, Kotdi, Chaani, Khajuwala, Chahatargarh, Kakadawala, 2 KWM, Ballar, 2 KLD, Aduri, Siyasar, Amarpura
Extreme Temperatures	Homeless population, people living in poor housing conditions, cattle and crops	Entire district is prone to heat and cold waves
Low Risk Hazards		
Hailstorm	Homeless population, people living in poor housing conditions, cattle and crops	Entire district
Railway Accident	Human, cattle	Railway stations and areas/ villages along the railway track
Terrorist Attack	Human, infrastructure, cattle, environment	Crowded places like bus stops, malls, hospitals, places of worship, Melas, market places
Radiation and Nuclear	Human, cattle and environment, Border Area	Entire district

Source : Data collected from various departments

CHAPTER 3

INSTITUTIONAL ARRANGEMENTS FOR DISASTER MANAGEMENT

3.1 INTRODUCTION

The Disaster Management Act, 2005 lays down institutional and coordination mechanisms for effective disaster management at the national, state, and district levels. As mandated by this Act, the Government of India created a multi-tiered institutional system consisting of the National Disaster Management Authority (NDMA), headed by the Prime Minister, the State Disaster Management Authorities (SDMAs) by the Chief Ministers and the District Disaster Management Authorities (DDMAs) by the District Collectors and co-chaired by elected representatives of the local authorities of the respective districts. These bodies have been set up to facilitate the paradigm shift from the hitherto relief-centric approach to a more proactive, holistic and integrated approach of strengthening disaster preparedness, mitigation and emergency response.

1. National Disaster Management Authority (NDMA)

The NDMA, as the apex body for disaster management, is headed by the Prime Minister and has the responsibility for laying down policies, plans and guidelines for DM and coordinating their enforcement and implementation for ensuring timely and effective response to disasters. It will approve the National Disaster Management Plan and DM Plans of the Central Ministries / Departments.

2. National Executive Committee (NEC)

The NEC is the Executive Committee of NDMA, which assists the NDMA in the discharge of its functions and also ensures compliance of the directions issued by the Central Government/NDMA. It is headed by the Union Home Secretary, along with Secretaries from some other ministries, and senior officers of GOI as members.

3. National Institute of Disaster Management (NIDM)

Capacity building along with training, research, documentation and development of a national level information base is the main responsibility of NIDM.

It organizes training of trainers, DM officials and other stakeholders.

4. National Disaster Response Force (NDRF)

NDRF is constituted for the purpose of specialized response to disaster situation/disasters/emergencies, both natural and manmade, under the command and supervision of NDMA. The NDRF, presently comprising of 8 to 10 battalions, is positioned at different locations in the country. NDRF units would maintain close liaison with the designated State Governments and it would provide prompt services in handling disasters. It will also impart basic training to all the stakeholders identified by the State Governments.

5. State Disaster Management Authority (SDMA)

At the State level, the SDMA, headed by the Chief Minister, has the responsibility for laying down policies and plans for DM in the State. It would approve the State Plan in accordance with the guidelines laid down by NDMA, coordinate the implementation of the State Plan, recommend provision of funds for mitigation and preparedness measures and review the departmental plans of the different departments of the State, to ensure the integration of prevention, preparedness and mitigation measures.

6. State Executive Committee (SEC)

The SEC, headed by the Chief Secretary of the State Government, has the responsibility to assist the SDMA in the performance of its functions. It has the responsibility to coordinate and monitor the implementation of the National Policy, National Plan and the State Plan.

The primary responsibility for disaster management rests with the State. The institutional mechanism put in place at the Centre, State and District levels would help the State manage disasters in an effective manner.

7. State Disaster Response Force (SDRF)

SDRF has been constituted in the State, with the assistance of Rajasthan Armed Constabulary (RAC). Initially, it is comprised of 150 trained and experienced personnel of RAC and they are stationed at Kota, Jodhpur, Jaipur and Bikaner with effective strength of 50 each. The force has been provided with expertise training and equipment to serve as state's response team during disasters.

8. Centre for Disaster Management

A Centre for Disaster Management, located in the State Administrative Training Institute (ATI), Jaipur, has been given the responsibility of capacity building in the State. It organises Trainings of Trainers (Tot) and other stakeholders and also serves as a centre of knowledge and documentation for DM in the State.

9. District Disaster Management Authority (DDMA)

The DDMA is headed by the District Collector to 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 NDMA and SDMA. It has the responsibility to prepare the District DM Plan for the district.

10. Local Authorities

Local authorities, consisting of Panchayat Raj Institutions (PRIs), Municipalities, District and Cantonment Boards and Town Planning Authorities, which control and manage civic services, have the responsibility to ensure capacity building of their officers and employees for managing disasters, carrying out relief, rehabilitation and reconstruction activities in the affected areas. They have their own DM Plans as per the guidelines of NDMA, SDMA and DDMA.

3.2 D.M. ORGANISATION AT THE DISTRICT LEVEL

1. District Disaster Management Authority (DDMA)

At the district level, DDMA act as the district planning, coordinating and implementing body for disaster management and take all measures for the purposes of disaster management in the District in accordance with the guidelines laid down by NDMA and SDMA.

The DDMA for the district has been notified on 6.9.2007 as table below:

Table 3.1: District Disaster Management authority (DDMA)

S.N	Officer	Position
1	District Magistrate	Chairperson
2	Chairperson, Zila Parishad	Co-Chairperson
3	Additional District Magistrate	Member Secretary
4	Superintendent of Police	Member

5	Chief Medical and Health Officer	Member
6	Superintendent Engineer (PHED)	Member
7	Superintendent Engineer (Power)	Member
6	Superintendent Engineer (PWD)	Member

The DDMA may meet when necessary with time and place being selected by the Chairperson. Under section 28 District Authority as and when considers necessary, constitute one or more advisory committees and other committees for the efficient discharge of its function and appoint from amongst its members the Chairperson of the committee formed and any person associated with the committee or sub – committee will be paid allowances as may be prescribed by the State Government.

The roles and responsibilities of the DDMA have been elaborated in Section 30 of the DM Act, 2005. It will perform the following roles and duties as per the act:

- Prepare, Coordinate and monitor a disaster management plan including district response plan for the district;
- Ensure that the areas in the district vulnerable to disasters are identified and measures for the prevention of disasters and the mitigation of its effects are undertaken by the departments of the Government at the district level as well as by the local authorities;
- Ensure that the guidelines for prevention of disasters, mitigation of its effects, preparedness and response measures as laid down by the National Authority and State Authority are followed by all the departments of Government at the district level and by the local authorities in the district;
- Review the state of capabilities for responding to any disaster or threatening disastrous situation in the district and give directions to the relevant departments or authorities for their up gradation as may be necessary;
- Organize and coordinate specialized training programmes for different levels of officers governmental and non-governmental organizations and voluntary rescue workers in the district;
- Set up, maintain, review and upgrade the mechanism for early warnings and dissemination of proper information to public;

- Ensure that the Departments of the Government at the district level and the local authorities prepare their response plans in accordance with the district response plan;
- Lay down guidelines for, or give direction to, the concerned Department of the Government at the district level or any other authorities within the local limits of the district to take measures to respond effectively to any threatening disaster situation or disaster;
- Advise, assist and coordinate the activities of the Departments of the Government at the district level, statutory bodies and other governmental and non-governmental organizations in the district engaged in the disaster management;
- Provide necessary technical assistance or give advice to the local authorities in the district for carrying out their functions;
- Review development plans prepared by the Departments of the Government at the district level, statutory authorities or local authorities
- Identify buildings and places which could, in the event of any threatening disaster situation or disaster, be used as relief centres 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;
- Ensure communication systems are in order, and disaster management drills are carried out periodically;
- Perform such other functions as the State Government or State Authority may assign to it or as it deems necessary for disaster management in the District.

2. District Crisis Management Group

The District Crisis Management Group is the apex body at the District level which is responsible for preparedness, early crisis detection, response, recovery, mitigation and prevention of all kinds of disasters in the District. The DCMG will supervise overall management of the incident/emergency and work under the general guidance and control of State Crisis Management Group. All agencies will provide resources to the District Crisis Management Group as and when required. Where a

specialist team is deputed by the State/Central Group, DCMG will normally abide by the advice of the said specialist team; but the final decision will be that of the District/State Crisis Management Group.

Table 3.2: District Crisis Management Group (DCMG)

Member	Post	Tel. No. (O)	Tel. No. (R)	Mobile
District Magistrate & Collector	Chairman	0151-2226000	2226001	95360322633
Superintendent of Police	Member	0151-2226111	2226112	9871064211
Additional District Magistrate	Convenor	0151-2226101	2226102	9950382495
SE, PWD	Member	0151-2226502	2226503	9828509642
Chief Medical & Health Officer	Member	0151-2226341	2226343	9414117860
Dist. Fire Officer	Member	101, 2226915	2226914	7230006243
District Informatics Officer, DIO	Member	0151-2226027	2233222	9636944223
PRO, Bikaner	Member	0151-2523263	2523464	9413821953

Any other district officer, senior officer of para military forces whose inclusion is considered necessary in the light of the emerging situation, may be co-opted as a member. The DCMG will also function as District Disaster Management Committee (DDMC) under The Disaster Management Act, 2005. For the purposes of crisis emanating from natural and man-made disasters affecting the community as a whole, DCMG and DDMC will function as one committee during such a crisis. The DCMG will always work under the guidance of SCMG.

1. Response System

Immediately on the occurrence of a crisis, the local action plan (follows) would be put into effect by the District Crisis Management Groups. If the situation has wider ramifications and warrants response at the State and National Level, the District Administration will contact the Nodal Ministry of the State and Central Government and seek the required help. Standard Operating Procedure/Guideline is required for handling each of the contingency/emergency situations. The guidelines/Standard Operating Procedures are not to be taken as exhaustive of all the measures necessary for handling particular emergencies. The following are the essential components of SOP.

Awareness Measures: During normal situation, awareness campaigns through print & electronic media, sensitization meetings, hoardings, leaflets etc. will be done for the

information of the general public.

Identification of vulnerable points: The District Crisis Management Group will identify the vulnerable points for probable human induced crisis like Airport, Headquarter of Army and Para Military Force, public life line installation, heritage building, religious places, markets and important public buildings in the district.

Mock Drill: To assess the effectiveness of Crisis Management Plan and Crisis Management Groups, periodic mock drills will be organized twice a year at District level.

Precautionary Stage (Early Warning): To handle any crisis or emergency situation, the precautionary stage is required to be dealt with all seriousness. Regular conferences of the agencies of Intelligence wings of the Government are be organized both at the top and the middle levels to exchange information as well as to build up working relationships.

- **Early Indication of Emergencies/Contingencies and Dissemination of Information**

If there is any indication of a situation that is likely to lead to emergency/ crisis situation, such information will be channelized to the Convener of the District Crisis Management Group through District EOCs and necessary steps will be undertaken to disseminate the information to the relevant persons and Crisis Management Groups to address the situation. The District Emergency Operation Centre will alert all hospitals in the event of a crisis situation so that adequate medical support is made available for the injured people who might be brought for treatment.

- **Advance Intelligence Mechanism**

Whenever advance intelligence/ information is received, the same will be disseminated confidentially to the District Magistrate and the Convener of the District Crisis Management Group. If necessary, the information will be communicated to the DCMG for taking precautionary measures.

- **Monitoring / Channels of Communication**

i. Operation of EOCs: After receiving the information, the DEOCs will monitor the situation by collecting information from various sources and sending to the Crisis Management Groups and agencies concerned through proper channel. All the

information will be given to single point of contact to the DM and the Convenor of the Crisis Management Group at the District level.

- ii. Deployment of Crisis Management Groups:** The DCMG is authorized to deploy the Response Teams at the vulnerable points with required manpower, equipment and other resources after receiving of warning.
- iii. Mobilization of resources within/ outside the State and Country:** To mobilize extra resources for the crisis/emergency situation, the District Crisis Management Group may make a requisition to the State and Central Government.

The Chairman of District Crisis Management Group may convey meeting forthwith based on his discretion or advise of any of the members of the CMG for assessing the overall situation and follow up, if any required.

Response/Crisis Management Phase : Immediately on the occurrence of a crisis, the local action plan would be put into effect by the District Crisis Management Group. The District Administration will contact the Nodal Ministry of the State and Central Government and seek the help, if required.

a. Deployment of Response Team on the Spot

All operational decisions on matters as deployment of quick response team shall be taken by the District Crisis Management Team. It will seek directions and advice wherever necessary from the State Crisis Management Group, Crisis Management Group of MHA or the National Crisis Management Committee.

b. Management of unforeseen emergencies

In the event of hostage taking, etc., the demands of the terrorists will not be conceded under any circumstance. However, there will be no hesitation in starting negotiation and for this negotiation teams will be given advance training.

c. Negotiation or commando action

In the event of it being decided to opt for negotiations or commando action, the District Crisis Management Group shall provide all necessary assistance to the senior most officers of the negotiating team/ commandos.

d. Utilization of communication channels of the other Central Organizations

The communication channels of the other State and Central Organizations

throughout the district shall be used by the District Crisis Management Group and Response Team in the event of an emergency/ crisis situation and for these purpose prior arrangements with the State Government and Government of India will be made.

e. Management of emergency involving foreign nationals

In any emergency involving foreign nationals, some assistance could be forthcoming from embassies having national, racial or religious affinities with influence on the miscreants, and the District Crisis Management Group after consultation with SCMG and through Ministry of External Affairs will take a decision to solicit such services.

f. Possible negotiation with close relatives of the miscreants/ terrorists

Close relatives of the miscreants/terrorists, if already available, will be located through the help of all available sources including State police and detained for possible use in negotiations.

g. Trial for leader of terrorist groups

In all cases where senior members of terrorist groups are arrested, trials and appeals may be concluded in a time bound manner by the State Government and, if needed, a separate trial court would set up.

Termination of Emergency by use of Force: The Crisis Management Group handling the crisis may require immediate intervention of force or it may wait for the NSG.

a. Decision for termination of an emergency by use of force

The District Crisis Management Group handling the crisis will decide on the termination of the emergency by use of force. Where necessary, it may seek the orders from the State and National Crisis Management Groups / Committee under the Disaster Management Act.

b. Requisition of NSG

Depending on the situation, availability of time and view of Central Government, the NSG will be requisitioned. The District Crisis Management Group will send the requisition for the NSG to the State and National Crisis Management Committee.

c. Provisions for calling out the Army

Provisions for calling out the Army in aid of civil authorities have not been enumerated in this Crisis Management plan because relevant provisions in the internal security schemes of the State regarding the procedure, liaison, establishment of joint headquarters etc. are already in place.

Media Handling: Accurate and timely briefing of the media is crucial to building confidence among the community, and prevent rumours.

a. Information dissemination, countering of false propaganda

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

b. Identification of spokes-person in the CMG for Press Briefing

A senior representative of Information Culture and Tourism Department will associate with District Crisis Management Group. It shall be the responsibility of the representatives of the Information Culture and Tourism Department to keep the members of the press/media briefed and counter any false information/ rumors/ propaganda.

No Officer other than the one designated by the State Government shall interact with the media.

c. Update/Situation report by District Magistrate/ SP to media time to time

The District Magistrate/ SP will brief the media suitably from time to time regarding the progress in handling the contingency/ emergency and they should coordinate their response with the designated person of the Information Culture and Tourism Department mentioned above.

d. Media Control at the scene of action

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

Post Crisis Management: At the end of the crisis, the effectiveness of the plan to handle that crisis is required to be reviewed for better implementation in future.

a. Communication of end of the Crisis Management

At the end of the emergency, the Member-Convenor of the District Crisis Management Group would signal the standing down of arrangements made under this Contingency Plan. The termination of the precautionary or the active stage will be communicated to the concerned members as well as the Emergency Operation Centres of the State, District and other linked Control Rooms. Debriefing of entire response process will be conducted by the State and District Crisis Management Groups to assess the strengths and weakness, and decisions will be taken for further strengthening this plan.

b. Examination of Post Crisis Management Situation

The District Crisis Management Group will examine each contingency situation after the termination of the event to identify practical difficulties and defects noticed in the smooth functioning of this Crisis Management Plan. An annual review of Crisis Management Plan will be undertaken in the light of lessons learnt during the year.

c. Review of Internal Security System

As this Crisis Management Plan envisages action of the District Authorities in conformity with the existing Internal Security schemes, it is essential that the internal security schemes be reviewed and updated regularly. The District Authorities would also need to identify vulnerable points/areas, which require protection, keeping in view the possibility of the seizure / hijack of establishments of Government and places for worship.

3. District Control Room (DCR) or District Emergency Operation Centre (DEOC)

The District Control Room under the control of District Collector, Bikaner and operates round the clock. It is the nerve centre to Monitor, Co-ordinate, Implement the actions / activities for Disaster Management. The District Control Room is placed in the Relief Section of the District Collectorate.

District Control Room Number - 0151-2226031

In a disaster time, the District Control Room will function as District Emergency Operation Centre (DEOC) and operate under the central authority of the District Collector, exercising emergency power to issue directives to all departments to provide emergency response service. It will also co-ordinate with the State Response Machinery. The Control Room is manned round the clock.

Like DEOC control rooms at sub district and other departments such as Irrigation, police, Municipal Corporation etc also operate round the clock.

Activities of Control Room

Normal Time

- Ensure that all warning and communication systems, instructions are in working condition.
- Receive information on a routine and regular basis from the departments on the vulnerability of the various Gram panchayats and Villages to disaster.
- Receive reports on preparedness from the relevant district level departments and other departments, as per as the formats. Based on these reports, the DEOC will forward the Preparedness Measures details on behalf of the Collector to the State Control Room, Relief Commissioner.
- Upgrade and update District Control Room system according to changing scenarios in the district
- Update data bank and maintain an inventory of resources.
- Update all information on the SDRN / IDRN Inform State Control Room, Relief Commissioner of any changes, including updating of data bank and annexure.
- Monitor preparedness measures including simulation exercises undertaken by various departments.
- Ensure proper dissemination of information about District Control Room System at the district level, local level and disaster prone areas.
- Identify appropriate NGOs/Private Sector Organizations, which can be assigned the task of community level preparedness.

- Organize post-disaster evaluation and update District Control Room System accordingly
- Prepare reports and documents on district level disaster events and submit the same to State Control Room, Relief Commissioner.

Disaster Time

- Weather tracking and early warning dissemination.
- To collect and transmit information regarding matter relating to natural calamity.
- Mapping of vulnerable areas.
- Database on civil society organizations and their activities Database on volunteers.
- Facilitate regular meetings of civil society organizations and issue updates.
- Flow of information to State control room in Relief Commissioner's office
- District level training of officials and NGOs in emergency response
- Men and material management in emergencies with proper inventorization.

4. Incident Response System (IRS)

The DM Act 2005 has heralded a paradigm shift in DM from a post-event response to one of pre-event prevention, mitigation and preparedness. In view of the paradigm shift towards improved pre-disaster preparedness, there is an urgent need for a proper and a well-prepared response system which would have;

- a) Well thought out pre-designated roles for each member of the response team;
- b) Systematic and complete planning process;
- c) System of accountability for the IRT members;
- d) Clear cut chain of command;
- e) Effective resource management;
- f) Proper and coordinated communications set up;
- g) System for effectively integrating independent agencies into the planning and command structure without infringing on the independence of the concerned agencies; and

h) Integration of community resources in the response effort.

The Incident Response System (IRS) provides a systematic, proactive approach guiding the concerned departments and agencies at all levels of government, the private sectors and Non-Governmental Organizations to work flawlessly in disaster situation. The Incident Response System (IRS) is, therefore, an effective mechanism for reducing the scope for ad-hoc measures in response. It incorporates all the tasks that may be performed during DM irrespective of their level of complexity. It envisages a composite team with various Sections to attend to all the possible response requirements. The IRS identifies and designates officers to perform various duties and get them trained in their respective roles. If IRS is put in place and stakeholders trained and made aware of their roles, it will greatly help in reducing chaos and confusion during the response phase. Everyone will know what needs to be done, who will do it and who is in command, etc. IRS is a flexible system and all the Sections, Branches and Units need not be activated at the same time or various Sections, Branches and Units need to be activated only as and when they are required.

The introduction of IRS will ensure that the response to disasters in future will definitely be swift, efficient and effective since every stakeholder / responder will be properly trained in the role he has to perform and will have a clear chain of command.

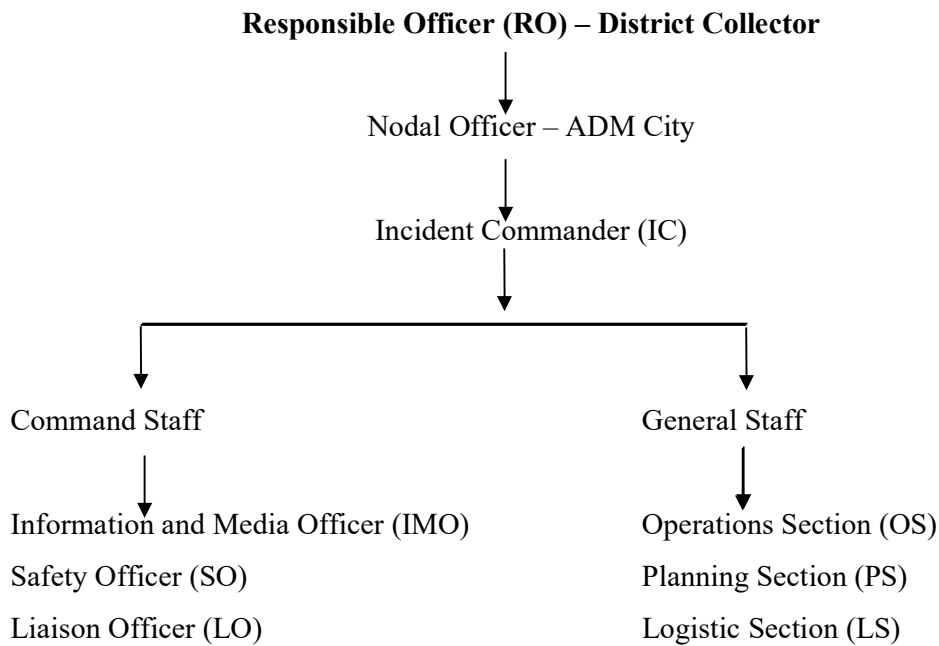
IRS Organisation

The IRS organisation functions through Incident Response Teams (IRTs) in the field. In line with our administrative structure and DM Act 2005, Responsible Officer (RO) has been designated at District level as overall in charge of the incident response management. The district Collector will act as Responsible Officer at district level. The Ro may however delegate responsibilities to the Incident Commander (IC), who in turn will manage the incident through IRTs. The IRTs will be pre-designated at all levels; District, Sub-Division and Tehsil/Block. On receipt of Early Warning, the RO will activate them. In case a disaster occurs without any warning, the local IRT will respond and contact RO for further support, if required. A Nodal Officer (NO) has to be designated for proper coordination between the District, State and National level in activating support for response.

Apart from the RO and Nodal Officer (NO), the IRS has two main components;

(a) Command Staff and

(b) General Staff. The structure is shown below.



Command: The Incident Commander (IC) is responsible for all incident or event activity. Although other functions may be left unfilled, there will always be an Incident Commander.

Operations: The Operations Section is responsible for directing the tactical actions to meet incident objectives.

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

Logistics: The Logistics Section is responsible for providing adequate services and support to meet all incident or event needs. Apart from Support & Service branches, Finance is also a branch in Logistics. The Finance Branch is responsible for keeping track of incident-related costs, personnel and equipment records, and administering procurement contracts associated with the incident or event.

Command Staff

The Command Staff consists of Incident Commander (IC), Information & Media Officer (IMO), Safety Officer (SO) and Liaison Officer (LO).

Information & Media Officer (IMO): The Information Officer is responsible for developing and releasing information about the incident to the news media, to incident personnel, and to other appropriate agencies and organizations. Only one Information Officer will be assigned for each incident.

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

Liaison Officer (LO): Incidents that are multijurisdictional, or have several agencies involved, may require the establishment of the Liaison Officer position on the Command Staff. The Liaison Officer is the contact for Agency Representatives assigned to the incident by assisting or cooperating agencies.

They report directly to the IC and may have assistants. The Command Staff may or may not have supporting organisations under them. The main function of the Command Staff is to assist the IC in the discharge of his functions.

General Staff

The General Staff has three components which are as follows -

Operations Section (OS) : The OS is responsible for directing the required tactical actions to meet incident objectives. Management of disaster may not immediately require activation of Branch, Division and Group. Expansion of the OS depends on the enormity of the situation and number of different types and kinds of functional Groups required in the response management.

Planning Section (PS) : In IRS, the Planning Section is responsible for managing all information relevant to an incident. When activated, the Planning Section Chief who is a member of the General Staff manages the Section. The Planning Section collects, evaluates, processes, and disseminates information for use at the incident. Dissemination can be in the form of the Incident Action Plan, formal briefings, or

through map and status board displays.

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

- Chemist
- Structural Engineer
- Hydrologist
- Geologist
- Meteorologist
- Training Specialist

A wide variety of Technical Specialists could be used, depending upon the requirements of the incident. There are four units within the Planning Section that can be activated as necessary:

- Resources Unit: This unit is responsible for maintaining the status of all assigned resources (primary and support) at an incident.
- Situation Unit: The collection, processing, and organizing of all incident information takes place within the Situation Unit. The Situation Unit may prepare future projections of incident growth, maps, and intelligence information.
- Documentation Unit: The Documentation Unit is responsible for the maintenance of accurate, up-to-date incident files. Incident files will be stored for legal, analytical, and historical purposes.
- Demobilization Unit: The Demobilization Unit is responsible for developing the Incident Demobilization Plan. On large incidents, demobilization can be quite complex, requiring a separate planning activity. Note that not all agencies require specific demobilization instructions.

The Planning Section Chief will determine the need to activate or deactivate a unit. If a unit is not activated, then the responsibility for that unit's duties will remain with the Planning Section Chief.

The PS is responsible for collection, evaluation and display of incident

information, maintaining and tracking resources, preparing the Incident Action Plan (IAP) and other necessary incident related documentation. They will assess the requirement of additional resources, propose from where it can be mobilised and keep IC informed. This Section also prepares the demobilisation plan.

Logistics Section (LS): The Logistics Section, with the exception of aviation support, provides all incident support needs. The Air Support Group in the Air Operations Branch handles aviation support. The Logistics Section is responsible for the following:

- Facilities
- Transportation
- Communications
- Supplies
- Equipment maintenance and fueling
- Food services
- Medical services
- Ordering resources
- Finance & Administration

The Logistics Section Chief, who may assign a Deputy, manages the Logistics Section. A Deputy is most often assigned when all designated units (listed below) within the Logistics Section are activated. On very large incidents, or on incidents requiring a great deal of equipment or facilities, the Logistics Section may be divided into three Branches – Service Branch, Support Branch and Finance Branch. A Branch Director, who reports to the Logistics Section Chief, leads each Branch. This is most often done for span of control reasons, resulting in a more manageable organization.

Three Branches may be established within the Logistics Section and units shown below may be established within these branches:

- i. Support :** Resource Provisioning Unit, Facilities Unit, Ground Support Unit.
- ii. Services :** Communication Unit, Food Unit, Medical Unit.
- iii. Finance :** Time Unit, Procurement Unit, Compensation/Claims Unit, Cost Unit.

The LS is responsible for providing facilities, services, materials, equipment and other resources in support of the incident response. The Section Chief participates in development and implementation of the IAP, activates and supervises Branches and Units of his section. In order to ensure prompt and smooth procurement and supply of resources as per financial rules, the Finance Branch has been included in the LS.

The roles and responsibilities under incident response system are mentioned in the following table –

Table 3.3: Roles and Responsibilities under Incident Response System (IRS)

ROLES AND RESPONSIBILITIES	
District Collector (DC), Bikaner as Responsible Officer (RO)	
<ul style="list-style-type: none"> • Ensure formation of Incident Response Teams (IRT) at District, Sub- Division, Tehsil/Block. • Ensure that a reasonable amount of imprest fund is sanctioned clearly delineating the procedure for emergency procurement. • Ensure effective communication and Web based / online Decision Support System (DSS) is in place in the EOC and connected with District, Sub-Division, Tehsil/Block level. • Appoint / deploy, terminate and demobilise Incident Commander (IC) and IRT(s) as and when required. • Decide overall incident objectives, priorities and ensure that Incident Action Plan (IAP) is prepared by the IC and implemented. • Identify, mobilise and allocate critical resources according to established priorities from with any department of the Government, Local Authority, private sector in the district. • Coordinate with the State Government for mobilisation of Armed Forces, Air support etc. as and when required. • Ensure overall coordination of response, relief and other activities. • Ensure that NGOs carry out their activities in an equitable and non-discriminatory manner. • Mobilise experts and consultants in the relevant fields for advice, if necessary. • Conduct post response review on performance of IRTs and take appropriate steps to improve performance. • Take such other necessary action as the situation demands. 	
1. COMMAND STAFF	
Additional District Magistrate (ADM), Bikaner as Incident Commander (IC)	
<ul style="list-style-type: none"> • Obtain information on: <ul style="list-style-type: none"> ➤ Incident situation status like number of people and the area affected etc. ➤ Availability and procurement of resources ➤ Requirement of facilities like ICP, Staging Area, Incident Base, Camp, Relief Camp, etc. ➤ Availability and requirements of Communication system ➤ Future weather behavior from IMD ➤ Any other information required for response from all available sources and 	

<p>analyse the situation</p> <ul style="list-style-type: none"> • Determine incident objectives and strategies based on the available information and resources and establish immediate priorities and strategies. • Establish appropriate IRS with Sections, Branches, Divisions and/or Units based on the span of control and scale of the incident. • Establish Incident Command Post (ICP) at a suitable place. There will be one ICP even if the incident is multi jurisdictional. • Prepare Incident Action Plan (IAP) which should be reviewed every 24 hours and circulated to all concerned. • Hold planning meeting at regular interval. • Ensure that adequate safety measures for responders and affected communities are in place. • Ensure proper coordination between all sections of the IRT, agencies working in the response activities and make sure that all conflicts are resolved. • Consider requirement of resources, equipment which are not available in the functional jurisdiction, discuss with Planning Section Chief (PSC) and Logistics Section Chief (LSC) and inform RO regarding their procurement. • Authorise release of information to the media. • Recommend demobilisation of the IRT, when appropriate. • Review public complaints and recommend suitable grievance redressal measures to the RO. • Perform any other duties that may be required for the management of the incident.
<p>Public Relations Officer (PRO), Bikaner as Information and Media Officer (IMO)</p> <ul style="list-style-type: none"> • Prepare and release information about the incident to the media agencies and others with the approval of IC. • Record decisions taken and directions issued in case of sudden disasters when the IRT has not been fully activated and hand it over to the Planning Section (PS) on its activation for incorporation in the IAP. • Monitor and review various media reports regarding the incident that may be useful for incident planning. • Organise IAP meetings as directed by the IC or when required. • Coordinate with IMD to collect weather information and disseminate it to all concerned. • Maintain record of various activities performed and perform such other duties as assigned by IC.
<p>ADM (City), Bikaner as Liaison Officer (LO)</p> <ul style="list-style-type: none"> • Maintain a list of concerned line departments, agencies (NGOs, etc.) and their representatives at various locations. • Liaison with all concerned agencies including SDRF and Armed Forces and line departments of Government. • Monitor operations to identify current or potential inter-agency problems. • Participate in planning meetings and provide information on response by participating agencies. • Keep the IC informed about arrivals of all the Government and Non-Government agencies and their resources.

<ul style="list-style-type: none"> • Organise briefing sessions of all Governmental and Non-Governmental agencies with the IC. • Maintain record of various activities performed and perform such other duties as assigned by IC.
Additional SP (Rural/Urban), Bikaner as Safety Officer (SO)
<ul style="list-style-type: none"> • Recommend measures for assuring safety of responders and to assess or anticipate. • Identify hazardous and unsafe situations and review it regularly. • Participate in planning meetings for preparation of IAP and review the IAP for safety implications. • Obtain details of accidents that have occurred within the incident area if required or as directed by IC and inform the appropriate authorities. • Review and approve the Site Safety Plan, as and when required. • Maintain record of various activities performed and perform such other duties as assigned by IC.
2. GENERAL STAFF
(A) OPERATION SECTION
Sub-Divisional Magistrate (SDM) of affected area as Operation Section Chief (OSC)
<ul style="list-style-type: none"> • Coordinate with the activated Section Chiefs. • Manage all field operations for the accomplishment of the incident objectives. • Ensure the overall safety of personnel involved in the OS and the affected communities. • Deploy, activate, expand and supervise organisational elements (Branch, Division, Group, etc) in his Section in consultation with IC and in accordance with the IAP. • Brief the personnel in OS at the beginning of each operational period and ensure resolution of all conflicts, information sharing, coordination and cooperation between the various Branches of his Section. • Consult the IC from time-to-time and keep him fully briefed. • Determine the need for additional resources and place demands accordingly and ensure their arrival. • Ensure record of various activities performed and perform such other duties as assigned by RO /IC.
SDM of the Affected Area as Staging Area Manager
<ul style="list-style-type: none"> • Establish the Staging Area with proper layout. • Organise storage and dispatch of resources received as per IAP. • Report all receipts and dispatches to OSC and maintain their records. • Manage all activities of the SA and utilise all perishable supplies expeditiously. • Request maintenance and repair of equipment at SA, as needed. • Ensure that communications are established with the ICP, different SAs, Incident Base, Camp, Relief Camp. • Maintain and provide resource status to PS and LS. • Demobilise SA in accordance with the Demobilisation Plan. • Maintain record of various activities performed and perform any other duties as assigned by OSC.
Tehsildar as Response Branch Director (RBD)
<ul style="list-style-type: none"> • Ensure implementation of IAP as per the assigned role. • Attend planning meetings as required by the OSC and review assignment lists for Divisions or Groups under Response Branch.

<ul style="list-style-type: none"> • Report to OSC regarding modifications required if any in the IAP, need for additional resources, availability of surplus resources and when hazardous situations or significant events occur, etc. • Provide Single Resource, Strike Team and Task Force support to various operational areas.
Block/Tehsil Supervisor
<ul style="list-style-type: none"> • Ensure implementation of division or group assignment list. • Assign resources within the division or group under them. • Report on the progress of Operations, and the status of resources within the division or group. • Coordinate activities with adjacent divisions or groups, if required. • Submit situation and resource status to the RBD and the OSC. • Report all hazardous situations, special occurrences or significant events (e.g., accidents, sickness, deteriorating weather conditions, etc.) to the RBD and the OSC. • Participate in the development of IAP for next operational period, if required.
Single Resource Unit Leader (SRUL)
<ul style="list-style-type: none"> • Take charge of necessary equipment and supplies. • Assess local weather and environmental conditions, law and order situation etc. in the assigned area and report to division supervisor or group in charge. • Perform the assigned duty and keep contact with his supervisor.
Block Development Officer (BDO) (rural areas) & EO/Secretary UIT, Commissioner, MC (of Urban areas) as Task Force Leader
<ul style="list-style-type: none"> • Review assignments with members of his team. • Report on work progress. • Coordinate activities with adjacent Single Resource, Strike Teams and Task Forces. • Establish and ensure communications. • Perform any other duties assigned. • Maintain record of various activities.
RTO/DTO, Bikaner as Transport Branch Director (TBD)
<ul style="list-style-type: none"> • Activate and manage different operations groups like road, rail and air. • Coordinate with railways, road transport and airport authorities for support. • Provide ground support to the air operations and ensure appropriate security arrangements. • Provide Road transport support to the Rail Operations Group as required. • Ensure safety of all personnel of this Branch involved in the Incident Response activities. • Ensure that all units moving in the area are familiarised with route with the help of road maps or local guides. • Prepare transportation plan as per the IAP. • Determine the need for additional resources, their proper and full use and place demand accordingly in advance. • Ensure the maintenance of the status of hired resources, their full utilisation and timely release. • Ensure that the record of various activities performed and perform any other duties assigned by the IC or OSC.

<p align="center">DTO, Bikaner as Group-in-charge (Road operations)</p>
<ul style="list-style-type: none"> • Ensure transportation of resources by road to the affected sites. • Attend planning meetings on the direction of OSC and determine coordination procedures with various destinations as per IAP and update Road Operations plan as required. • Ensure proper parking locations. • In case of accidents, inform the TBD, the local police and provide assistance in investigation, if required. • Ensure that mechanics are available for repair of vehicles and also ensure adequate availability of diesel, oil and lubricants. • Maintain the records of all important activities relating to the number of vehicles deployed, source of vehicles (i.e. Government or private), locations where vehicles are deployed along with resource details they are carrying. • Support and coordinate the road operations part of the rail and air operations.
<p align="center">DRM/Railway Superintendent, Bikaner as Group- in-charge (Rail Operations)</p>
<ul style="list-style-type: none"> • Prepare and provide rail operations summary including time of departure and arrival, destinations, resource details, etc as and when required by the senior officers. • Coordinate with road operations group for movement of resources. • Organise crew for loading and unloading. • Ensure safe storage and warehousing of the materials. • Update Rail Operations Plan. • Establish and maintain communications with various storage and warehousing areas, destination points and railway officers.
<p align="center">Chief Manager, Nal Airport (Air Operations)</p>
<ul style="list-style-type: none"> • Coordinate with concerned authorities for air operations and project the type of air support required demand at least 24 hours in advance or as early as possible. • Inform the IC and OSC about the air movements and landing schedules in their respective areas. • Ensure that relevant maps of the incident locations are available with all agencies involved in the air operations to give the correct coordinates of the locations where air support is required. • Determine the suitability of helipads or helibases in coordination with the Air Force authorities and the State authorities. • Maintain communication with Air Traffic Control and the ground support staff regarding the Air movements and other related activities. • Report on air operations activities to the RO and perform any other duties assigned by the RO and IC.
<p align="center">(B) PLANNING SECTION</p>
<p align="center">Additional District Magistrate (ADM), Bikaner as Planning Section Chief (PSC)</p>
<ul style="list-style-type: none"> • Coordinate with the activated Section Chiefs for planning and preparation of IAP in consultation with IC. • Ensure that decisions taken and directions issued in case of sudden disasters when the PS had not been activated are obtained from the IMO and incorporated in the IAP. • Prepare IAP by assessing the current situation, predicting probable course of the incident and preparing alternative strategies. • Ensure collection, evaluation, and dissemination of information about the incidents including weather, environment toxicity, availability of resources etc. from concerned technical specialist, demobilization unit, documentation unit, situation unit, resource unit and other sources.

<ul style="list-style-type: none"> • The PS must have a databank of available resources with their locations from where it can be mobilized. • Plan to activate and deactivate IRS positions as appropriate, in consultation with the IC and OSC. • Utilise IT solutions for pro-active planning, GIS for decision support and modeling capabilities for assessing and estimating casualties and for comprehensive response management plan. • Prepare and implement of Incident Demobilisation Plan. • Ensure that record of various activities performed and perform any other duties assigned by IC.
District Town Planner (DTP), Bikaner as Resource Unit Leader (RUL)
<ul style="list-style-type: none"> • Maintain and display the status of all assigned resources at the incident site by maintaining a resource status-keeping system. • Access information about availability of all required resources at other locations and prepare a plan for their mobilization. • Ensure and establish check-in function at various incident locations. • Update the PSC and IC about the status of resources received and dispatched from time to time. • Coordinate with the various activated Branches, Divisions and Groups for checking status and utilisation of allotted resources. • Ensure quick and proper utilisation of perishable resources.
Assistant Town Planner (ATP), Bikaner as Check- in/ Status Recorder
<ul style="list-style-type: none"> • Report to the RUL and ensure that all resources assigned to an incident are accounted for at each check-in point. • The status of resources would be displayed through a computerised programme. • Establish communications with the EOC and Ground Support Unit (GSU) of LS. • Ensure displays of check-in locations on signboard so that arriving resources can easily locate the check-in location(s). • Transmit Incident Check-in and deployment information to Resource Unit on a regular and prearranged schedule or as needed.
District Planning Officer, Bikaner as Situation Unit Leader (SUL)
<ul style="list-style-type: none"> • Collect, process and organise all incident information as soon as possible for analysis. • Prepare periodic future projections of the development of the incident (along with maps if required) and keep the PSC and IC informed. • Prepare situation and resource status reports and disseminate as required. • Provide authorised maps, photographic services to responders, if required. • Attend IAP Meeting with required information, data, documents and Survey of India maps etc. • Maintain record of various activities performed and send to concerned section.
Tehsildar of the affected area as Display Observer
<ul style="list-style-type: none"> • Display incident status obtained from Field Observers (FOs), Single Resource, Strike Teams, Task Forces, aerial photographs and other data received from technical sources and report to the SUL. • Ensure timely completion of display chart. • Assist in analysing and evaluating field reports. • Maintain record of various activities performed and send to the SUL.

Girdawar of the affected area as Field Observer
<ul style="list-style-type: none"> • Report to SUL immediately on observing any situation, including local weather conditions, posing danger or being a safety hazard to responders and affected communities. • Gather intelligence that may facilitate better planning and effective response. • Maintain record of various activities performed and send to the SUL.
District Informatics Officer (DIO), Bikaner as Documentation Unit Leader (DUL)
<ul style="list-style-type: none"> • Ensure that all the required forms and stationery are procured and issued to all the activated sections, branches, divisions, groups and units. • Compile all information and reports related to the incident. • Review and scrutinise the records and various IRS forms for accuracy and completeness. • Inform appropriate units of errors or omissions in their documentation, if any, and ensure that errors and omissions are rectified. • Store files properly for post-incident analysis.
Tehsildar of the affected area as Demobilization Unit Leader (Demob. UL)
<ul style="list-style-type: none"> • Prepare Incident Demobilisation Plan (IDP). • Identify surplus resources and prepare a tentative IDP in consultation with the PSC and give priority to demobilisation of surplus resources. • Develop incident check-out functions for sections, branches, divisions and units in consultation with all sections and send to the PS. • Plan for logistics and transportation support for Incident Demobilisation in consultation with LS. • Disseminate IDP at an appropriate time to various stakeholders involved ensuring that all sections, units, teams and resources understand their specific incident demobilisation responsibilities and avail demobilisation facilities. • Brief the PSC on the progress of demobilization.
(C) LOGISTICS SECTION
ADM (City) Bikaner as Logistics Section Chief (LSC)
<ul style="list-style-type: none"> • Coordinate with the activated Section Chiefs. • Provide logistic support to all incident response effort including the establishment of Staging Area, Incident Base, Camp, Relief Camp, Helipad, IDP etc. • Participate in the development and implementation of the IAP. • Keep RO and IC informed on related financial issues and request for sanction of Imprest Fund, if required. • Ensure the safety of the personnel of his Section. • Brief Branch Directors and Unit Leaders. • Anticipate over all logistic requirements for relief Operations and prepare accordingly. • Constantly review the Communication Plan, Medical Plan and Traffic Plan to meet the changing requirements of the situation. • Assess the requirement of additional resources and take steps for their procurement in consultation with the RO and IC. • Ensure that the hiring of the requisitioned resources is properly documented and paid by the Finance Branch. • Ensure that cost analysis of the total response activities is prepared. • Ensure that record of various activities performed and perform any other duties as assigned by RO or IC.

SDM as Service Branch Director (SBD)
<ul style="list-style-type: none"> • Work under the supervision of LSC, and manage all required service support for the incident management. • Discuss with activated Unit leaders for the materials and resources required and procure the same through LS. • Ensure proper dispatch of personnel, teams, resources etc as per the IAP. • Prepare an assignment list, if required.
District Radio Officer (Police) Bikaner / GM, BSNL Dept. as Communication Unit Leader (Com. UL)
<ul style="list-style-type: none"> • Provide communications facility as and when required. • Ensure that all communications equipment available is in working condition and that the network is functional. • Maintain the records of all communications equipment deployed in the field and recover them after the incident is over. • Ensure setting up of a message centre to receive and transmit radio, telephone and other messages from various activated sections, branches, units and higher authorities and maintain their records. • Prepare an alternative communication plan for execution in case of possible failure of the normal communications network. The alternative communications network may have wireless, satellite phones, cell phones, HAM radios etc. • Prepare a plan for integration of the communications set up of the central teams (NDRF, Armed Forces) with the local communications set up for the management of large scale disasters when they come to assist in the response effort.
CMHO, Bikaner as Medical Unit Leader (MUL)
<ul style="list-style-type: none"> • Prepare the Medical Plan and procurement of required resources. • Provide medical aid and ambulance for transportation of victims and maintain the records of the same. • Obtain a road map of the area from the PS for the ambulance services, transportation of medical personnel and victims. • Respond to requests of the OS for medical aid, transportation and medical supplies etc. under intimation to the SBD and LSC. • Maintain the list of medical personnel who could be mobilised in times of need. • Prepare and circulate list of referral service centres to all the medical team leaders.
DSO, Bikaner as Food Unit Leader (FUL)
<ul style="list-style-type: none"> • Supply resources to various activated sections, branches, units and groups of IRT as per direction of the SBD. • Supply food to personnel of IRT(s) at ICP, camps, incident base, SA, victims at the temporary shelters, relief camps etc. • FUL may request the LSC to split the unit (if the task becomes very large) into two groups-one to supply food for personnel and another for victims. • Determine food and drinking water requirements and their transportation and brief the SBD and LSC. • Maintain an inventory of receipt and dispatch of resources.
Tehsildar as Support Branch Director (SBD)
<ul style="list-style-type: none"> • Procure and dispatch required tactical materials and resources for operations with the concurrence of the Section Chief. • Participate in the planning meeting of the LS. • Ensure that organisation assignment list concerning the branch is circulated to all units under SBD.

Naib tehsildar of Affected Area as Resource Provisioning Unit Leader (RPUL)
<ul style="list-style-type: none"> • Organise movement of personnel, equipment and supplies. • Receive and store safely all supplies required for the incident response. • Maintain the inventory of supplies and equipment. • Organise repair and servicing of non-expendable supplies and equipment. • Monitor the 'kind', 'type' and quantity of supplies available and dispatched and maintain the records of receipt and dispatch of supplies including equipment and personnel. • Receive and respond to requests for personnel, supplies and equipment from the activated sections, branches, divisions, units and groups under intimation to SBD.
Naib tehsildar of Affected Area as Facilities Unit Leader (FUL)
<ul style="list-style-type: none"> • Prepare the layout and activation of incident facilities like Incident Base, Camp(s), Relief Camp(s), ICP, etc., and provide basic amenities to the responders. • Locate the different facilities as per the IAP. • Participate in the planning meeting of the Section, prepare list for each facility and its requirements in coordination with the LSC.
Naib tehsildar of affected area as Ground Support Unit Leader (GSUL)
<ul style="list-style-type: none"> • Provide transportation services for field operations to TBD. • In case Air Operations are activated, organise and provide required ground support through TBD. • Provide maintenance and repair services for all the vehicles and related equipment used for incident management as per proper procedures and keep the concerned line departments informed through the SBD and LSC. • Develop and implement the Incident Traffic Plan. • Inform Resource Unit about the availability and serviceability of all vehicles and equipment. • Arrange for and activate fueling requirements for all transport including Aircrafts in consultation with the SBD. • Maintain inventory of assigned, available and off road or out of service resources.
Treasury Officer, Bikaner as Finance Branch Director (FBD)
<ul style="list-style-type: none"> • Attend planning meetings. • Prepare a list of resources to be mobilised, procured or hired in accordance with the IAP. Obtain orders of the competent authority as per financial rules and take steps for their procurement without delay. • Ensure that time records of hired equipment, personnel and their services are accurately maintained as per Government norms for payment. • Examine and scrutinise cost involved in the entire response activity including the demobilisation, analysis the cost effectiveness and keep the LSC informed. • Ensure that all obligation documents initiated at the incident are properly prepared, completed, verified and signed by the appropriate Section Chief and BD. • Brief the LSC or IC on all incident related financial issues needing attention or follow-up.
Tehsildar as Time Unit Leader (TUL)
<ul style="list-style-type: none"> • Maintain time recording of hired equipment and personnel and ensure that it is maintained on a daily basis and according to government norms. • Examine logs of all hired equipment and personnel with regard to their optimal utilization. • Ensure that all records are correct and complete prior to demobilisation of hired resources.

TRA as Compensation/ Claim Unit Leader (Com./ CUL)	
<ul style="list-style-type: none"> • Collect all cost data and provide cost estimates. • Prepare and maintain a list of requisitioned premises, services, resources and vehicles, etc. with correct date and time of such requisition. • Follow appropriate procedures for preparation of claims and compensation. 	
TRA as Cost Unit Leader (CUL)	
<ol style="list-style-type: none"> 1. Develop incident cost summaries in consultation with the FBD on the basis of Cost Analysis Report. 2. Make cost-saving recommendations to the FBD. 3. Complete all records relating to financial matters prior to demobilization. 	

Table 3.4 : Members of Planning Section and Response Branch

Departments	Members of Planning Committee	Response Branch Director	Divisional Supervisor	Single Resource Unit Leader
Agriculture	Deputy Director	Sub-Divisional Agricultural Officer	Block Agricultural Officer	Agriculture Development
Animal Husbandry	Deputy Director	Sr. Veterinary Office	Veterinary Surgeon (VS)	Block Level Extension Officer
Zila Parishad/ Panchayat Samiti	CEO, Zila Parishad	BDO	IEC	Village Secretary
Electricity	Superintending Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)
Fire Services	Commissioner, Municipal Corporation & Executive Officer/ Secy. Committee	Fire Officer (FO)	Fire Station Officer (FSO)	Assistant Fire Station Officer
Food & Supplies	District Food and Supplies Officer (DSO)	District Food and Supplies Officer (DSO)	Assistant Food and Supplies	Food Inspector
Forest	District Forest Officer (DFO)	Range Forest Officer (RFO)	Block Forest Officer	Forest Guard
Health	CMHO / Superintendent PBM	Deputy CMHO / Deputy Superintendent PBM	Senior Medical Officer (SMO)	Medical Officer (MO)
UIT / Housing Board	Superintending Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)

Departments	Members of Planning Committee	Response Branch Director	Divisional Supervisor	Single Resource Unit Leader
Irrigation	Superintending Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)
Municipal Corporation	Chief Engineer/ Supdt. Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)
Police	SP, Bikaner	Ad. SP (Rural/Urban)	Circle Officer (CO)	Station House Officer (SHO)
Public Health Engineering Department	Superintending Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)
Public Works Department	Superintending Engineer (SE)	Executive Engineer (XEN)	Assistant Engineer (AEN)	Junior Engineer (JEN)

Nodal Departments

The District Authority has designated disaster specific Nodal Departments for efficient management of disasters. The list is as follows:-

Table 3.5: Nodal Departments

S.N.	Nodal Department	Hazards / Disasters
1	Agriculture/IMD	Drought, Hailstorm, Heat and Cold wave, Thunder and Lightning, Cyclone, Pest Attack
2	Jodhpur Vidyut Vitran Nigam Limited	Disaster involving power generation/ distribution/ transmission
3	District Administration (Police, Fire Fighting, SDRF, Civil Defence)	Terrorist attack, police Mutiny, Major Law and Order crisis, Nuclear, Chemical and Biological and Nuclear and Radiological disaster; Air, Road and Rail Accidents, Festive related disaster
4	PHED	Floods, Flash Floods and Cloudbursts
5	IGNP	Dam and Canal burst
6	Public Works Department	Earthquake. Major building collapse,

S.N.	Nodal Department	Hazards / Disasters
	(PWD)	Landslide
7	Mining	Mine sliding and mine flooding
8	Industries	Chemical and Industrial
9	UIT/ Nagar Nigam/ Municipality/ Panchayat Samiti/Forest	Fires
10	Medical and Health	Biological and Epidemic, Food poisoning
11	Animal Husbandry	Epidemic in Animal Population

The key responsibilities of Disaster Management amongst different departments/ agencies of the state government are:

Planning: Development of strategies and requirement analysis for resource utilization. Plan for establishment of structures, development of systems, and to test and evaluate organizational capacity to perform as per allotted roles.

Coordinated Execution of Plans: Increased coordination, convergence and synergy among the departments and institutions should be promoted in order to endorse sharing of resources, perspectives, information and expertise through support of training centres, academic and applied research, education, and awareness generation programmes, etc.

Mainstreaming DM Concerns into Development Programmes: this deal with integration of measures for prevention of disasters and mitigation into developmental plans and projects including mitigation projects and to facilitate provision of adequate funds for DM. Plans may be shown in three broad categories, viz. short, medium, and long term. The structural and non-structural measures to be taken may be brought out in each category.

CHAPTER 4

PREVENTION & MITIGATION MEASURES

4.1 INTRODUCTION

Prevention can be defined as an action taken to avoid an incident or stopping an incident from occurring. It basically includes deterrence operations and surveillance whereas mitigation measures are described as the strategies and intervention to reduce both the effect of the hazard itself and the vulnerable conditions. Therefore, mitigation activities can be focused on the hazard itself or the elements exposed to the threat. The structural and non-structural aspects are the main parts of mitigation measures. Structural mitigation refers to any physical construction to reduce or avoid possible impacts of hazards. This includes 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. Various prevention and mitigation measures based on NDMA Guidelines for different hazards are discussed in table 4.1.

Table 4.1: Hazard Specific Structural & Non-Structural Measures

Structural Measures of Hazards	Non-Structural Measures of Hazards
Flood Hazards	
<ul style="list-style-type: none"> Strengthening/construction of embankments, flood walls and flood levees Proper regulation of lakes, dams and other water storage reservoirs Improvement of channels Proper desilting/dredging of rivers in order to keep the rise of the river beds minimum Drainage improvement in order to avoid congestion Diversion of flood water in order to lower water levels in the rivers Catchment area treatment/afforestation, building up of check dams/detention basins in order to reduce the flood peaks and control the suddenness of the runoff Anti-erosion works such as revetment or pitching along with 	<ul style="list-style-type: none"> Flood plain zoning to regulate land use in the flood plains Flood proofing Flood forecasting and warning Integrated Water Resource Management such as water resources assessment, socio-economic assessment, water resources planning, implementation of action plans, day-to-day water resources management (adjustments of the plans) and water resources protection and conservation Medical preparedness in terms of after-effects of floods requiring medical attention Creating awareness to the type of illnesses and other health problems that can result in the aftermath of floods, to all the medical teams and the community at large

<p>launching apron and spurs of earth protected by armour of stones or spurs of loose stones or stones in wire-mesh crates</p> <ul style="list-style-type: none"> • Alignment, location, design and provision of waterways i.e. vents, culverts, bridges and causeways in National Highways, State Highways, District and other roads and Railways embankments • Inspection, rehabilitation and maintenance programme to ensure that the design capabilities are maintained 	<ul style="list-style-type: none"> • Creation of trained medical first responders for first aid and resuscitation measures • Preparing of medical stores and medical kits • Development of patient evacuation plans
Earthquake Hazards	
<ul style="list-style-type: none"> • Structural safety audit of critical lifeline structures • Seismic strengthening of existing structures • Prioritization of structures especially, critical/lifeline structures • Retrofitting of weak buildings • Earthquake-resistant construction in rural and semi-urban areas 	<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 • Public Awareness Campaigns • Techno-legal regime for ensuring compliance of earthquake-resistant design and construction practices in all new constructions • Licensing and certification of professionals • Compliance review by professionals of PRIs and ULBs • Medical preparedness • Earthquake engineering education
Drought Hazards	
<ul style="list-style-type: none"> • Water management including water harvesting and conservation • Cloud seeding in drought-prone areas • Micro-irrigation including drip and sprinkler irrigation • Afforestation with bio-diesel species through the National Afforestation Programme 	<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 • Insuring of crops

Fire Hazards	
<ul style="list-style-type: none"> Establishment of Fire-stations as per Fire Safety Bye-laws 	<ul style="list-style-type: none"> Implementation of the Rajasthan Fire Service Act, 2009 Updating basic infrastructure and adopting modern technologies Procurement of Personal Protective Equipments (PPE) for fire fighting staff Improving outreach of fire services Provincialisation and formation of state level fire services Making the fire services a multi-hazard response unit Training of community members in fire-fighting techniques Putting in place the audit system Compulsory fire hazard evaluation of all types of buildings, both old and new Planning and calendar of evacuation drills/mock drills in vital installations/ industrial plants/ government buildings /schools and critical infrastructure like hospitals, etc. xi. Enforcement of fire approvals as per the provisions contained in National Building Code (NBC), 2005 (Part IV- Life & Fire Safety) for new constructions.
Chemical & Industrial Accidents	
<ul style="list-style-type: none"> i. Creation of appropriate infrastructure as mentioned in offsite emergency plan of Bikaner district and onsite plans of MAH and other industries, including Public Address Systems at such places and nearby 	<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 audits and testing of emergency plans Safety Auditing Hotline telephone connection with nearby emergency services Awareness generation among community regarding hazardous material. Training of specialized Medical First Aid Responders viii. Mutual aid communication among industries to share precautions/ lesson learnt after any incidents & resource sharing

Biological Disasters Hazards	
<ul style="list-style-type: none"> • Installing High Efficiency Particulate Air (HEPA) filters in the ventilation systems of important buildings in order to prevent the entry of microbes • Enforcement of bio-safety measures in labs 	<ul style="list-style-type: none"> • Strengthening of Integrated Disease Surveillance Systems in district for issuing public health measures • Regular survey and proper maintenance of water supply and sewage pipeline • Creation of awareness about personal hygiene • Vector control programmes • Burial/disposal of dead bodies • Training of Rapid Response Teams (RRTs) under IDSP • Provision of Personal Protective Equipments (PPEs) to all health care workers prior to coming in contact with the patients • Social distancing measures • Disease Containment by Isolation and Quarantine Methodologies • Training/refresher training to Quick Response Medical Teams (QRMTs) / Medical First Responders (MFRs) to handle disasters due to natural epidemics/ Bio-Terrorism • Establishment of mobile hospitals/mobile teams at strategic locations • Preparation and promulgation of National Code of Practice for Bio-security and Bio-safety • Provision of animal quarantine, providing health regulatory measures for import/export of livestock and livestock products, animal feeds, etc., and prevention of inter-state transmission of animal diseases and control of diseases of national importance through National Veterinary Services • Proper disposal of carcass during the disaster and post- disaster • Initiation of Public Private Partnership (PPP) in livestock emergency management

Source: NDMA Guidelines for Different Hazards

4.2 EXISTING SCHEMES/PROJECTS

There are various on-going schemes and projects in Bikaner district. Some of these are particularly targeting the vulnerable population like widows, destitute, disabled persons, pregnant women, adolescent girls, scheduled castes, etc. Some of

these schemes and projects could be used during normal and peace time for undertaking various prevention and mitigation measures as discussed before. Various existing schemes and projects in Bikaner district that could be used for disaster management are mentioned in table 4.2.

Table 4.2: Schemes for Prevention and Mitigation Measures

Responsible Department/Scheme
Medical and Health
• Indira Bal Swasthya Yojna
• National Vector-Borne Disease Control Programme (NVBDCP)
• Integrated Disease Surveillance Project (IDSP)
• Janani Suraksha Yojana (NRHM)
• Janani Suraksha Yojana (State)
• Janani Shishu Surksha Karyakram
• Leprosy Eradication Programme
• National Goiter Programme
• Free Medicines for OPD/ Emergencies and Pregnant
• Surgical Package Scheme
• Neo Natal Units
• Free Delivery Services
• Referral Transport Service
• Arogya Kosh
• PNDT and Sex Ratio Scheme
• ASHA Scheme
• Polio Eradication Programme
• MCTS Scheme
• Family Welfare Scheme
Social Welfare
• अंतरजातीय विवाह योजना
• नवयोजना जीवन-
• सहयोग एवं उपहार योजना
• विधवा विवाह एवं उपहार योजना
• पालनहार योजना
• वृद्धाश्रम एवं डे केयर सेंटर
▪ संबल ग्राम योजना
▪ देवनारायण योजना
▪ मुख्यमंत्री निराश्रित पुनर्वास योजना
▪ गाड़िया लुहार योजना
• पन्नाधाय जीवन अमृत योजना

Responsible Department/Scheme
<ul style="list-style-type: none"> ● छात्रवृत्ति योजना ● आवासीय विद्यालय योजना ● छात्रावास योजना ● मुख्यमंत्री अनुप्रति कोचिंग योजना ● अम्बेडकर डीबीटी वाउचर योजना
PHED
<ul style="list-style-type: none"> ● National Rural Drinking Water Programme ● Implementation of Sewerage System and providing Sewerage in balance areas ● Providing Water Services facilities under MGGBY to various villages ● Providing and installing additional tubewells in various villages ● Amrit Yojna
Animal Husbandry
<ul style="list-style-type: none"> ● Foot and Mouth Disease Control Programme ● Health Care Camps
PWD
<ul style="list-style-type: none"> ● Pradhan Mantri Gram Sadak Yojana (PMGSY) ● Bharat Nirman

4.3 TRAINING PROGRAMMES FOR HUMAN RESOURCES

Training of human resources and thereby building the capacity of the district is another important mitigation measure. A series of training programmes will be organized for different focused groups like that of district level officers, sub division and community level office bearers, teachers and principals, doctors and engineers, architects, masons, builders and contractors. Community could also be made aware and trained on safe construction practices through various awareness, sensitization and skill development programs. At district level, training assistance for community will be provided by Civil Defence, District Red Cross Society and other recognized NGOs in the district. The organizations like Civil Defence, Nehru Yuva Kendrya (NYK), NCC, NSS, etc. have a large number of volunteers registered with them. Wardens of these bodies along with their volunteers must be regularly trained in the district.

The strengthening of Civil Defence in the district is another important part of non-structural prevention and mitigation measures, particularly awareness generation. The Civil Defence and Home Guards are indeed quite a helpful resource in times of emergency. They can be given awards, identity cards, honorarium and certificates for their work so that more number of people volunteer themselves and participate in

such works.

4.4 OTHER MEASURES

1. Retrofitting

Retrofitting means reinforcement of structures to make them more resistant and resilient to the forces of natural hazards. This involves consideration of changes in the mass, stiffness, damping, load path and ductility of materials, as well as radical changes such as the introduction of energy absorbing dampers and base isolation systems. Consideration of wind loading to strengthen the structure so as to minimize the impact wind force and strengthening of structures in earthquake- prone areas are two examples of retrofitting.

For an existing building, retrofitting or seismic strengthening is the only solution to make it disaster resistant. The lifeline buildings within the district should primarily be retrofitted followed by other significant buildings of the district. Retrofitting should be carried out along with a panel of experts for assessing the structure and to suggest the type of retrofitting required.

2. Land Use Planning

Land use planning is a powerful mitigation tool as it lessens the risks and vulnerability from several geological and other hazards. The planning and control of land use include a vast spectrum of general policies about it, which leave determining effects and influences on programs and plans of urban development. They also cover economic, environmental, social and political aspects. Responsible management of the environment and its resources, and flexible and responsive development can prevent or mitigate negative impacts.

The degree of effectiveness of land use planning and its efficiency in case of an earthquake, from the time of the earthquake till the return of the city to its normalcy, are significant and determine two indicators of vulnerability, i.e. casualties and destruction. The urban areas and the cities (i.e. the more densely populated areas) need to be spatially planned in order to reduce the risks of the hazards.

3. Enforcing Existing Codes and Laws

The list of codes and laws are and must be enforced in the district in order to

prevent and Considering these factors in land use planning and zoning improves efficiency of the city, welfare and comfort for the citizens, and minimizing the fatalities and economic damages as a result of the hazard. Land use planning can minimize risk in following number of ways:

- Prohibiting development in high-risk areas through zoning and overlay controls.
- Mitigate the effects of the hazards. Bureau of Indian Standards, National Building Codes of India and subsequent amendments in various acts provides sufficient legal protection to the enforcing agencies for safe construction practices. The National Building Codes must be strictly followed in lifeline structures and should be immediately implemented, wherever necessary. In construction works, the civil engineers have to follow Bureau of Indian Standards (BIS) to construct resistant structures. The by-laws for control of vector- borne diseases should be implemented and strictly followed by all the municipalities in the state of Rajasthan. All the concerned departments must ensure the enforcement of existing codes.

CHAPTER 5

PREPAREDNESS MEASURES

5.1 INTRODUCTION

Disaster causes sudden disruption to the normal life of society and causes damage to the properties and lives to such an extent that normal social and economic mechanism available to the society get disturbed. Those who are unaware and unprepared generally get affected more due to their lack of knowledge and physiological pressure. Hitherto, the approach towards coping the effects of disasters has been post-disaster management, involving many problems related to law and order, evacuation, communications, search and rescue, fire-fighting, medical and psychiatric assistance, provisions of relief and shelters etc. After initial trauma next phase starts with long-term reconstruction planning which takes about 5 to 6 years to normalize the life-style in a particular area.

In view of these problems and spirit of DM Act 2015, the district administration has prepared a comprehensive plan. The plan basically detailed out preparedness strategy under which communities and district authorities would be prepared so that level of destruction and unnecessarily delay in relief and response can be reduced. The preparedness measures include setting up disaster relief machinery, formulation of community preparedness plans, training to the specific groups and earmarking funds for relief operations (UNDRO, 2004).

5.2 IDENTIFICATION OF STAKEHOLDERS

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

Other technical institutions, community at large, local self-governments, NGOs etc. are also stakeholders of the District Disaster Management Pan. The role of the stakeholders has been prepared with the sole objective of making the concerned organizations understand their duties and responsibilities regarding preparedness plan at all levels and accomplishing them.

General Preparedness

1. District Collector, Bikaner shall ensure that preparedness checklist is duly followed by each front-line department and status of the same is discussed in monthly meetings.
2. District Head of department of each frontline department shall ensure that the departments are prepared to meet the challenges of any emergency/ disaster by duly following the preparedness checklists.
3. Nodal officers of each of the frontline departments shall ensure quarterly updation of District Disaster Management Resource Inventory (DDMRI) and submission of the same to District Revenue Officer, Bikaner by:
 - a. Adding to it any changes in the human resources of their department along with their updated contact numbers, if any.
 - b. Adding to the equipment list, relevant resources for response activities from both the government and private sector.
4. DRO shall ensure that the same has been updated and uploaded on website of District Administration on quarterly basis with the help of District Information Officer (DIO).
5. Nodal officers of each of the frontline departments shall also report to District Head of Department and/or District Collector, Bikaner about requisition of any relevant resource/equipment, not available with the Government and/or private sector, for disaster management activity.
6. District Disaster Management Authority (DDMA), Bikaner shall ensure the establishment of Emergency Operation Centre, Bikaner with the following:
 - Proper space for Planning and Logistics Section Chief and staff.
 - Proper space for control room with adequate communication equipments including landline telephones, mobile phones, satellite phones, walkie-talkie, ham radio, computer/ laptop with printer facility, email facility, fax machine, television, etc.
 - Ensure power backup facilities along with availability of generator set.
 - Ensure proper space for meeting, conference, media briefing along with LCD,

computer and video conferencing facilities.

- Availability of vehicle at Emergency Operation Centre.
- Availability of District Disaster Management Resource Inventory, Bikaner and also of the neighbouring districts (Sri Ganganagar, Hanumangarh, Churu, Naguar, Jodhpur and Jaisalmer), Disaster Management Resource Inventory of the state and also of critical national resources.
- Availability of Hazard Seasonality Map of Bikaner district.
- Availability of District Disaster Management Plan, Bikaner.

5.3 DEPARTMENT-WISE PREPAREDNESS PLAN

1. District Administration

Ensure enforcement of the codes, bylaws and act such as National Building Code, Bureau of Indian Standards, etc in the upcoming development projects, construction work, and commercial complexes.

2. Agriculture Department

- Prepare Agriculture Contingency Plan.
- Constitute a Crop Weather Watch Group at district level with representatives from Meteorological Department and concerned officers dealing with agricultural inputs, credit extension, etc to keep a close watch on the monsoon situation, extreme temperature, hail and wind storm.
- Identify vulnerable areas prone to pest infestation, drought, flood and other hazards.
- Identify source for procurement of fodder.
- Ensure proper mechanism for fodder management.
- Ensure awareness generation in farmers regarding proper fodder management, various plant diseases, alternate cropping practices in disaster-prone areas, crop insurance, provision of credit facilities, proper storage of seeds, etc.
- Provide training to farmers in alternate cropping techniques, mixed cropping and other agricultural practices which minimise crop losses during future disasters.

- Ensure surveillance for pest infestation and crop diseases.
- Ensure availability of stock for immediate replacement of broken/non-functioning gadgets/equipments.
- Ensure availability of adequate stock of seeds and other agro inputs particularly for areas vulnerable to hazards.
- Prepare trained and equipped team for assessment of damage to soil, crop and forest and impact on other agricultural activities.
- Prepare for establishment of public information booths, with appropriate and modern means of communication, to assist farmers in providing information regarding insurance, compensation, repair of agro equipments and restoring of agricultural activities at the earliest.

3. Animal Husbandry & Dairying

- Ensure fully functional mobile veterinary unit at disposal.
- Prepare a database of veterinary hospitals/ clinics and agencies working for animal care.
- Ensure availability of stocks of mineral and feed supplements, life saving drugs, electrolytes, vaccines, etc.
- Ensure sensitization of farmers about protection of their feed and fodder prior to the onset of monsoon.
- Locate feed and fodder banks.
- Ensure filling feed banks before the scarcity period.
- Prepare for the feed of the poultry birds.
- Identify source for procurement of fodder in consultation with Agriculture Department.
- Identify safe locations for fodder depot and cattle camps within the district.
- Ensure assured source of water or canals for drinking and growing fodder along with the above locations with help of Department of Irrigation/ PHED/ Development & Panchayat Raj.
- Prepare for necessary arrangements of *tatties*, gunny bags and tarpaulin sheets to

cover the sheds during heat and cold waves.

- Ensure availability of sprinklers/ foggers in shed/camp during heat waves period.
- Prepare for special care for productive, lactating and pregnant animals; also supplement them with additional concentrates and fodder.
- Ensure proper administration of de- worming and vaccinations for cattle, sheep and goats, pigs and other relevant measures for disease management.
- Ensure isolation of sick and healthy animals.
- Ensure separate/alternate arrangement for keeping, feeding and watering of diseased animals due to contagious diseases to prevent spread of disease to healthy animals.
- Organise awareness camp for farmers concerning the management of sick/ infected animals.
- Ensure separate transport vehicles for sick/infected and dead animals due to contagious diseases.
- Ensure proper disinfection of space, vehicles and manpower involved in transportation of sick/infected and dead animals due to contagious diseases.
- Prepare for arrangements for transportation of critically injured livestock.
- Identify space for burial of animals and ensure proper disposal of dead animals.

4. Bharat Sanchar Nigam Limited

- Procure recovery plans from private communication service providers for their recovery time objectives.
- Prepare for alternate communication system.

5. Civil Aviation

- Identify safe locations that can be used as helipads.

6. Civil Defence

- Prepare workforce of volunteers particularly trained in the following:
 - a) First aid
 - b) Rescue Operations

- c) Minor fire fighting services
 - d) Traffic management
 - e) Crowd management
 - f) Dead body management
 - g) Evacuation
 - h) Shelter and camp management
 - i) Mass Care
 - j) Welfare services during relief
- Prepare a database of volunteers available and update the same in DDMRI.
 - Prepare a database of NSS/ NCC students and faculties from various educational institutions and update the same in DDMRI.
 - Prepare a database of equipments available and update the same in DDMRI.
 - Maintain and update regularly household record.
7. Jodhpur Vidyut Vitaran Nigam Ltd. (JdVVNL)
- Ensure distribution map at disposal.
 - Prepare a database of critical and lifesaving infrastructure in the district and prepare for providing uninterrupted power supply to them.
 - Prepare for providing continuous power supply to the affected area.
 - Prepare to provide electrical connections and system at short notice in affected areas for purpose of pumping flood water and illumination of the area.
 - Prepare for prompt replacement/ recommissioning of affected power supply system.
 - Ensure availability of adequate stock of important equipments like power transformers, breakers, control cables, poles, current transformer, conductors, cables, insulators, etc for prompt action whenever required.
 - Ensure trained construction and maintenance staff at disposal.
8. Rural Development and Panchayat Raj
- Ensure availability of tractor trolleys and other required equipments for the same.

- Plan to provide building/guest house/*dharamshalas/ chaupals* at different locations to establish control room, first aid and medical post or shelters during emergency.
- Prepare a database of catering services providers, *hawai sanghs*.
- Prepare a database of private providers of tents, tarpaulin sheets, poles, *kanats*, cooking utensils, polythene bags, shrouds and other essential items that could be used for community kitchen and cremation and burial.
- Ensure cleaning of house drains before the monsoon season.
- Prepare for sanitation operations in view of post flood situations.
- Prepare for prompt provision of temporary toilets/ trench latrines in the affected rural area and relief camps in urban areas.
- Prepare mechanism for proper solid waste management, disposal of waste and removal of debris in shelter and relief camps, feeding centres and affected rural areas.

9. Education Department

- Organise awareness generation programs in schools and colleges for students, teachers, administrative staff and other helpers. These programs should focus on dos and don'ts for various hazards and safe evacuation in case of any emergency.
- Conduct hygiene promotion activities as per direction issued by the Health Department on a regular basis.
- Ensure database and awareness regarding dos and don'ts of various hazards as issued by Department of Revenue & Disaster Management, Health Department, Police Department, etc.
- Ensure preparation of first aid and disaster management kit in each school and college.
- Ensure preparation of school and colleges disaster management plan.
- Identify safe schools and colleges to serve as relief shelter in case of any emergency within that area, only for short period of time.

10. Explosive Department

- Ensure awareness about safe transportation and disposal of chemicals and other hazardous material to various industries and factories.
- Ensure all drivers of vehicles carrying hazardous materials must have HAZCHEM cards related to hazardous chemicals in coordination with industries.
- Train drivers of such vehicles in basic dos and donts about the chemicals being transported by them.

11. Fire Services

- Ensure proper functioning of all fire fighting equipments, appliances and respiratory equipments.
- Make a database of existing fire fighting services and facilities provided with private agencies.
- Be aware of MAH units and other potential hazardous installations and level of possible emergency required.
- Prepare to deal with leakage of flammable toxic substances.
- Ensure, at disposal, the list of adverse affects of chemicals and antidotes/ methods to deal with emergency involving each chemical. This is prepared by Department of Industrial Safety and Health. (Annexure VIII)
- Review the adequacy of existing fire prevention arrangements in each MAH and other hazardous units before and after the installations. Share the report with Department of Industrial Safety and Health.
- Identify roads and routes of access and escape to and from MAH and other potential hazardous units.
- Ensure all important buildings should have sketch map and their escape route with glowing signs.
- Ensure evacuation drill as per evacuation plan periodically in all important buildings, malls, hospitals etc.

12. Food & Supplies Department

- Prepare a database of godowns and cold storage facilities in the district. This information can be obtained from Labour Department/ Market Committee.
- Prepare a database of catering services providers.
- Prepare for safety of stored food grains in godowns against inundation and water logging, fire and other possible hazards.
- Prepare for out-movement of food grains to a pre-decided safer location, if required.
- Ensure availability of adequate food grains storage in godowns in view of the scarcity or emergency period.
- Prepare a database of kerosene depots, petrol pumps, gas agencies, etc and update the same in DDMRI.
- Ensure availability of adequate stock of LPG cylinders, kerosene, petrol, diesel and CNG.
- Prepare database of private retailers and wholesalers of edible food items.
- Prepare a database of suppliers and distributors of packaged drinking water.
- Prepare a database of providers of refrigerated vehicles for transportation of perishable food items.
- Prepare for large-scale movement of food grains, their transportation, expeditious unloading, proper storage and prompt distribution through fair price shops, if required.

13. Forest Department

- Ensure proper functioning of all equipments and vehicles.
- Prepare a database of all machine holders.
- Prepare team for catching wild animals to prevent infiltration in habituated areas, relief camps, etc.
- Prepare to supply wood for cremation purpose.

14. Rajatshan Roadways

- Ensure proper functioning of filling station, vehicles and equipments including fire extinguishers, first aid kits, etc.
- Prepare for prompt deployment of vehicles at short notice for various purposes like mass evacuation, transportation of response teams, relief items, victims, etc.
- Prepare mechanical team for prompt repair of equipment and vehicles.
- Train drivers and conductors in first aid and basic life saving techniques.
- Be well familiar with routes of potential hazardous installations and follow incident traffic plan.

15. Rajatshan State Agriculture Marketting Board

- Ensure proper cleaning of sewerage and improve drainage system of all mandis.
- Ensure safe platforms for foodgrains storage.
- Ensure availability and functioning of all equipment like JCB, cranes, etc. (from private dealers if required)
- Prepare for repair of damaged roads in its jurisdiction.
- Prepare for prompt deployment of engineers for clearance of debris for assisting the PWD (B&R) department.

16. Rajatshan Industrial & Infrastructure Development Corporation Ltd. (RIICO)

- Ensure availability and functioning of all equipments and vehicles.
- Ensuring filling of storage tanks in your jurisdiction in coordination of Irrigation Department prior to the onset of summer.
- Prepare for treatment/ chlorination of piped water, if required.
- Prepare for distribution of water purifying tablets, bleaching powder and chlorination of public water resources, if required.
- Prepare for arrangement of safe drinking water supply for surviving community in the affected areas and also in relief camps and shelters (in your jurisdiction). Also prepare for provisioning of water for other purposes.

- Prepare for prompt repair of sewerage system and water works in your jurisdiction.
- Prepare for prompt clearing and repairing of damaged roads, culverts, bridges and flyovers in your jurisdiction.
- Prepare for prompt repair of pipelines supplying potable water in your jurisdiction.

17. Rajatshan Urban Development/Improvement Authority

- Ensure availability and functioning of all equipments and vehicles.
- Ensuring filling of storage tanks in your jurisdiction in coordination of Irrigation Department prior to the onset of summer.
- Prepare for treatment/ chlorination of piped water, if required.
- Prepare for distribution of water purifying tablets, bleaching powder and chlorination of public water resources, if required.
- Prepare for arrangement of safe drinking water supply for surviving community in the affected areas and also in relief camps and shelters (in your jurisdiction). Also prepare for provisioning of water for other purposes.
- Prepare for prompt repair of sewerage system and water works in your jurisdiction.
- Prepare for prompt clearing and repairing of damaged roads, culverts, bridges and flyovers in your jurisdiction.
- Prepare for prompt repair of pipelines supplying potable water in your jurisdiction.

18. Medical and Health Department

- Prepare trained team of paramedics.
- Develop dos and don'ts and IEC materials regarding health and hygiene.
- Organise awareness camps with help of CHC/ PHCs and Development and Panchayat Department for hygiene promotion and public health issues.
- Ensure availability of trained mobile medical teams at disposal.

- Prepare psychological and psychosocial care teams.
- Ensure availability of generator sets and buffer stock of fuel at disposal.
- Ensure availability of adequate supply of life saving equipments and stock of medicines, portable supplies including portable oxygen cylinders, portable X-ray machine, portable ultrasound machines, triage tags, etc.
- Ensure availability of adequate space with suitable facilities for storage of medicines.
- Prepare a database of private hospitals and nursing homes with services and facilities available.
- Prepare a database of doctors registered with Indian Medical Association (IMA).
- Prepare a database of available ambulance services from government, private agencies and District Red Cross Society, if any.
- Ensure, at disposal, list of MAH units and hazardous chemicals stored in them.
- Ensure, at disposal, the list of antidotes for various hazardous chemicals. This list is prepared by Department of Industrial Safety and Health. (Annexure VIII)
- Ensure availability of adequate supply of blood units.
- Prepare database of blood donors in the district and update the same in DDMRI.
- Prepare a database of providers of refrigerated vehicles for transportation of vaccines, blood, blood products, etc.
- Prepare a database of *halwai sangh*, restaurants and caterers through Food Safety Officer (FSO).
- Train drivers and attendants of ambulance and mobile medical units in first aid and basic life saving techniques.
- Prepare a decontamination ward in view of any possible CBRN hazard.
- Prepare for prompt establishment of temporary hospital, mobile surgical unit, etc at short notice, near the affected area.
- Ensure chlorination of surface water sources to avoid water borne diseases.
- Ensure proper and safe mechanism for medical waste disposal.

- Prepare for proper disease surveillance system.
- Make proper arrangement and mechanism for mass casualty management.

19. Home Guards

- Ensure proper functioning of all equipments.
- Prepare teams trained in search and rescue, first aid, fire fighting, etc.
- Prepare a database of volunteers and equipments and update the same in DDMRI.
- Train staff of various departments in first aid, rescue operations, fire fighting, etc.

20. Industrial Safety & Health

- Prepare a database of MAH units and contact details of their safety officers.
- Enlist methods of packaging and handling, disposal, containment and precautions for all the hazardous materials present in industries.
- Direct the management of industries and units to prepare on-site emergency plan of their units.
- Prepare offsite emergency plan.
- Inspect premises and machinery in plants, industries for adequacy of safety and emergency arrangements in industries and direct for corrective measures, if necessary, with respect to statutory provisions for safety.
- Ensure at disposal Material Safety Data Sheet (MSDS) for chemicals available/ used / transported from the district.
- Organise health camp for industries workers in coordination with Industrial Health wing of the department.
- Prepare a database of suppliers/ manufactures of antidotes for hazardous chemicals as discussed in Annexure VIII.

21. Irrigation Department

- Ensure proper early warning mechanism in place for flood by monitoring water level of surface water bodies.

- Ensure proper and timely inspection of conditions of bunds, siphons, regulators, embankments, inlet and outlets of lakes, drains/ nallaha, channels and pump houses.
- Ensure timely de-silting and dredging of rivers and canals, if required.
- Ensure prompt repair of channels, if required.
- Ensure proper functioning of all equipments including dewatering pumps.
- Ensuring filling of water ponds, lakes, storage tanks of PHED/ UIT/BMC in the district with canal water prior to the onset of summer.
- Prepare for the arrangements of clean drinking water for affected livestock and poultry.
- Ensure availability of *ballies*, and gunny bags/ECB.
- Ensure provision of back up supplies for dewatering or other operations.

22. Municipal Corporation/ Committee

- Prepare for sanitation operations in view of post flood situations within jurisdiction of the area.
- Ensure availability of tractor trolleys and other required equipments for the same.
- Prepare mechanism for proper solid waste management, disposal of waste and removal of debris in shelter and relief camps, feeding centres and affected areas in their jurisdiction.
- Plan to provide building/ guest house at different locations to establish control room, first aid and medical post or shelters during emergency in coordination with UIT/BMC.
- Prepare for prompt provision of temporary facilities like that of medical post, temporary shelters, temporary toilets, etc at short notice.
- Prepare a database of catering services providers, *hawai sanghs*.
- Prepare a database of private providers of tents, tarpaulin sheets, poles, *kanats*, cooking utensils, polythene bags, shrouds and other essential items that could be used for community kitchen and cremation and burial.

- Prepare for prompt repair of sewerage systems and water works.
- Ensure cleaning of drains before the monsoon season.
- Ensuring filling of storage tanks in your jurisdiction in coordination of Irrigation Department prior to the onset of summer.
- Prepare for prompt provision of temporary toilets/ trench latrines in the affected urban area and relief camps in urban areas.
- Prepare mechanism for proper solid waste management and disposal of waste in shelter and relief camps, feeding centres and affected urban areas.
- Prepare for prompt clearing and repairing of damaged roads, culverts, bridges and flyovers in your jurisdiction.

23. Police Department

- Ensure proper functioning of all equipments.
- Ensure availability of operational security chek points at crowded and critical places.
- Develop dos and don'ts and IEC materials regarding road safety, stampede, bomb blast and terrorist attack.
- Ensure proper mechanism in place for early warning of different hazards through police stations and police posts.
- Arrange for public address system and siren.
- Prepare for temporary installation of wireless systems between district and sub-divisions in case of any damage to existing wireless system with the department.
- Train the communication wing of police in setting up control room at short notice at a required site.
- Prepare contingency plan for response to bomb blast, riots, terrorist attack and other law and order emergencies.
- Ensure availability of telephone numbers and database of Bomb Disposal Squad and Dog Squad Team in police control room and update in every three months
- Ensure availability of telephone numbers and database of reserve battalion of police located in nearby for reinforcement.
- Prepare deployment plan of home guards and other volunteers for protection of

property of affected community.

- Prepare for proper arrangement for custody of recovered belongings and property from dead bodies and affected sites.
- Ensure availability of first aid box in PCR vans and ensure proper functioning of other equipments in PCR van.
- Train police personnel and staff of PCR vans in first aid and basic life saving techniques.
- Prepare for proper protection to women, girls and children to avoid cases of human trafficking.
- Prepare for protection of dead bodies to avoid their theft and false claims.
- Prepare for safety and security of food and other commodities.
- Prepare for protection against hoarding, black marketing of relief material.
- Prepare for safety and security arrangements for evacuated area, affected area, transit camps, relief camps, hospital, medical centre, cattle camps and feeding centres.
- Ensure availability of District Road Maps at disposal.

24. Pollution Control Board

- Prepare a database of hazardous chemicals and pollutants in the districts and their probable adverse effects on environment.
- Prepare for methods and techniques of decontamination of the same.

25. Public Health Engineering Department

- Ensure availability and well functioning of all equipments and vehicles.
- Prepare for treatment/ chlorination of piped water, if required.
- Prepare for distribution of water purifying tablets, bleaching powder and chlorination of public water resources, if required.
- Prepare for arrangement of safe drinking water supply for surviving community in the affected areas and also in relief camps and shelters. Also prepare for provisioning of water for other purposes.
- Prepare for prompt repair of pipelines supplying potable water.

- Make standby arrangements of generators for running the water pumps.
- Ensure installations of tube wells, if needed, before the monsoon to provide underground water to the livestock during flood period.
- Ensure availability of adequate number of water tankers, drums, jerry cans or identify their private suppliers to prepare for supply of water, in scarcity period and in emergency.
- Ensure availability of water supply/ filling points for fire tenders, water cannons, hospitals and other necessary life saving infrastructure.
- Ensuring filling of storage tanks in your jurisdiction in coordination of Irrigation Department prior to the onset of summer.
- Prepare for the arrangements of clean drinking water for affected livestock and poultry.
- Prepare mechanism for proper liquid waste management and disposal of liquid waste in shelter and relief camps, feeding centres and affected areas.
- Prepare for prompt provision of temporary toilets/ trench latrines in the affected urban area and relief camps in your jurisdiction.

26. Public Relations Department

- Prepare for proper public-address system ensuring rumour control.
- Prepare for media management.
- Ensure database of dos and don'ts of all possible hazards in the district.
- Ensure distribution of IEC material to community for awareness generation about the same.
- Publicise the information in the interest of public awareness through booklets, pamphlets, radio, television, film shows, newspapers, documentary films, door to door campaign, meetings and folk media units.

27. Public Works Department (PWD)

- Ensure availability and functioning of all equipments like cranes, JCB, etc.
- Prepare a data base of availability of heavy equipments like cranes, JCB with private agencies also.

- Ensure, at disposal, the list of MAH units and other vulnerable buildings.
- Prepare for prompt clearance of debris.
- Prepare the demolishing squad for prompt demolition of unsafe buildings.
- Prepare for prompt clearing and repairing of damaged roads, culverts, bridges and flyovers in your jurisdiction.
- Prepare for construction of new temporary roads at short notice for diverting traffic from the affected area.
- Prepare for construction of temporary facilities like that of medical post, temporary shelters, etc at short notice.
- Prepare for prompt establishment of helipad near the affected site for VVIP visits.
- Prepare for restoration of government buildings damaged during disaster.

28. District Transport Authority

- Make a database of private vehicles available with schools, colleges and other private agencies.

29. Renewable Energy Department

- Ensure availability of solar panels, solar lights/ lanterns for emergency.

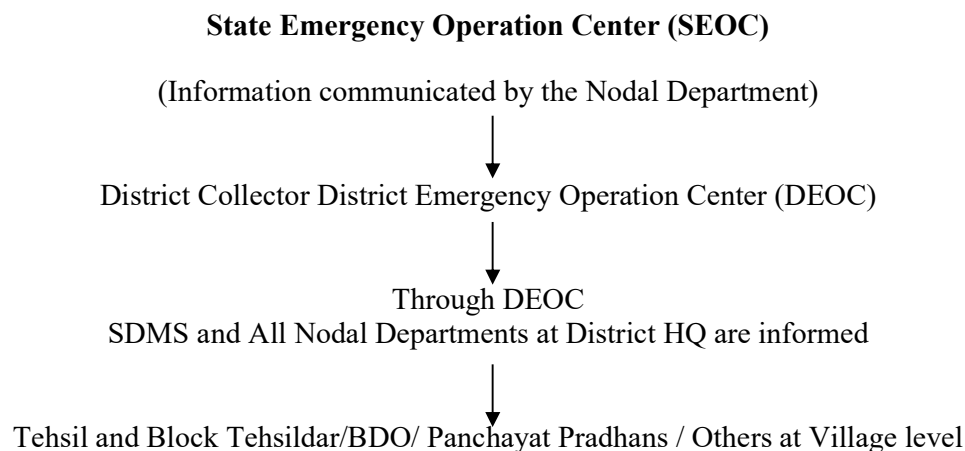
30. Revenue and Disaster Management Department

- Ensure regular monitoring of raingauge and regular updation of database for distribution and variation in rainfall.
- Ensure proper mechanism in place for early warning of different hazards to village level through tehsildars, patwaris, DDPO.
- Prepare Flood Control Order by 31st May of each year.
- Ensure proper functioning of district Flood Control Room during monsoon period and otherwise, if required.
- Identify villages vulnerable to flood and drought.
- Prepare a database of critical and lifesaving infrastructure in the district
- Prepare a database of safe locations for evacuation.
- Identify possible safe sites for temporary shelters, relief camps and staging area.

- Ensure availability of fully functional boats, life jackets and oars in view of flood condition of the district.
- Prepare a database of voluntary organizations and service they offer. Ensure the authenticity of the same.
- Identify competent persons/experts from various required fields for carrying out damage and need assessment post disaster.
- Prepare proper mechanism for disbursement of compensation to victims or families of deceased.
- Prepare a database of safe locations for relief distribution site for mass care and housing.
- Identify site for temporary burial.

Early Warning

The Govt. of India / State Govt. has authorized agencies generating early warning signals; in case the matter is very urgent needing action at Block/Tehsil/Village levels, the alerts and action points will go directly to all concerned. Arrangements need to be in place to ensure prompt receipt of these signals and action thereon. After such warning/advisory received by the State Govt., the SEOC will communicate it to the DEOC urgently. The DEOC will communicate such warning to the departments at the district level. The information flow in such cases will be as follows:-



Activation of Incident Response Team

The district collector functions through Incident Response Teams (IRTs) in the field. In line with our administrative structure and DM Act 2005, Responsible Officer

(RO) has been designated at District level as overall in charge of the incident response management. The district Collector will act as Responsible Officer at district level. The Ro may however delegate responsibilities to the Incident Commander (IC), who in turn will manage the incident through IRTs. The IRTs will be pre-designated at all levels; District, Sub-Division and Tehsil/Block. On receipt of Early Warning, the RO will activate them. In case a disaster occurs without any warning, the local IRT will respond and contact RO for further support, if required. A Nodal Officer (NO) has to be designated for proper coordination between the District, State and National level in activating support for response.

Protocol for seeking help from other agencies

The NDMP provides the framework for mobilization and coordination of the central ministries, departments and other agencies among themselves and the devolution of responsibilities between central and state government in all spheres of disaster prevention, preparedness, response and recovery within India. The deployment of armed forces and central agencies during disaster within India will be subject to norms adopted by the Central government and the relevant protocols agreed upon between Central and State Governments. Any State may seek the assistance and support of the Centre and other States at any time during a disaster. Responding to incident specific emergencies is the responsibility of designated agencies.

To mobilize extra resources for the crisis/emergency situation, the District Crisis Management Group may make a requisition to the State and Central Government. The Chairman of District Crisis Management Group may convey meeting forthwith based on his discretion or advise any of the members of the CMG for assessing the overall situation and follow up, if any required.

Immediately on the occurrence of a crisis, the local action plan would be put into effect by the District Crisis Management Group. The District Administration will contact the Nodal Ministry of the State and Central Government and seek the help, if required.

Incidents that are multijurisdictional, or have several agencies involved, may require the establishment of the Liaison Officer (LO) position on the Command Staff. The Liaison Officer is the contact for Agency Representatives assigned to the incident by assisting or cooperating agencies.

CHAPTER 6

CAPACITY BUILDING AND TRAINING MEASURES

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 active participation of all those who are tasked with it. It must include maintaining a comprehensive and up-to-date District Disaster Management Resource Inventory (DDMRI) for Bikaner, awareness generation programs, education, Research and Development (R&D) and systemic training. The District Collector, Bikaner should ensure the following capacity-building activities for the entire district and the various Heads of Departments should ensure capacity building of their respective departments. Furthermore, the nodal officers should, in coordination with the District HODs, procure relevant equipments for disaster management activities. As per the National Disaster Management Act (2005), capacity-building includes:

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

6.1 INSTITUTIONAL CAPACITY BUILDING

Institutional capacity building is structured upon a level-system that will be designed to bring officials and professionals from multiple fields and skill sets at the district level. The District Disaster Management Authority, Bikaner will utilize the abilities and expertise of representatives from various areas, structured in the form of levels in this chapter on the basis of priority.

1. Centre for Disaster Management

The Centre for Disaster Management (CDM), RIPA holds responsibility at the State level for conducting training programs on various aspects of Disaster Management in all the districts of Rajasthan. The trainings take place over three to five days for district officials from various departments, as per the specificities of the

training being conducted. Trainings are conducted at RIPA, Bikaner as well as within the districts, for which officials are nominated by the District Administration. It is incumbent upon these officials to attend the trainings for which they have been nominated, and upon completion of the program, they shall receive certification from RIPA. The officials in charge of updating the DDMP are also responsible for keeping record of trained officials under these trainings and update the same in the plan. This will ensure the availability of trained human resources capable of dealing with disasters at the district level.

2. DDMA/ District HODs

The role of district level officials in Bikaner in terms of capacity-building and training is primarily that of the District Disaster Management Authority (DDMA), Bikaner. The Authority will ensure that participants from various departments are nominated for the various disaster management related trainings conducted by CDM, RIPA and any other body/authority that is competent to conduct/organise trainings in the field of disaster management. The role of the DDMA will, thus, be predominantly that of coordination and monitoring. Furthermore, capacity building at the institutional level should be done by carrying out various activities under the Mini Secretariat and Judicial Complex Safety Programme. The DDMA, Bikaner is responsible for ensuring that the Heads of Department (HODs) of the following departments discharge their responsibility of nominating officials from their departments for various disaster management trainings pertaining to their specific areas of work. The HODs will also ensure the following activities under their department.

Agriculture Department

- 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.
- Provision of training to farmers in alternate cropping techniques and mixed cropping.
- Provision of training to farmers on disease and its management, agro-terrorism,

etc.

- Provision of training to farmers 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.

Animal Husbandry

- 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.

Civil Defence

- 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.
- The purchase of SAR equipments through the appropriate channels of the District Administration.

Rural Development and Panchayat Raj Department

- Provision of training for formation of teams to engage with the issues of hygiene and sanitation at the village level through the Gram Panchayats.
- Provision of training regarding relief distribution and shelter & camp management as mentioned in Annexures.

Education Department

- Formation and training of damage and needs assessment teams within the department.
- Provision of trainings in first aid and basic survival skills for teachers and students in the district. Ensuring the same at primary and elementary level also.
- Education and awareness programs should be designed in such a way so that the disaster management education in the school/college curriculum could be

included.

- Capacity building at the institutional level should be done by carrying out various activities under the National School Safety Programme (NSSP).

Electricity Department

- The timely purchase of electric equipments necessary for maintaining a state of adequate preparedness and for speedy and efficient disaster response, through the appropriate channels of the District Administration.

Fire Services

- Conduct fire safety trainings for all district officials as well as for housing societies, shopkeeper associations, etc. from time to time.
- Conduct safety audits of various government and civilian buildings in order to check whether they comply with fire- safety norms.
- Conduct mock-drills for fire-fighting and evacuation procedures regularly, following a schedule stipulated by the District Disaster Management Authority (DDMA), Bikaner.
- The trained Fire Services personnel should be placed on record within a district-level database of persons trained in disaster management.
- Conduct regular refreshers course for staff within department.
- Train fire fighting staff and personnel for dealing with hazardous materials and accidents involving the same.
- Train officers/ officials/ staff of MAH units and other industries in fire fighting techniques.
- Procurement of specialised equipments, hydraulic platform, hazardous material van, advanced rescue tender, etc.
- Procurement of SAR equipment & training of specialised teams.

Forest Department

- Formation and training of teams within the department for catching wild/escaped animals who pose a threat to human safety.

- Train staff to deal with cases of forest fire.

Rajatshan Roadways

- Provision of training to drivers, conductors and staff in first aid and basic life saving techniques
- Adequate stocking/replenishing of First Aid kits and maintenance of fire extinguishers in all vehicles and depots in the district.

Health Department

- Formation and training of damage and needs assessment teams within the department.
- Provision of trainings for paramedics, mobile medical teams, psychological first aid teams, psycho-social care teams and QRMTs.
- Timely procurement/purchase of portable equipments for field and hospital diagnosis, triage, etc.
- Provision of trainings for health attendants and ambulance staff in first aid and life- saving techniques.
- Provision of training to members of local communities in health and hygiene practices.
- Capacity building at the institutional level should be done by carrying out various activities under the Hospital Emergency Preparedness Programme (HEPP).
- Coordinate and liason with NCC, NSS and Civil Defence volunteers.

Home Guards

- 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.
- The purchase of SAR equipments through the appropriate channels of the District Administration.

Irrigation Department

- Provision of trainings to all human resources with regard to early-warning for

flood.

- The timely purchase of early warning and communication equipments through appropriate channels of the District Administration.
- Awareness regarding Participatory Irrigation Management for farmer staff.

Police Department

The efforts of the police go a long way in helping avoid and/or control chaos at disaster sites. They also help prevent human trafficking which is increasingly common in the aftermath of disasters these days. The trained police personnel should be placed on record within a district-level database of persons trained in disaster management. Trainings for the police personnel are thus, an important aspect of capacity-building in the district. District police also receives training specific to the role of the department from the Rajatshan Police Academy (RPA) at Jaipur.

Revenue & Disaster Management Department

- Develop trained human resource as swimmers, divers and boat-operators in view of flood vulnerability of the district.
- Form and train team in first aid, search and rescue and basic life saving techniques.
- Adequate stocking/replenishing of first aid kits, boats, oars, OBM, life jackets, life buoy, public addressal system.

3. Civil Engineers (Structural capacity building)

There is strong evidence that appropriate engineering intervention can significantly reduce the risk of disasters. Civil engineers also play an important role in post-disaster conditions – in rescue operations, damage assessment and the retrofitting of structures. Civil engineers need to keep themselves updated about the latest research and developments in construction technology, advances in construction materials and analysis or design procedures. Civil engineers should also take support from other branches of engineering for the better planning, execution and functioning of their building and infrastructure projects. Trainings to civil engineers will be provided by CDM, RIPA. Furthermore, at the district level, civil engineers will conduct training of masons for construction of earthquake-resistant structures. Such

trainings will be facilitated by the DDMA, Bikaner.

4. Corporates & Professionals

The National Disaster Management Framework emphasizes on the involvement of corporate sector in awareness generation and disaster preparedness and mitigation planning. Keeping in mind the need to mainstream disaster management concerns at multiple levels of the corporate sector, the following steps should be taken into consideration:

- Through Corporate Social Responsibility (CSR), corporates can assist in development projects, and thus help enhance the capacity at the district-level.
- Conducting mock-drills at regular intervals to determine the efficacy of the disaster management plans.
- Large-scale association with awareness generation initiatives aimed at building the knowledge, attitude and skills of the common people for a safer habitat.
- To move away from relief centric approach to a pro-active approach through risk management measures and capacity-building of industrial personnel through Business Continuity Planning (BCP), trainings and other measures.
- Training of a core team of Structural Engineers for retrofitting of existing industrial infrastructure as per requirement.

6.2 STRENGTHENING OF DISTRICT EOC

As mentioned in Chapter 5, the Emergency Operations Centre (EOC) contains important equipments and resources such as maps and communication equipments including landline telephones, mobile phones, satellite phones, walkie-talkie, ham radio, computer/laptop with printer facility, email facility, fax machine, television, etc. In addition, it will also contain LCD monitors, printers, video-conferencing equipment, power sources and backups, copies of plans, etc. It is crucial to strengthen the district-level EOC. This can be done by ensuring regular training of all staff meant to be present in the EOC.

6.3 CAPACITY BUILDING AT THE COMMUNITY LEVEL

Capacity building at the community level includes awareness, sensitisation, orientation and developing skills of communities and community leaders. At the

district level, assistance will be provided by consolidating the know-how and practical training provided by NDRF, Civil Defence and NGOs, Self-Help Groups (SHGs), *anganwadi* centres and disseminating it within the communities and school. Multiple responsibilities within the arena of capacity- building and training will be delegated to local authorities, PRIs and ULBs under the overall guidance of District authorities. It is also crucial to focus on imparting training, cultivating community awareness and ensuring skill-development among members of the community. Furthermore, capacity-building at the community level should be done on the Public Private Partnership (PPP) model. This can be done by ensuring identification of local resources and developing local infrastructure through PPP. Community-based Disaster Risk Reduction (CBDRR) and Village Contingency Planning (VCP) are also critical for capacity building at the community-level and will be managed by the concerned departments in the district.

6.4 DEVELOPMENT OF IEC MATERIAL

Addressing the specific requirements of vulnerable regions and the risk mitigation and preparedness needs of identified communities, various IEC material like list of do's and don'ts, posters, leaflets, banners, training modules and audio-visual material must be produced using capacity-building funds of the state. The aim is to develop a large body of advocacy and awareness materials, especially in vernacular languages, targeting vulnerable groups such as women, children, elderly, differently-abled, and marginalized and excluded groups.

CHAPTER 7

RESPONSE AND RELIEF MEASURES

7.1 DECLARATION OF DISASTER

District Collector as the ex-officio chairperson of District Disaster Management Authority is responsible for declaration of disaster, and activation of response and relief activities. To do so, first priority is to determine whether the resources are sufficient or not. If the situation is beyond the coping capacity of community in the affected area, then a disaster shall be declared. Declaration can be on the basis of level of disasters (L0, L1, L2 and L3) in affected area as per the NDMA guidelines.

L0 denotes normal times which are expected to be utilised for close monitoring, documentation, prevention, mitigation and preparatory activities. This is the planning stage where plans at all levels from community to the State shall be put in place. Training on search and rescue, rehearsals, evaluation and inventory updation for response activities will be carried out during this time. L1 specifies disasters that can be managed at the district level, however, the state and centre will remain in readiness to provide assistance if needed. L2 specifies disaster situations that may require assistance and active participation of the state and the mobilisation of resources at the state level. L3 disaster situations arise from large scale disasters where districts and the state may not have the capacity to respond adequately, and require assistance from the central government for reinstating the state and district machinery. Level of disaster should be based on rapid damage and needs assessment reports (Annexure III).

1. Important Elements for Declaration

- Declaration of Disaster by District Collector, Bikaner (Ex-officio chairman of DDMA)
- Situation shall be discussed among DDMA and HODs of various departments.
- DDMA has full authority to declare disaster and issue orders to carry out necessary actions like activation of IRS and resource mobilisation to protect people, environment and resources in the affected district.

- DDMA shall notify Rajatshan State Disaster Management Authority when a disaster is declared and forward constant updates on the situation.

2. Content of Declaration

- Date and Time
- Justification for declaring of disaster, specification of the event and level of disaster
- Delineation of the area (representation by map)
- Special orders associated with situation and reason justifying these orders
- Declaration signed by District Collector

7.2 IMPLEMENTATION OF DDMP

DDMA shall ensure implementation of District Disaster Management Plan for activation of IRS, roles and responsibilities of departments & their officers, Emergency Support Functions, and implementation of DDMRI for resource mobilisation. It has the following steps -

1. Activation of IRS

On declaration of disaster, DDMA shall activate IRS at district level. The District Collector, Bikaner as Responsible Officer (RO) will activate various sections, branches, divisions, units and other facilities, as and when required. Various roles and responsibilities under IRS are discussed in chapter 3.

2. Establishment and Activation of Incident Command Post

The ICP is the location at which primary command functions are performed. IC will be located at ICP, and there would be only one ICP. This also applies to situations with multi- agencies or multi- jurisdictions under unified command. ICP may be located at the headquarters. In case of total destruction or lack of space, an ICP can be in the form of a tent or a vehicle as well.

3. Establishment of Staging Area

Staging area is an area where mobilised resources are collected and accounted for field operations. These may include food, vehicles, equipments and

other materials. It should be located at a suitable site near the affected area for immediate, effective and quick deployment of resources.

4. Establishment of Incident Base

All primary services and support activities are usually located and performed at the incident base; the Logistics Section (LS) is preferably located here. The incident base may be co- located with the Incident Command Post or other incident facilities. Normally base is the location where all uncommitted / out-of- service equipment and personnel to support operations are located

5. Coordination

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

7.3 DISASTER REPORTING

Importance of disaster reporting is an important aspect to maintain clear communication among different levels of administration. This helps officers and staff to understand situation precisely and respond effectively and efficiently. This also involves documentation of situation and maintaining its photographs. All reports should quote facts and figures from credible sources.

1. Rapid Assessment Report

Rapid damage and needs assessment team will produce a report describing the magnitude of disaster with respect to life loss, property loss and other urgent

needs of the affected areas. This assessment provides a base for planning response activities. This report should further be communicated to HSDMA.

2. Preliminary Assessment Report

This report will give an account of disaster in first 24 hours with some basic needs and damages post-disaster.

3. Detailed Assessment Report

This report highlights severity of disaster and provides detailed information on damage and needs of the affected area. It is prepared by damage and needs assessment team and is based on reports from departments and specialists in health, irrigation, public health infrastructure, etc. It gives a clear picture to the District Administration for proper resource mobilization and requirement of external help, and forms the basis of relief and rehabilitation activities. It should be prepared within 72 hours of disaster and forwarded to RSDMA.

4. Interim Report

Based on earlier reports, interim reports provide additional and more precise information, and are to be submitted every 24 hours to DDMA. This time may vary depending upon the recipient and activities involved, and this should be forwarded to RSDMA.

As time goes by, the emphasis of interim reports will shift from the needs for relief to the needs for rehabilitation and reconstruction (for example, repairs to damaged structures, restoration of agriculture, animal husbandry, fisheries and industrial production). It is not necessary to repeat what has already been said in earlier reports unless the earlier details require updating. Interim reports should provide forecasts (with inputs from specialists and people who have experience of previous disasters) and highlight information which may not otherwise be obvious to the recipients, for example, potential problems, changes, patterns, trends and indicators, essential component to vulnerable group etc.

5. Final Report

It is a summary of details:

- a. About the disaster

- b. Management of activities
- c. Lessons learnt

7.4 EMERGENCY SUPPORT FUNCTION

Emergency support functions (ESF) are essential services for prompt and well coordinated management of disaster. It is to be noted that each Response Branch Director (RBD) will be responsible for the tasks assigned to his/her respective department. Table 7.1 explains the purpose of different ESFs during any disaster.

Table 7.1: Emergency Support Functions

ESF	Purpose
1. Early warning	To alert departments and public for the disaster about to strike.
2. Communication	To provide provisions for communications support before, during, and after an emergency/disaster situation. It will coordinate communications resources (equipments, services and personnel) that may be available from a variety of sources (i.e. District/State agencies, voluntary groups, local agencies, the telecommunications industry, armed forces) before or after the activation of the State Emergency Operations Centre.
3. Evacuation	To provide necessary information to administration and people to evacuate them to safe places.
4. Damage and needs assessment	To assess the extent of damage caused by a disaster. It helps in planning and execution of relief and response activities. The needs assessment of the affected population is a vital and continuous activity. As the situation and needs change, the assessments should be carried out regularly and results should be updated accordingly.
5. Fire Fighting	To provide life- and property-saving assistance to manage fire incidences following natural or man-made disasters.

6. Hazardous Material	To provide state support to local governments in response to an actual or potential discharge or release of hazardous materials resulting from a natural, manmade or technological disaster and other environment protection issues. Also, it has to establish and coordinate the basic roles and responsibilities for oil & hazardous materials.
7. Search and Rescue	To provide life-saving assistance from natural as well as human caused events.
8. Health	<p>To coordinate assistance in disaster-response to an all-hazards emergency or disaster event requiring a coordinated response, and/or during a developing potential health and medical emergency.</p> <p>Furthermore, it has to respond to medical needs associated with mental health, behavioural health, and health considerations of incident victims and response workers. And then it has to cover the medical needs of members of the at risk or special needs population (including the population whose members may have medical and other functional needs before, during, and after an incident)</p>
9. Dead Body Management	To identify and maintain the record of the dead (human beings) and facilitate in appropriate cremation /burial, claim of compensation and belongings, to reduce the psychological impacts on the family members.
10. Food and Supplies	To provide food and other supplies to relief centres and affected areas.
11. Shelter and Camp Management	To provide requirements like food, clothing, shelter, water and basic amenities to the affected people in the relief camps and ensure safe, secured and healthy environment in culturally appropriate manner.

12. Mass Care and Housing	To facilitate various services to be provided to the affected population until the recovery is achieved. These services cater to mass care needs beyond the scope of relief camps and shelters. Human services programs help disaster survivors recover their non-housing losses including replacement of destroyed personal property, and assist with obtaining disaster loans, food supplies, crisis counseling, disaster unemployment and other Central and State benefits.
13. Water, Sanitation and Hygiene (WASH)	To promote good personal and environmental hygiene in order to protect health. Effective WASH relies on identification of key hygiene problems and culturally appropriate solutions. Ensuring the optimal use of all water supply and sanitation facilities and practicing safe hygiene will impact public health response activities, highly positively. Hygiene promotion is integral to WASH function and is reflected in the specific tasks relating to water supply, excreta disposal, medical waste disposal, vector control, solid waste management and drainage.
14. Media Management	To disseminate information about various hazards in the district and the relevant dos and don'ts for before, during and after a disaster. This may be done through various media such as newspapers, television, radio, internet, media and information van, street theatre, etc. This ESF will also help in control of rumours and panic, and for crowd management.
15. Law & Order	To provide safety and security to citizens and their property during disaster. To establish command and control in coordination with law enforcement personnel.
16. Public Works	To provide technical assistance for damage assessment, and repair and restore damaged public infrastructure.

17. Transport	To coordinate the transportation resources to support the needs of emergency responders, in terms of mobilization of human resource, equipments, facilities, materials and supplies, etc. to perform task of emergency response and recovery.
18. Livestock	To establish procedures for coordination among local government agencies, volunteer organizations, allied animal interest groups and veterinary medical personnel, to provide their services to animals affected by any disaster. Assistance can be in form of emergency medical care, temporary confinement, shelter, food and water, identification and tracking of wandering/abandoned animals so as to return them to their owners, and ultimately disposal of dead and unclaimed animals, as necessary.

7.5 RELIEF

There are norms of compensation for ex-gratia grant payable to people affected by calamities like flood, drought, hailstorm, fire, lightening and earthquake for loss of human life, damage of crops, loss of cattle, loss of personal property by fire and damage to houses due to floods. Relief in district should be cultural-sensitive and appropriately distributed. It should be noted that relief distribution should include all communities and all parts of society. Considering district profile of Bikaner, special attention is necessary for population from scheduled caste, women, children and old age people during the process (social vulnerability as discussed in chapter 2). It is the responsibility of each responsible department within the District Administration to see that rights of affected population particularly that of vulnerable population are not violated during the process.

7.6 WITHDRAWAL OF DECLARATION OF DISASTER

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

CHAPTER 8

RECONSTRUCTION, REHABILITATION AND RECOVERY MEASURES

The International Strategy for Disaster Reduction (ISDR) defines recovery as the “decisions and actions taken after a disaster with a view to restoring or improving the pre- disaster living conditions of the stricken community, while encouraging and facilitating necessary adjustments to reduce disaster risk”. The process demands co-ordinated 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.

8.1 POST DISASTER RECONSTRUCTION

Post disaster reconstruction includes both short term and long-term activities. The short-term activities refer to repair, restoration and strengthening of damaged structures, whereas long term reconstruction activities refer to reconstruction of multi-hazards resilient housing, relocation, provision of basic amenities etc. along with psychological, socio- economic, environmental and agronomic rehabilitation. DDMA, Bikaner should initiate the reconstruction activities based on the details of damage assessment. Further, on the basis of extent and type of damage to buildings (public, private, government, etc.), district administration should initiate reconstruction measures.

1. Short-Term Reconstruction Activities

Repair: The main purpose of repair is to bring back the architectural shape of buildings to resume their functioning at the earliest. The following actions can be taken for repair:

- Patching up of defects such as cracks, fall of plaster, etc.
- Repairing doors, windows, placement of glass panes.
- Checking and repairing electric wiring.
- Checking and repairing gas pipes, water pipes, sewerage and other plumbing services.

- Repairing of broken walls, disturbed roofing tiles, cracked flooring and its redecoration with washing, painting etc.

The architectural repairs as stated above do not restore the original structural strength of cracked walls or columns and may sometimes be very illusive.

Restoration: The main purpose of restoration is to carry out structural repair to load bearing elements. It may involve cutting portions of the elements and rebuilding them or simply adding more structural material so that the original strength is restored.

- Removal of portions of cracked masonry wall and piers and rebuilding them in richer mortars. Use of non-shrinking mortar is preferred.
- Addition of reinforcing mesh on both faces of the cracked walls holding it to the wall through spikes or bolts and covering it suitably. Several alternatives can be used.
- Injecting epoxy like material which is strong in tension into the crack in the walls, columns, beams etc.

Where structural repairs are considered necessary, these should be carried out prior to or simultaneously with the architectural repairs so that total planning of work could be done in a coordinated manner and wastage is avoided.

Strengthening of Existing Buildings: It is an improvement over the original strength where the evaluation of the building indicate that the strength available before the damage was insufficient and restoration alone will not be adequate in resisting future impacts. Strengthening procedure should aim at one or more of the following objectives:

- Increasing the lateral strength in one or both directions, by reinforcement or by increasing wall area or the number of wall and columns.
- Giving unity to the structure by providing a proper connection between its resisting elements in such a way that inertia forces generated by the vibration of the building can be transmitted to the members that have the ability to resist them.
- Eliminating features that are sources of weakness or that produce concentrations

of stresses in some members or cause abrupt changes of stiffness from one floor to the other concentration of the large masses. For example, large opening in wall without a proper peripheral reinforce.

- Avoiding the possibility of brittle modes of failure by proper reinforcement and connection of resisting members.

2. Long Term Reconstruction Activities

Reconstruction of housing and associated infrastructure plays most important role in betterment of psychological trauma, livelihood, health, education in entire disaster recovery process. Therefore, it should consist of a comprehensive approach involving rehabilitation of housing, infrastructure, livelihood, health, education, environment, etc. to ensure sustainable development of disaster affected communities. It should be taken into consideration that below mentioned multi disciplinary activities and approaches should be incorporated in reconstruction process in consultation of the affected community in an institutionalised manner. This would ensure sustainable development of the community.

Design & Material: The reconstruction of housing requires appropriate design i.e. culturally acceptable, environmentally suitable and suitable to contextual needs of community. The material and technology used should also be context specific and in full consultation with the people so that they are able to maintain the housing after they occupy them. For the same, owner driven approach is preferred.

Disaster Resilient Construction: DDMA, Bikaner shall constitute a committee to meet the technical requirements for disaster resilient housing in reconstruction. This committee shall have members from PWD department, Development and panchayat Department and other members best suited for ensuring disaster resilient housing. These members shall assist in multi hazard resilient design and monitor the entire process of reconstruction. The committee should ensure that disaster resilient techniques are incorporated in various schemes and development projects. Therefore, funds under schemes can also be used for reconstruction Indira Awaas Yojana and other such as Housing Schemes for Scheduled Castes and Denotified Tribes.

Owner-Driven Approach: One of the significant approaches for disaster reconstruction is owner driven approach. This approach facilitates the owner to build the housing as per their own conveniences. The intervention of district administration is limited to provision of the funds and technical expertise for construction activity. This approach will facilitate the owners to design houses as per their needs, at preferable locations. This gives them a sense of ownership and helps them to maintain their social capital. The involvement of owner helps in reducing the cost and proper monitoring.

Relocation: When reconstruction also involves relocation of the community, the relocation site should be in close proximity to the existing sources of livelihood such as places of work, agricultural farms, livestock facilities, markets, etc. This will ensure favourable conditions for livelihood generation and other economic activities. DDMA, Bikaner should plan and procure land for rehabilitation in consultation with the targeted community members to meet the above mentioned aspects.

8.2 BASIC AMENITIES

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

1. Health Facilities

- DDMA shall constitute a committee to ensure for provision of health facilities at all reconstructing sites in the district.
- The committee shall co-ordinate with constructing agencies and departments (Private agencies, PWD, UIT, Nagar Nigam, Housing Board, etc.) in association with Health department and ensure functioning of health facilities along with necessary infrastructure at strategic locations at all reconstruction sites.
- Schemes under health department such as NRHM should be used for the same.

2. Educational Facilities

- DDMA shall constitute a committee to ensure provision of educational facilities

for all the reconstructing sites in the district.

- The committee shall co-ordinate with constructing agencies (PWD, UIT, Nagar Nigam etc) in association with Education department for ensuring education for disaster affected children/ students in the district.
- Various departmental schemes such as Anganwadi programme, creche programme, children's library can be used for the same.

3. Water

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

4. Drainages and Sanitation Facilities

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

5. Electricity

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

6. Transportation and Connectivity Facilities

- DDMA shall constitute a committee to ensure provision of proper road connectivity and transportation facilities for all the reconstructing sites in the

district.

- The committee shall coordinate along with PWD Department, Rajatshan Roadways and Regional/District Transport Authority to ensure road connectivity and transportation facilities for the reconstruction sites.

8.3 REHABILITATION

Post-disaster rehabilitation is a complex process involving several dimensions such as livelihood restoration, psychological care, environmental rehabilitation, etc. This requires strong linkages between government, non- governmental organisations as well as international organisations and should be seen as opportunity to work with communities in the district.

1. Socio-Economic Rehabilitation

- DDMA shall constitute a committee to ensure revamping of economy for affected people in the district.
- This committee shall provide mechanisms and schemes for livelihood generation and support for livelihood.
- The committee shall have members from Development and Panchayat department, Dist. Social Welfare department and Health Department etc.
- Various measures such as seed capital, micro finance and other related schemes should be used for the same.
- Following are some of essential activities for different target groups. The committee shall ensure the execution of the same at every reconstruction and rehabilitation sites.

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

- Training tailoring to SC, ST, OBC, destitute/ widowed women/girls.
- Up-gradation of typing and data entry skills of the SC, ST and OBC unemployed

youth through computer training.

- Financial Assistance for training to SC, ST candidates in unorganised sector through private institutions.
- Creation of employment generation opportunities by setting up Employment Oriented Institutions/ training programme.
- Other schemes such as MGNREGA, PMGSY, Skill Development Programme can also be used for livelihood generation.

The socio-economic rehabilitation committee shall also co-ordinate with Animal Husbandry and Dairying Department to ensure alternate livelihood generation activities by providing cows and buffaloes. Various schemes under Animal Husbandry and Dairying Department shall be used for the same:

- Schemes for Employment Opportunities to Scheduled Castes families by establishing livestock units and insurances of their livestock (SCSP)
- Special Employment to educated/ uneducated young men/women of rural area through Dairy Development
- Self employment generation in dairy sector by establishing Hi-tech/ Mini dairy units

Children: The socio-economic rehabilitation committee shall further co-ordinate along with DCCW department to install playschools, orphanages etc. at community level. Under the Anganwadi Programme, pre-school education, routine health check-up, nutrition, play and other related activities are covered. Child Welfare Department should ensure that each and every child from affected community is benefitted from such schemes and programmes. Financial Assistance under the Non-School Going Disabled Children and Destitute Children, ICDS, etc. could also be used.

Widows/Destitute: The socio-economic rehabilitation committee should co-ordinate along with Department of Social Welfare to ensure that each widow/destitute is registered under various schemes and measures to support livelihood. The Widow and Destitute Women Pension Schemes and other such schemes under Welfare and Social Welfare Department can be used for the same.

Old Age: The socio- economic rehabilitation committee shall further coordinate along with Department of Social Welfare to ensure that each elderly/ old-aged people is registered under Old Ages Pension Scheme and Samman Allowance. The committee shall also coordinate with various NGO's to address various needs of the old age.

Physically Challenged: The socio- economic rehabilitation committee shall coordinate with Department of Social Welfare to ensure that each physically challenged person is provided with artificial limbs, hearing aids, wheel chairs, etc. Assistance should be given by Social Welfare Department under Handicapped Person Pension Scheme, Scholarship to Handicapped Students and Unemployment Allowance to Literate Handicapped Persons, etc.

SC/ST/OBC Classes: The socio-economic rehabilitation committee shall co-ordinate along with Social Welfare Department for provision of support for livelihood to SC, ST and OBC. Various schemes such as Financial Assistance for Training, Tailoring to SC, ST, OBC, destitute/widowed women/girls, Indira Gandhi Priyadarshini Viwah Shagun Yojna and Housing Schemes for SCs, etc. have potential to support the targeted vulnerable sections.

2. Psychological Rehabilitation

- DDMA shall constitute a psychological rehabilitation committee to ensure provision of psychological care and psychological first aid to the disaster affected community.
- The committee shall co-ordinate with Health Department, Women and Child Development to carry out activities at community level to reduce the psychological trauma of the disaster affected communities. Support and co-ordination from NGOs should also be utilized for the same.
- Various programmes like Child Care Centres, Play ground, Hobby classes under Mother and Child Development Department can be used to provide psychological

care for the disaster affected children.

3. Agronomic Rehabilitation

- DDMA shall constitute an agronomic Rehabilitation committee to ensure soil reclamation in case of any changes in composition and fertility of soil in the district.
- The committee shall coordinate with Department of Agriculture to ensure that Soil testing labs undertake research and formulate necessary steps required for agronomic rehabilitation.
- The committee shall coordinate with NGO's working in same fields and their support should also be channelized for the same.
- They should also suggest cropping patterns, suitable compositions of fertilizers pesticides etc. depending upon the changes in soil and develop a model of rehabilitation of the same.

4. Environmental Rehabilitation

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

5. Restoration of Social Capital

- DDMA shall constitute a Social Capital restoration committee to ensure intact social bonding of the people during distribution of houses.
- The committee shall co-ordinate with distributing agency to ensure that the social fabric is not weakened in the process of allocation of houses. Families with better cooperation with each other should be allocated close to each other.

8.4 COORDINATION ENSURING HOLISTIC RECOVERY PROCESS

DDMA should formulate necessary institutional mechanisms for ensuring that

each above mentioned parameters/ activities of reconstruction and rehabilitation are provided at each site. DDMA should monitor and coordinate NGO or any other agency depending upon their mandates and utilize their resources appropriately. It should be noted that the external agencies have a time bound approach and communities may or may not be completely rehabilitated before that time, therefore DDMA, Bikaner should ensure rehabilitation of such communities. Most essentially to avoid communities getting dependent on assistance, DDMA should design achievable indicators and ensure proper and timely withdrawal.

Table 8.1: Departmentwise Schemes for Post-Disaster Reconstruction and Rehabilitation Measures

Department/Scheme
Animal Husbandry & Dairying
Scheme for Animal Health Care in the State
Scheme for Employment Opportunities to Scheduled Castes Families by establishing livestock units and insurance of their livestock (SCSP)
Special Employment to Educated/ Uneducated Young Men/Women of Rural Area Through Dairy Development
Health Care Camps
Social Welfare Department
Training Tailoring to Scheduled Castes/ Backward Castes destitute/widowed women/ girls
Financial Assistance for training to Scheduled Caste candidates in un-organized sector through private institutions
Scheme for the pre-examination training of Scheduled Castes candidates for taking Union Public Service Commission and State Public Service Commission examination
Indira Gandhi Priyadarshini Viwah Shagun Yojna (Rs. 31,000 for SC and Rs. 11,000 for BC/General)
Housing scheme for Scheduled Castes and Denotified Tribes (Rs 10,000 to Rs. 50,000)
Monetary Relief to the Victim of Atrocities
Post Metric Scholarship to Scheduled Castes candidates
Dr. Ambedkar Meritorious Boys/Girls students Scheme
Scheduled Castes Girl Students Higher Education Provision Scheme
Old Age Samman Allowance (Rs. 600)
Widow & Destitute Women Pension (Rs 750)
Handicapped Persons Pension (Rs. 500 p.m. and Rs. 750 p.m. for 100% Disabled)
Scholarship to Handicapped Students
Financial Assistance to Destitute Children (Rs. 200 p.m.)
Allowance to Dwarfs and Eunuch (Rs. 500 p.m.)
Rajiv Gandhi Parivar Bima Yojna for 18-60 years (Rs 1 lac)

Rashtriya Parivar Labh Yojna (Only BPL between 18-65 years; Rs 20000)
DRDA
Mahatma Gandhi National Rural Employment Guarantee Scheme (MNREGS)
Indira Awas Yojana (IAY)
Medical and Health
National Rural Health Mission (NRHM)
Accredited Social Health Activist (ASHA)
PWD
Pradhan Mantri Gram Sadak Yojana (PMGSY)

CHAPTER 9

FINANCIAL ARRANGEMENTS FOR DISASTER MANAGEMENT

9.1 FINANCIAL ARRANGEMENTS

The Disaster Management Act, 2005 provides for Disaster Response Fund (DRF) and Disaster Mitigation Fund (DMF), each at the national, state and district levels. As per Section 46(I) and section 48(I) (a) of the Act, the National Disaster Response Fund (NDRF) and State Disaster Response Fund (SDRF) were constituted in 2010 vide Letter No. 32- 3/2010-NDM-1 dated 28th September, 2010 by the Ministry of Home Affairs (Disaster Management Division). In the same notification, the Calamity Relief Fund (CRF) was converted into SDRF. Under the 13th Finance Commission (FC), this provision of funds was made. On the recommendation of the fifteenth finance commission (FFC) on financing of disaster risk management and the report of the expert committee setup by the government of India ministry of home affairs (Disaster Management Division). The Government of India has revised the items and norms for assistance from SDRF and NDRF with effected 10 oct 2022, The National Disaster Mitigation Fund is to fund projects exclusively for the purpose of mitigation and is to be administered by the NDMA. The district level provision of the Disaster Response Fund and Disaster Mitigation Fund, however, has not been created.

Table 9.1: Allocation of NDRF/SDRF Fund to Bikaner District

Year	Alloted Budget (in lakh Rs)	Budget Utilised (in lakh Rs)
2010-11	5350.82	5313.11
2011-12	185.73	160.86
2012-13	380.68	339.43
2013-14	3272.53	2993.27
2014-15	2893.55	2294.94
2015-16	12359.49	12300.50
2016-17	600.60	600.60
2017-18	1719.54	1719.54
2018-19	4028.10	4028.10
2019-20	2654.90	2654.90

2020-21	4519.20	4519.20
2021-22	6375.19	6375.19
2022-23	1067.13	1067.13

Source: Office of the Collector, Bikaner

9.2 ADDITIONAL CENTRAL ASSISTANCE

In the context of disaster finance post-disaster reconstruction, there is provision for Additional Central Assistance (ACA). Over and above the provision of the SDRF, funding is provided from the NDR Fund in the wake of calamities of severe nature. On receipt of memorandum from the affected states, an Inter-Ministerial Central Team comprising of representatives of the central Ministries/ Departments is constituted and its report, after examination by the Inter- Ministerial Group (IMG) headed by Home Secretary, is placed before High Level Committee (HLC) for their consideration and approval of funds from NDRF. It has been given to states in recent years, particularly for the Gujarat earthquake of 2001, the Indian Ocean tsunami of 2004, the Kashmir earthquake of 2005 and the Kosi floods of 2008 in Bihar.

9.3 CAPACITY BUILDING FUND

Effective disaster response requires trained manpower to deal with complex situations where effective and speedy handling can reduce the impact of a disaster on human life and property. It is necessary to continuously undertake measures to build capacity amongst those handling response and create awareness among the people. Ten percent of SDRF received each year at the state level is meant for capacity building. As the district demands the state to carry out capacity building exercises at district level, the state would release the fund for the same, as per the need. The activities that can be included in capacity building exercises are mentioned in Chapter 6.

9.4 PRIME MINISTER RELIEF FUND

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

- Immediate financial assistance to the victims and next of kin.
- Assisting search and rescue.

- Providing health care to the victims.
- Providing shelter, food, drinking water and sanitation.
- Temporary restoration of roads, bridges, communication facilities and transportation.
- Immediate restoration of education and health facilities.

9.5 CHIEF MINISTER RELIEF FUND And Chiranjivee Accidental Insurance Scheme

At the State level, a provision has been made to provide immediate support to the distressed people affected by the natural calamities, or road, air or railways accidents, under the Chief Minister Relief Fund. CM Chiranjivee Accidental Insurance Scheme was also launched on 01 may 2022. In this rule in accidental incident, every deceased person's family entialed for assistance of Rs. 5,00,000.

9.6 MEMBER OF PARLIAMENT LOCAL BODY AREA DEVELOPMENT SECHEME (MPLADS)

In the context of natural & man-made calamities, MPLADS works can also be implemented in the areas prone to or affected by the calamities like floods, cyclone, tsunami, earthquake, hailstorm, avalanche, cloud burst, pest attack, landslides, tornado, drought, fire, or chemical, biological and radiological hazards. Lok Sabha MPs from the non- affected areas of the State can also recommend permissible works up to a maximum of Rs.10 lakh per annum in the affected area(s) in that State. The funds would be released by the nodal district of the MP concerned to the District Authority of the affected district. MPLADS funds may be pooled by the District Authority of the affected district for works permissible under the Guidelines. The amount so transferred from the nodal district to the natural calamity affected district may be shown in the UCs as well as Monthly Progress Reports as amount transferred to natural calamity affected district for rehabilitation work. The Works Completion Report, Audit Certificate and Utilization Certificate for such works and funds will be provided by the District Authority of the affected districts directly to the Ministry of Statistics and Programme Implementation for overall reconciliation. No separate UC/AC/ Completion Report in respect of the transferred amount would be required from the Nodal District authority in this regard while processing release of subsequent installments of MPLADS funds.

In the event of Calamity of severe nature in any part of the country, an MP can

recommend works up to a maximum of Rs. 50 lacs for the affected district. Whether a calamity is of severe nature or not will be decided by the Government of India. The funds in this regard will be released by the District Authority of Nodal district of the MP concerned to the District Authority of the affected district to get permissible works done.

9.7 CONVERGENCE WITH CENTRAL SPONSORED SCHEMES

Various employment generation schemes, especially those such as the National Rural Employment Guarantee Scheme (NREGS), assure financial relief to needy families in drought-affected areas. They can be easily integrated with relief programmes post- disaster to increase the availability of funds for relief expenditure.

Another scheme that has been effectively dovetailed with calamity relief is the Indira Awas Yojana (IAY) which has accomplished useful relief work in terms of providing housing to the affected families. Ten percent of the annual allocation under IAY is earmarked for this purpose. The provision has been made for the mid day meal to remain functional in the drought hit areas.

9.8 OTHER FINANCIAL SOURCES

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

9.9 DISASTER INSURANCE

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

The Insurance Regulatory and Development Authority (IRDA), India has framed micro insurance regulations that allow distribution of micro insurance products in the state. The regulations cover insurance for personal accidents, health

care for individual and family and assets like houses, livestock, tools and others. In Rajasthan, various Ministries/ Department have their insurance schemes related to health, crops, livestock, and other which can be utilize in case of disaster.

CHAPTER 10

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

The District Disaster Management Plan is the sum and substance of the horizontal and the vertical disaster management plans in the district. Horizontal plans included plans prepared by line departments such as Police, Fire Service, UIT, Nagar Nigam, Civil Defence, Food and Civil Supplies, PWD, PHED, IGNP etc. whereas the vertical plan includes Sub- Divisional Plans, Community Plans, School/Hospital plans and all other logical units' plan at the lower level and State disaster management plans and National disaster management plans at the higher level.

The monitoring, evaluation, updation and implementation of the District Disaster Management Plan, Bikaner are discussed in this chapter. The District Disaster Management Authority (DDMA), Bikaner must ensure the planning, coordination, monitoring and implementation of DDMP. The District Collector, Bikaner is the overall in-charge of all the activities related to disaster management.

10.1 MONITORING AND EVALUATION

The DDMA, Bikaner will be responsible for the proper monitoring and evaluation of the DDMP. The purpose of monitoring and evaluation of DDMP is to determine:

- Adequacy of resources
- Coordination between various departments/agencies
- Community participation

- Partnership with NGOs
- Partnership with insurance companies to work on disaster insurance schemes

Roles and Responsibilities of DDMA

- Identify and ensure implementation of Disaster Risk Reduction into all developmental projects and schemes.
- Monitor the functioning and adequacy of the resources present in the district, every six months.
- Based on the analysis, the DDMA has to procure/purchase/borrow resources from the concerned authorities and replace the dilapidated and non- functioning resources by using the developmental funds.
- Ensure that all the departmental plans are operational and checked by the respective nodal officers.
- Monitor that all the officers of the frontline departments have to be trained as per their requirements.
- Monitor that all prevention, mitigation, preparedness and response measures (as mentioned in chapter 4, 5 and 7 respectively of the DDMP) are properly implemented within the district.
- All departmental heads at the district level must ensure to identify their suitable and relevant schemes (centrally-sponsored or state-funded) which will be suitable to be used in disaster management, keeping in view their parameters.

The monitoring and evaluation could be done through various audits such as:

- Electrical Safety Audits of critical infrastructure
- Fire-Safety Audits of critical infrastructure
- Enforcement of National Building Code in construction of lifeline buildings
- Audit reports of various departments such as Environment, Irrigation (regarding canals) and Labor (Industrial Safety & Health) Departments.
- All onsite emergency plans of the industries which fall within the district
- Offsite emergency plan of Bikaner district

10.2 REVIEW AND UPDATE

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

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

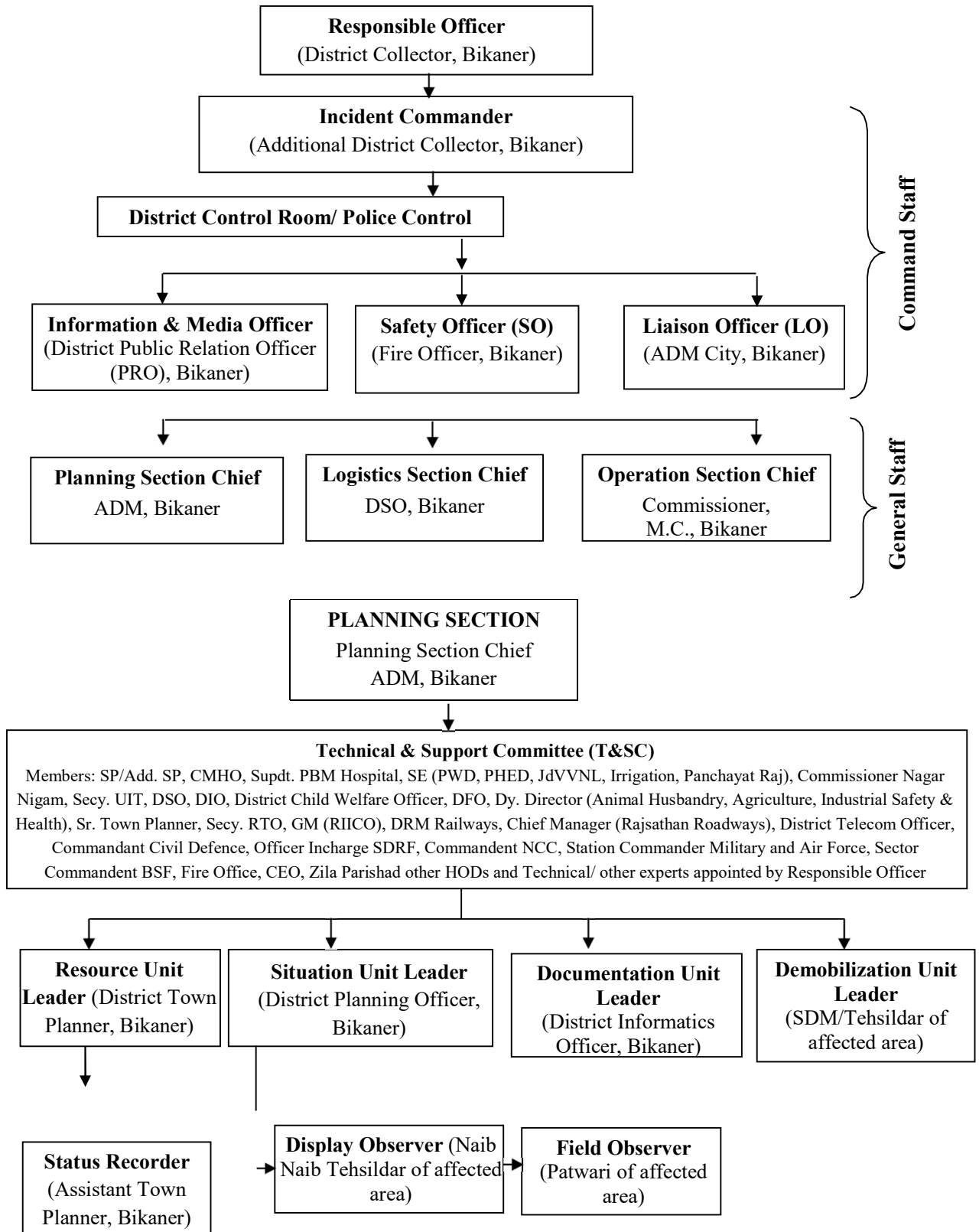
DDMP, Bikaner is an effective document for the District. In overall supervision of ADM, Bikaner, the District Revenue Officer, Bikaner along with the help of the nodal officers of frontline departments will update it on bi-annual basis taking into consideration the following:

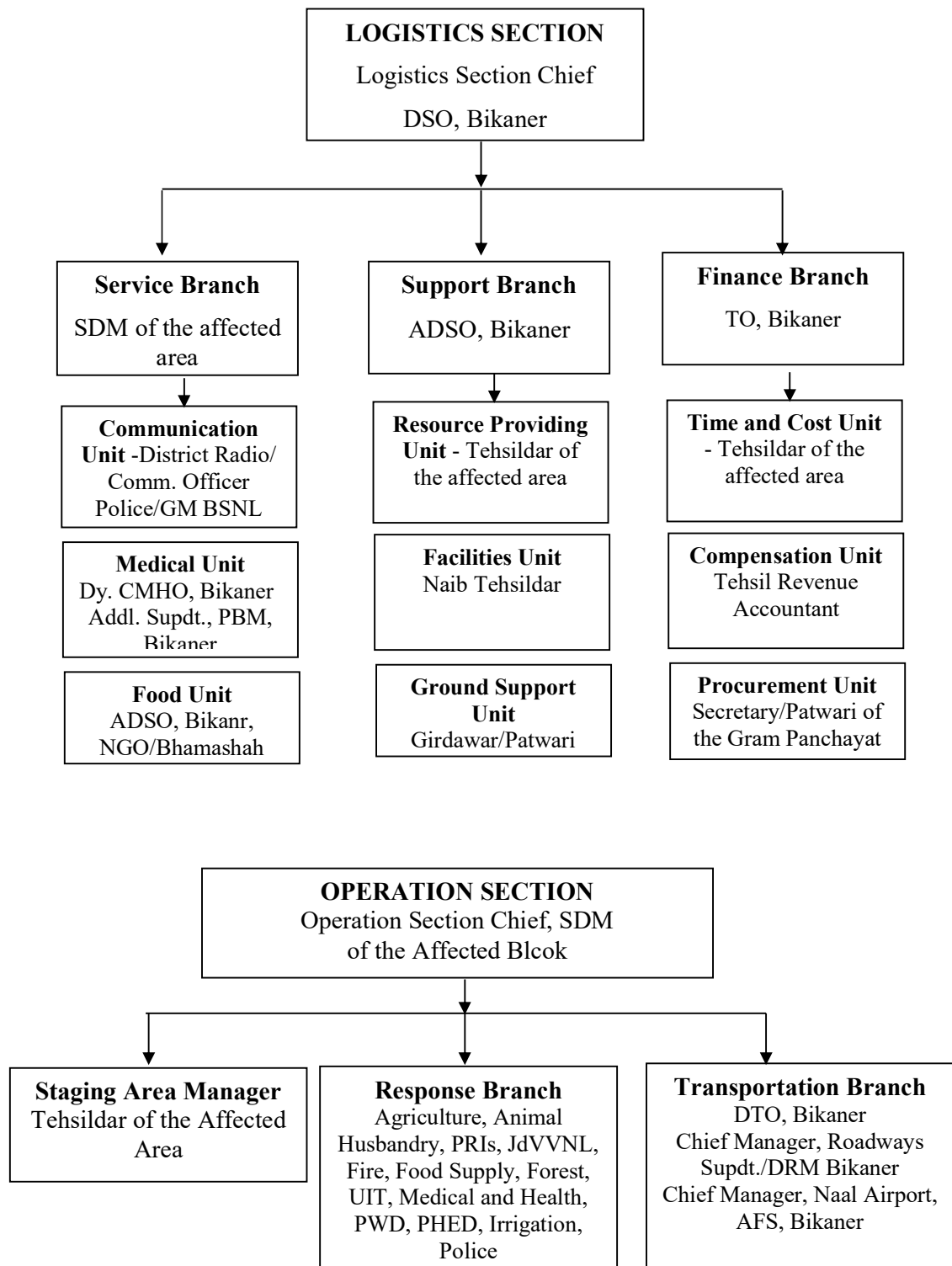
- Inventory of equipments in the district (DDMRI)
- Human Resources, their addresses and contact numbers (DDMRI)
- Medicinal stock
- List of flood prone villages
- Technology to be used
- Coordination issues from the lessons learnt

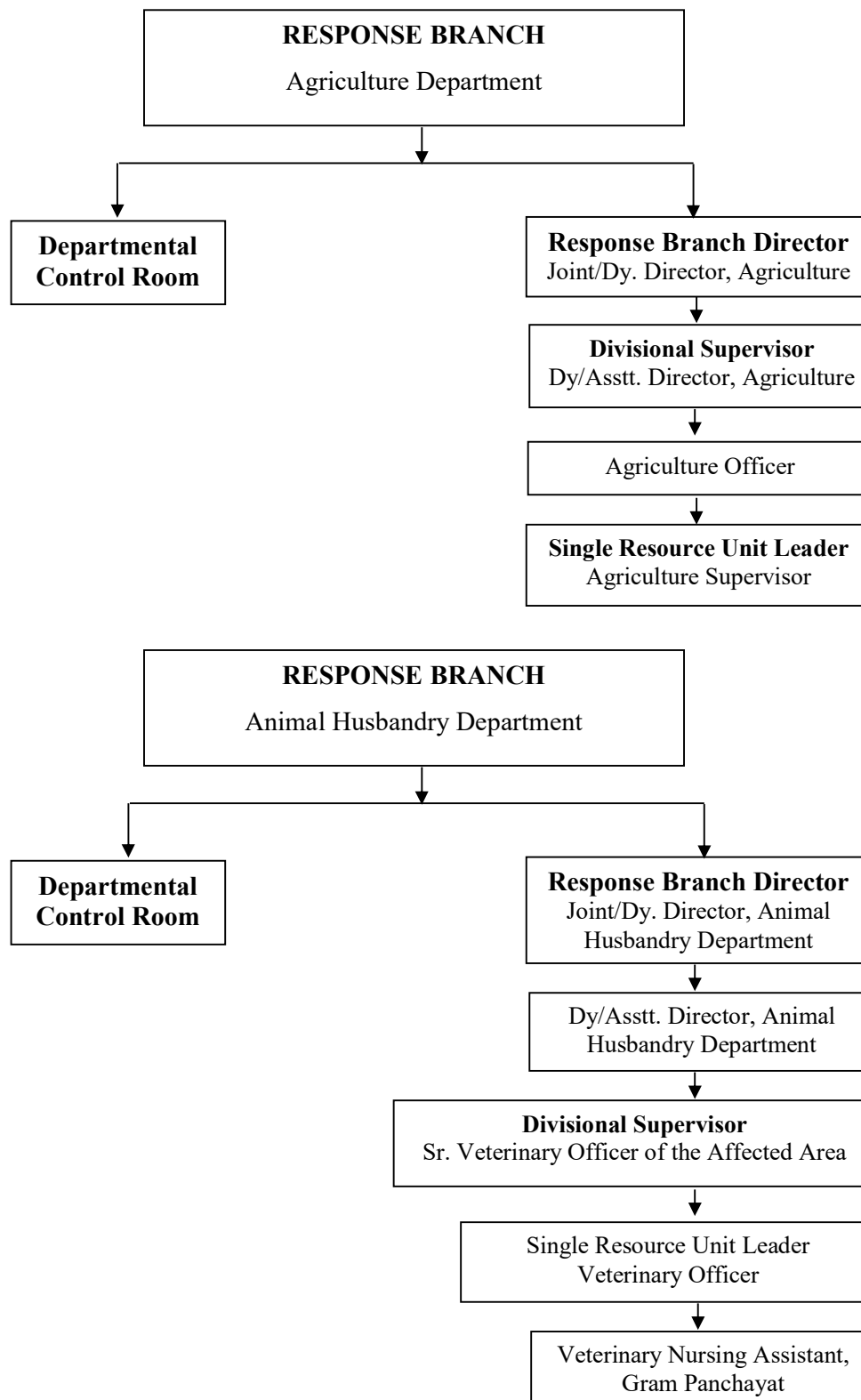
The DIO, Bikaner in coordination with DRO under overall supervision of ADM, Bikaner will update and upload the DDMRI of the district every three months. A quarterly meeting for updation of DDMP will be organized by the DDMA under

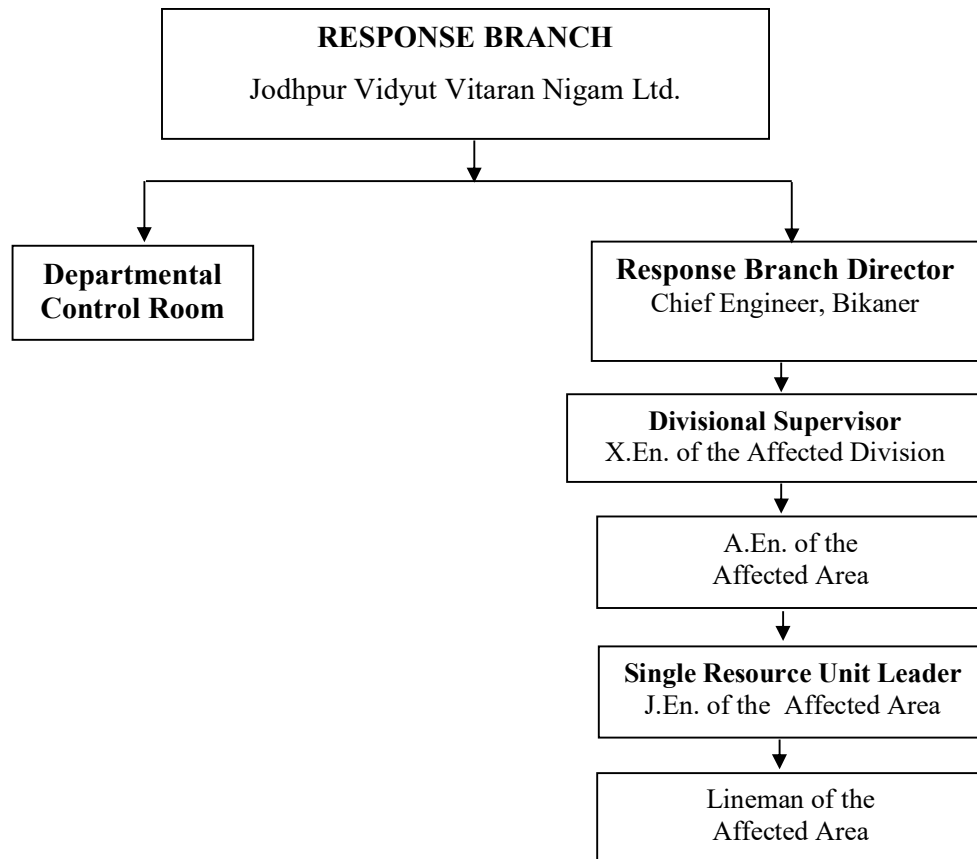
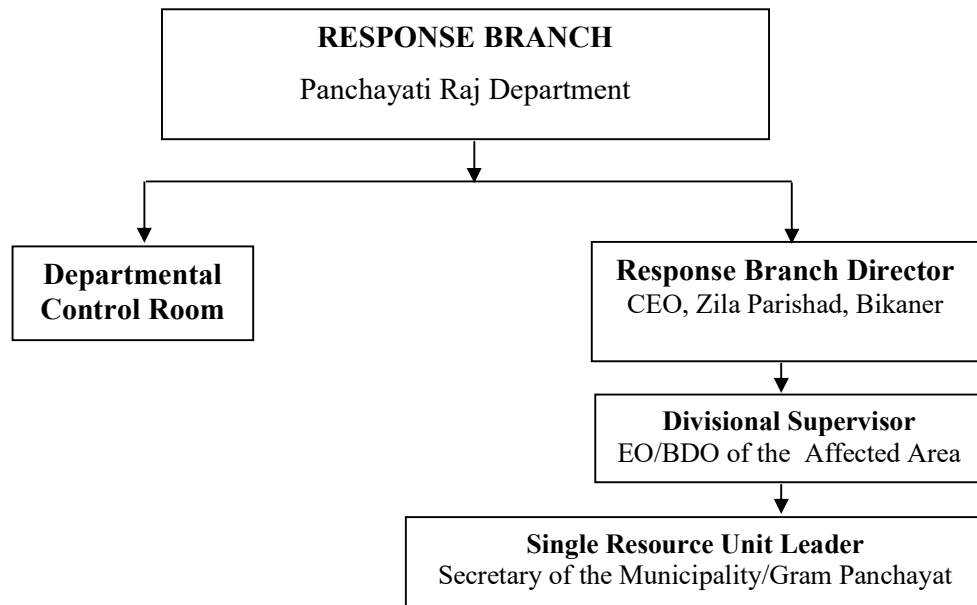
the chairmanship of the District Collector, Bikaner. The District Collector should ensure for the progress and gap analysis. All concerned departments and agencies have to participate and give recommendations on specific issues and submit their updated reports on the above-mentioned factors to the ADM, Bikaner quarterly. The DDMA has to ensure updation of the DDMP bi-annually. The District Collector, Bikaner should make a report of DDMA activities/ departmental activities for capacity building and present in the Chief Minister annual meeting.

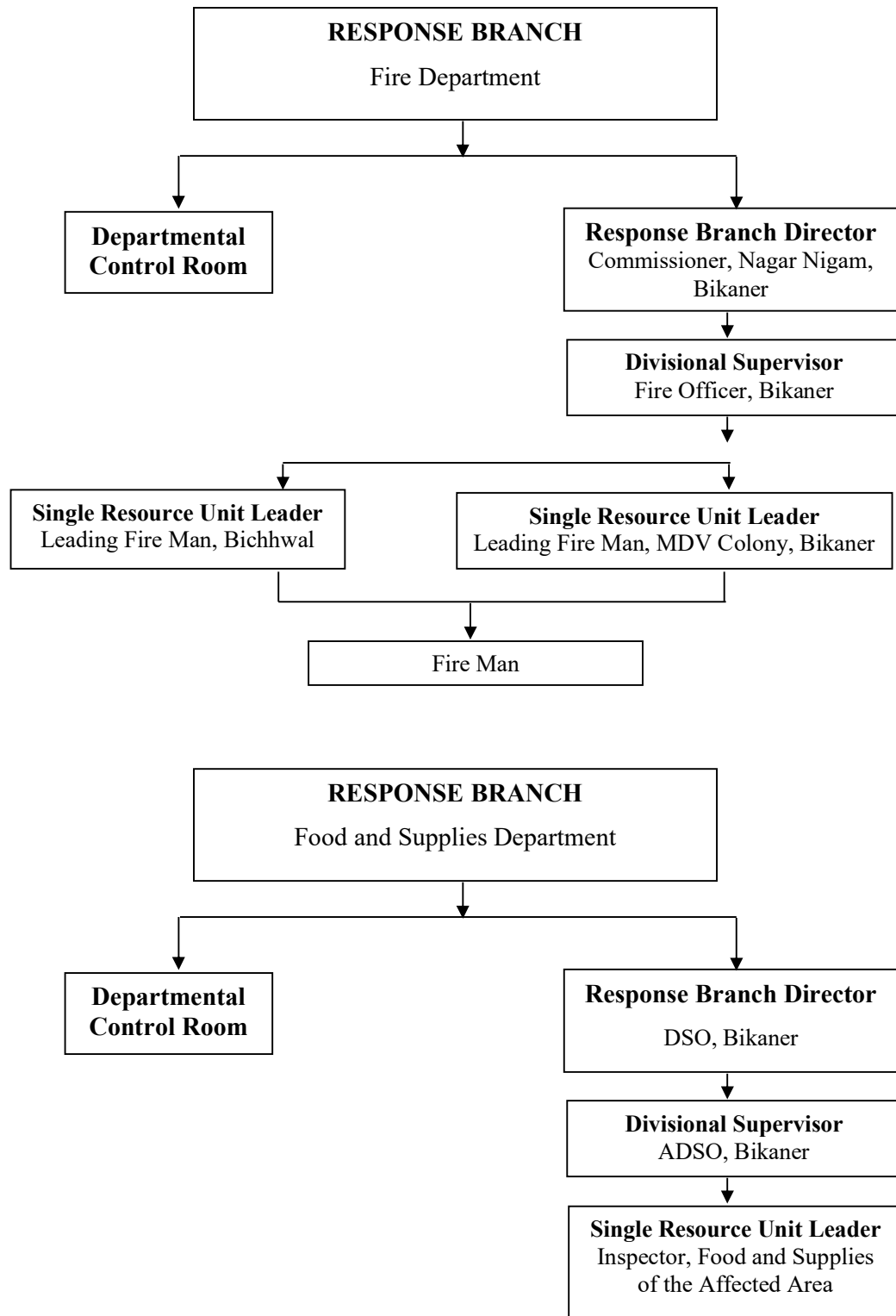
Incident Response System (IRS) for Bikaner District

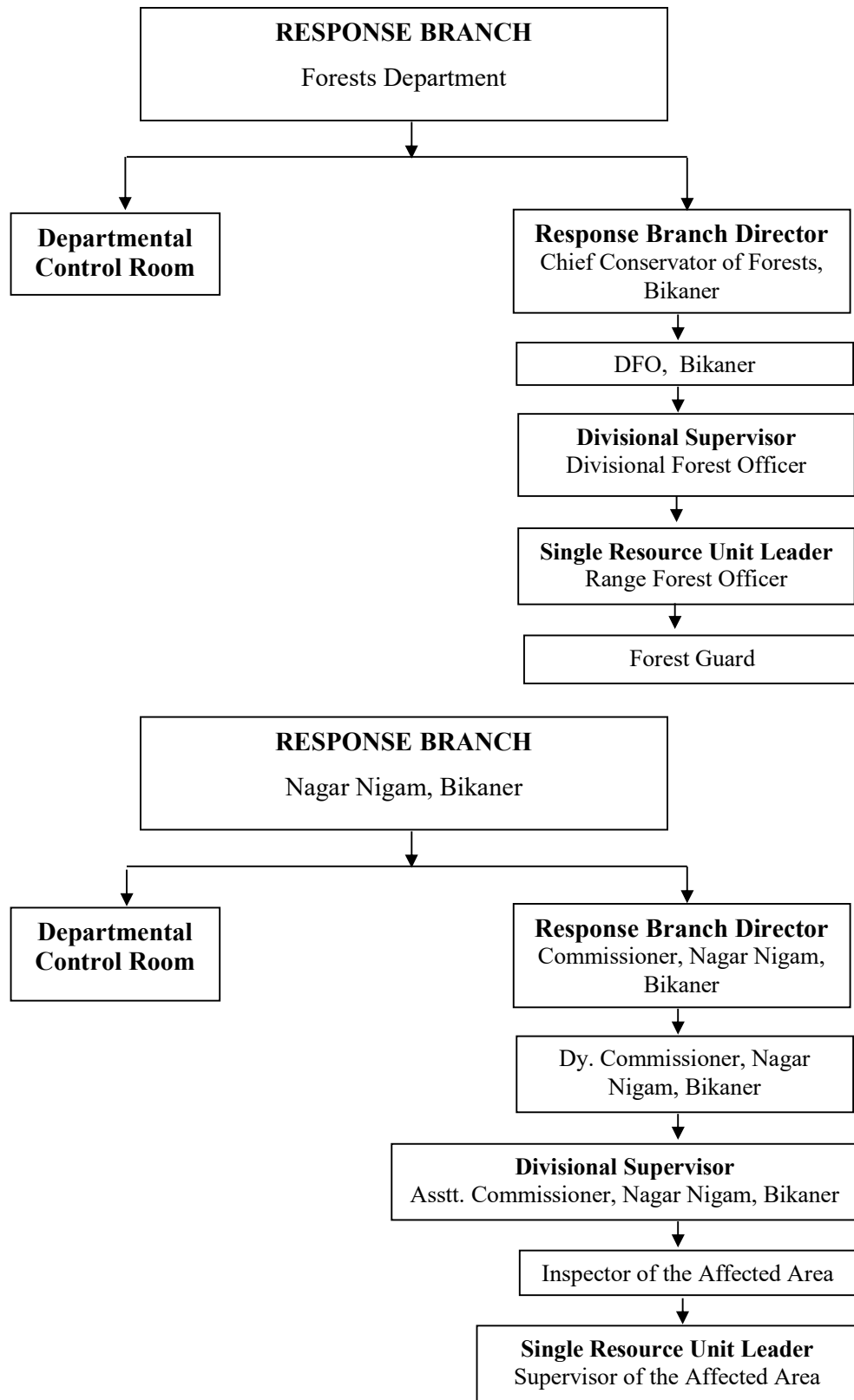


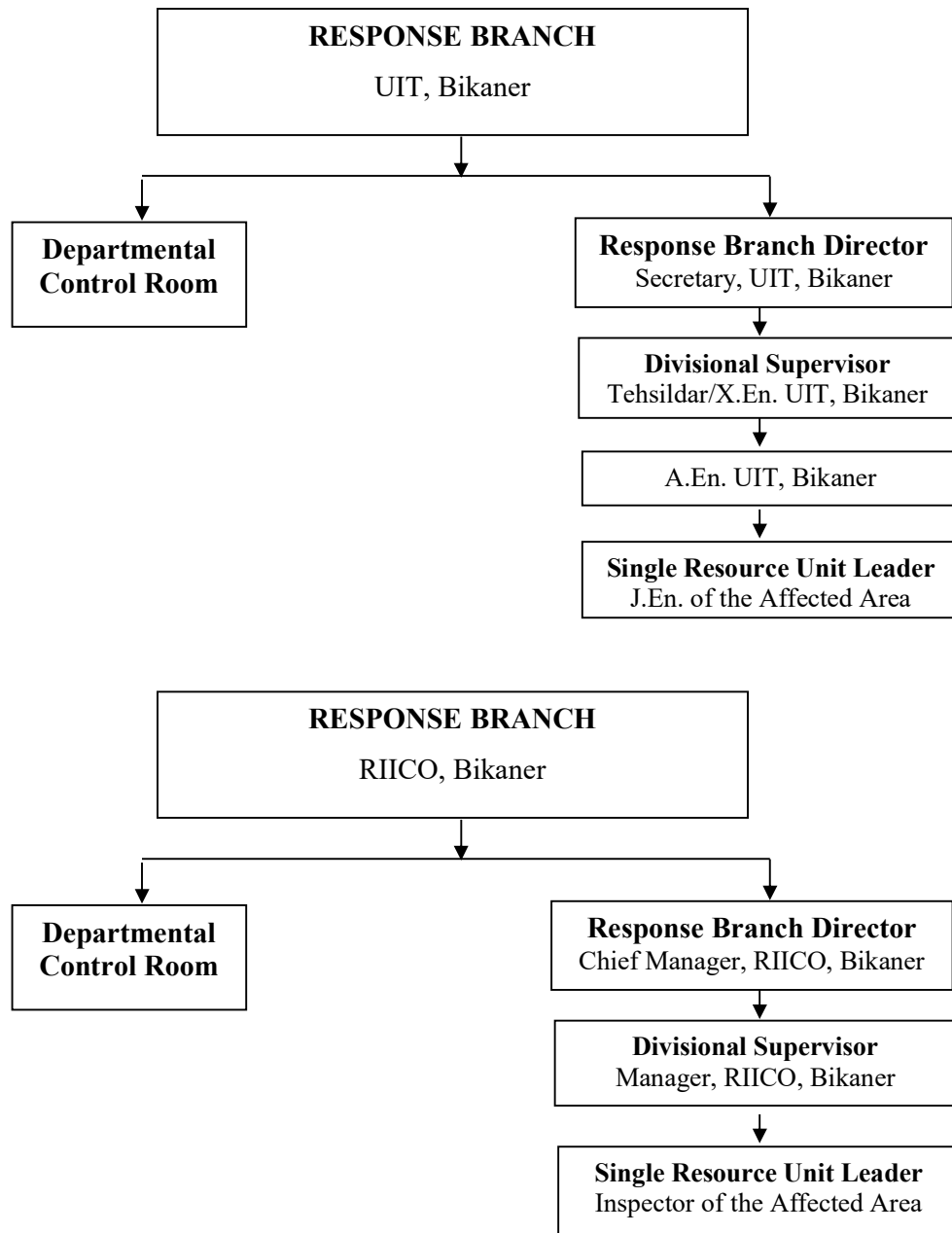


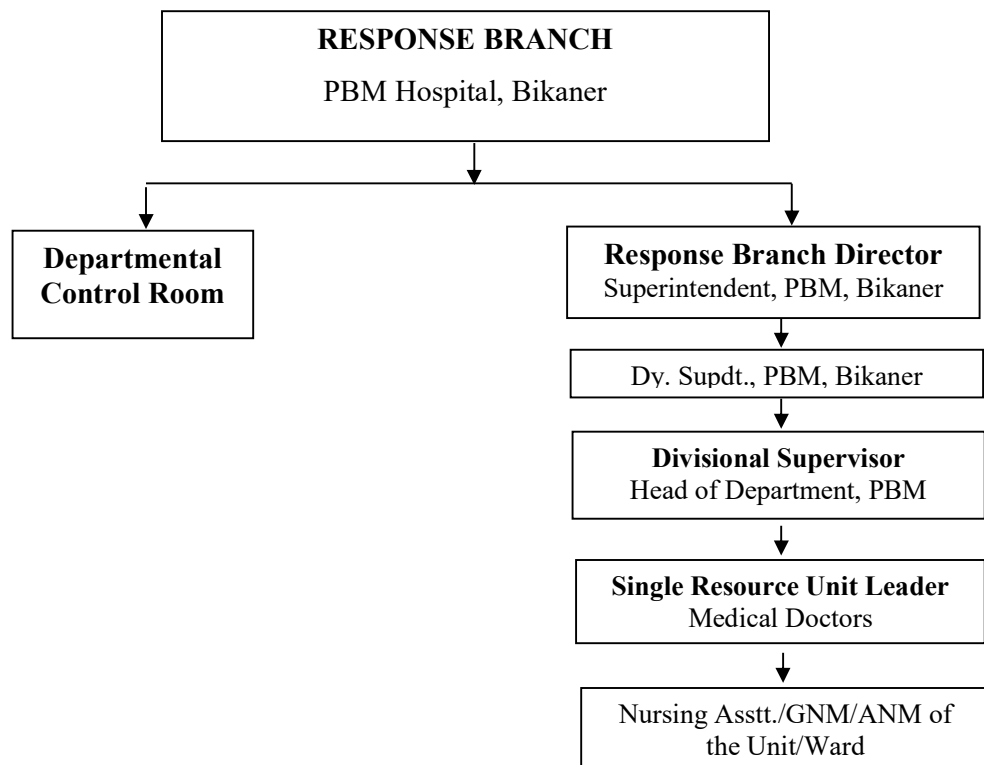
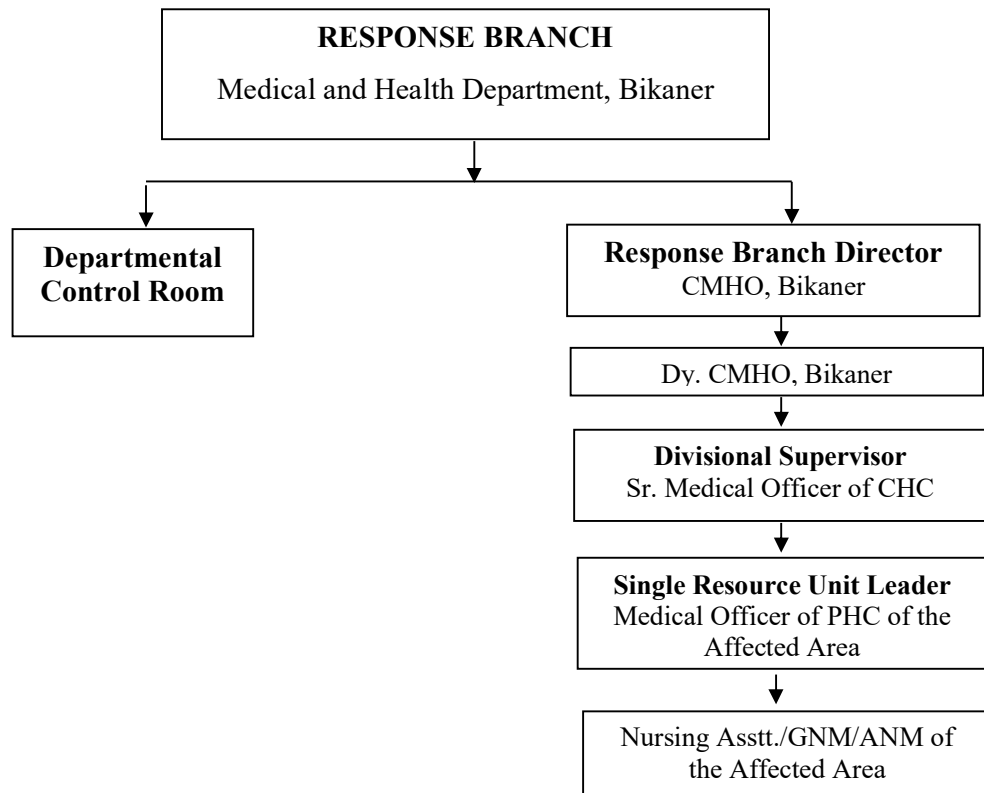


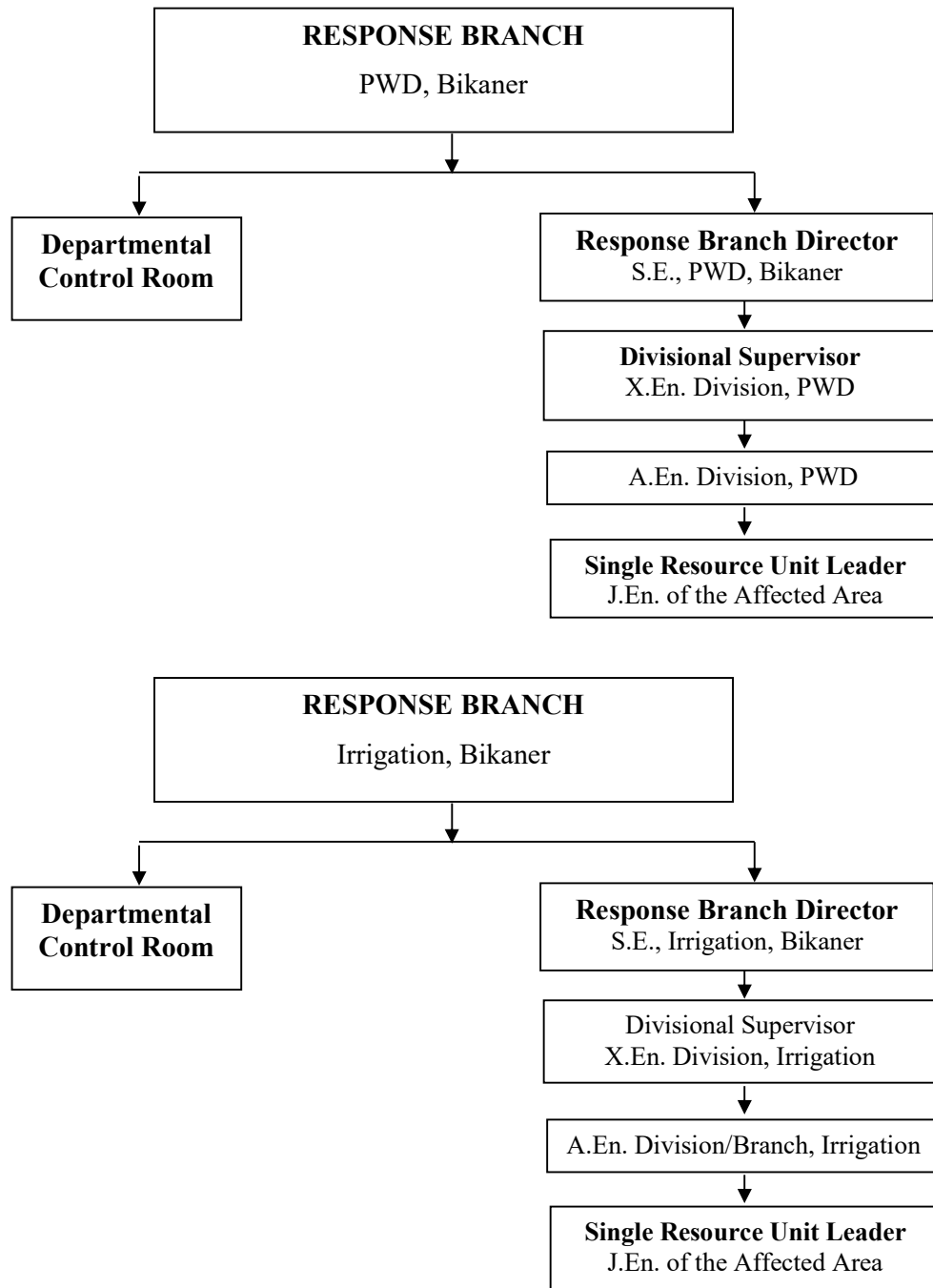


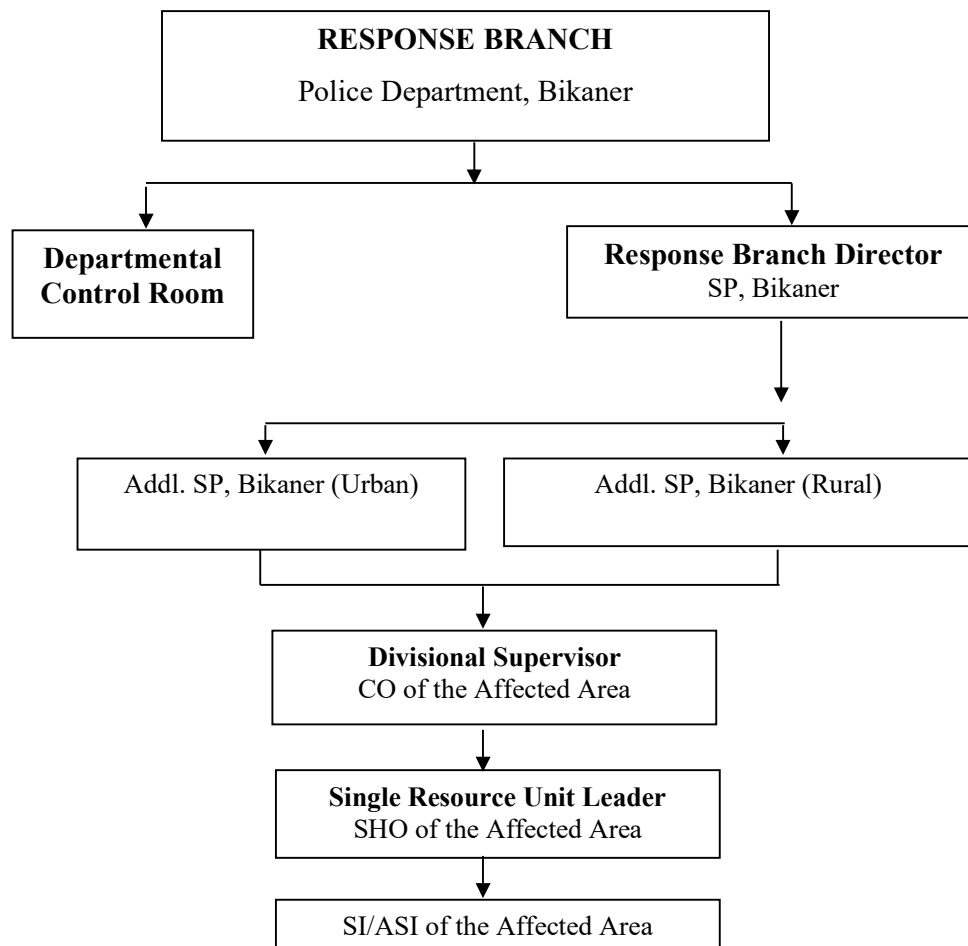
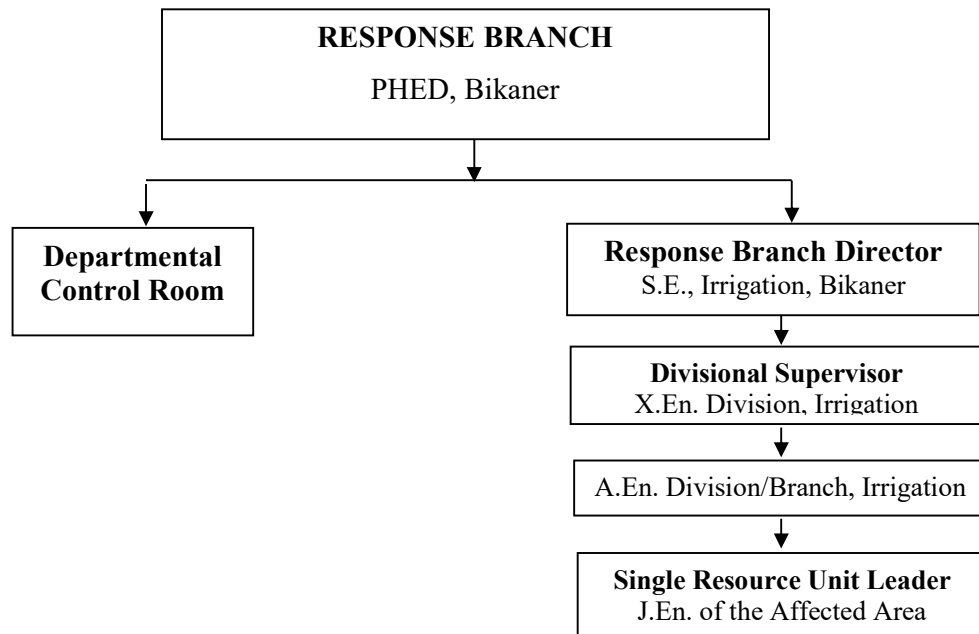












CHAPTER 11

COORDINATION MECHANISM FOR IMPLEMENTATION OF DDMP

Dealing with a major disaster requires resources from outside the district. When the capacities of a district administration are overwhelmed, higher levels are called upon to assist. Likewise, assets and capabilities in the corporate and non-governmental sectors available around the district may be brought to bear. There are many actions undertaken by participants in disaster management that support this goal, both pre-disaster (to reduce potential damage) and post-disaster (to recover from actual damage) and ideally these activities would reduce the potential effects of a disaster significantly. For achieving this objective, the plan should have a pre-established and practiced mechanism for Inter, intra and extra agency coordination.

Communication is the most important tool for effective coordination. Generally, Emergency Operation Centre (EOC) is the enabler of communication and coordination. EOC communication and coordination plan (EoC-SoP) should specify procedures for interfacing with different stakeholders during all phases of emergency, as stated in the DDMP framework.

Networking and coordination among the departments will lay a strong foundation in achieving the goal of mitigating disasters and managing them effectively. While networking specific to the district will incrementally evolve with active participation of government departments and other stakeholders, there are certain tools already available for ready use. The Indian Disaster Resource Network (IDRN) facilitates better coordination and networking among different departments and stakeholders.

11.1 CO-ORDINATION WITH VARIOUS DEPARTMENTS AND AGENCIES

The initial response to a disaster is usually provided by the emergency services supported by local authority, but many agencies can become involved. The emergency services will maintain a state of readiness so as to provide a rapid response and alert local authorities and other services at the earliest. All organizations that need to respond quickly to a disaster will have arrangements that can be activated at a very short notice. These arrangements shall be clearly established and promulgated.

Although involvement of different emergency services like Police, Fire Brigade, Civil Defence, SDRF and Hospital services is inevitable, some other Public Utility Services, such as local bodies, Railways, Air lines, etc., have to be involved also in most cases for dealing with the situation effectively. All such agencies are different organizations, with different hierarchies and chains of command and responsibility. If rescue and recovery work is to be effective, all these departments and agencies have to work together in a coordinated way. They therefore, have to be aware of each other's areas of responsibility and systems of working. Comprehensive discussion and agreement among these agencies in the planning stage and communication of these decisions to lower level functionaries, and of course their capacity enhancement, is of utmost importance. This would not only enable them to know about who is responsible for what, but also make them aware of their own roles and responsibility and can appreciate the need for Multi-Service Involvement in such a situation, avoiding duplication. The DDMA will coordinate all the activities related to Disaster Management at the District level.

Coordination, as between and amongst the various agencies involved in Disaster Management for ensuring implementation of the tasks entrusted to them is an important statutory responsibility of authorities at various levels. The Disaster wise Action Plan of the DDMP has been designed and drafted keeping in view the practicality, transparency in the realistic terms, sequence and requirement of a disaster situation. Therefore, this portion ensures vertical and stakeholder in the most effective manner. However, it is pertinent to mention here that the process of coordination has to be a continuous process and is not limited to any particular situation but always should have a holistic view. Coordination efforts amongst various government departments and other stakeholders generates synergy and involves the bringing together of agencies and functionaries to ensure effective performance. Hence, minor alterations and customizations as per local conditions can always be handy for effective Disaster Management processes.

Annual Report:

At the end of every financial year the DM&R will prepare and publish an annual report. The annual report will provide a full account of the activities of the DM&R during the previous year and will include the following –

- A statement of aims, objectives and vision of DM&R for Disaster Management
- Annual targets and achievement, in physical and financial terms, during the year to which the annual report pertains
- The activities implemented/ executed during the previous year.
- Plan for the next year.
- Any other information as deemed fits.

Institutionalizing Disaster Management Plan:

All departments shall nominate a nodal officer along with establish a control room that will be responsible for disaster management efforts of the respective departments. The nominated officers will prepare SOPs for their respective departments. The nodal officer shall also function as the first point of contact when the DDMP is activated and the EOC is operationalized.

Disaster considerably impacts all the sectors of development resulting in a serious social and economic setback of the overall physical and social development of the community. The process of development and the models of development choices made sometimes lead to disaster risks. There is a paradigm shift in an approach to disaster management in the country. The new approach proceeds from conventional approach that development cannot be sustainable unless disaster mitigation is built into the development process. The new policy also emanates from the belief that investment in mitigation is much more cost effective than expenditure on relief and rehabilitation.

Government line departments and service providing departments undertake several development programmes and execute projects in the districts, panchayats on regular basis. For instance, the Agriculture Department regularly conducts outreach programmes in educating farmers on best agricultural practices. Similarly the DM&R at the state level would coordinate and develop mechanisms where the information transferred to the farmers is disaster preparedness centric. This could be done by training agriculture staff and frontline workers on Disaster Management.

Therefore, these agriculture extension workers could effectively function as field ambassadors of disaster management. This concept is applicable for all the departments and capacity building plays a crucial role. Likewise, Irrigation and PWD

departments regularly execute infrastructure improvement and development programmes. Streamlining disaster management into these regular programmes will help in better preparing to meet the emergency challenges. Several NGOs, Corporate Social Responsibility (CSR) in the state have exclusive social development projects. The state shall reach out to these sectors within the state to impress on them in integrating disaster management efforts as core objectives of their social development projects and also involve them in the state sponsored capacity building initiatives.

11.2 IMPLEMENTATION

The nodal authority for the task of implementation during and after disaster will be the District Disaster Management Authority, Bikaner. For the process of implementation, the most important component of testing the DDMP is to conduct quarterly mock drill or simulation exercise in order to identify the positive elements as well as gaps. Mock drill exercise is required in order to verify the level of preparedness and improve the coordination during emergencies. This has to be based on past experiences and lessons learnt. Mock-drills help in evaluating response and improving coordination within the administration, among various departments, non-government agencies, other stakeholders and communities. They help in identifying the extent to which the plans are effective and also aid in revising these, if required. These drills enhance the ability to respond faster, better and in an organized manner during the response and recovery phase. DDMA, Bikaner must ensure the following:

- Implementation of DDMP within the district, its updation and quarterly mock-drill
- Implementation of all policies and plans of State Government
- Implementation of all NDMA guidelines
- Implementation of all instructions of Revenue & Disaster Management Department
- Department should ensure that all schemes based on the parameters of mitigation, relief and rehabilitation are identified and implemented
- Implementation of all guidelines/instructions related to disasters from GoI and State Government
- All officers to be trained in Disaster Management through HCM, RIPA

- Implementation of National bylaws
- Implementation of Fire-safety bylaws
- Implementation of all on-site plans of the respective industries
- Establishment and proper functioning of Emergency operation Center (EOC)

11.3 IMPORTANT CONTACT AND ADDRESSES

Address and telephone numbers of various departments for the smooth coordination are being provided in the following table:

Table 11.1: Address and Telephone Number of Civil Authorities

Name of Officer	Designation	Phone No.		
		Office	Residence	Mobile
Dr. Bhagwati Prasad	DM	0151-2226000	2226001	9530322633
Ms. Pratibha Deothia	ADM	2226002	2226003	9950382495
Sh. Jagdish Prasad Gour	ADM City	2226006	2226007	9414302990
Sh. Yaksh Choudhary	SDM, Bikaner	2226014	2226015	8011026490
Sh. Sanjeev Kumar Verma	SDM, Loonkaransar	01528-271258	01528-271259	9782464520
Pradeep Kumar	SDM, Kolayat	01534-236082		9414403178
Sh. Kalpit Shivran	SDM, Nokha	01531-220992	01531-220991	9928541327
Sh. Mukesh Chaudhary – I	SDM, Dungargarh	01565-223672	01565-224777	8827425220
Sh. Shyoram Verma	SDM, Khajuwala	01520-232182		6350604691
Sh. Sita Sharma	SDM, Pugal	01523-265449		9413869369
Sh. Rajendra Kumar	SDM, Chhattargarh	01520-242241		9549777454
Sh. Hari Singh Shekhawat	SDM, Bajju	01535-294555		7727044479
Sh. Bhawani Shankar	Tehsildar, Bikaner			8209921677
Sh. Ramswaroop Meena	Tehsildar , Kolayat	01534-236031		9602501970
Sh. Ashok Kumar Swami	Tehsildar, Loonkaransar	01528-272026		9929925839
Sh. Narendra Bapediya	Tehsildar Nokha	01531-220067		9636011239
Sapna Kumari Soni	Tehsildar, Khajuwala	01520-265439		93525500538
Ms. Dipti	Tehsildar, Chhattargarh			7891369029
Sh. Rameshwar Lal	Tehsildar, Poogal	01523-232253		9950571964
Sh. Rajveer Kadwasara	Tehsildar, Dungargarh	01565-222039		9414579679
Sh. Girdhari Singh	Tehsildar, Bajju			9166868657
POLICE DEPARTMENT				
Police Control Room	100	0151-2220601	2220602 2220603 2203400	Helpline 1090
Sh. On Prakash	IG, Bikaner	0151-2226101	2226102	9649412345

Smt. Tejaswani Gouttam	SP, Bikaner	0151-2226111	2226112	9871064211 9983886688
Sh. OM Prakash	Ad. SP, Bikaner City	0151-2226114	2226115	9468572011
Sh. Deepak Kumar Sharma	Ad. SP, Bikaner Rural	0151-2204213		9610514681
Sh. Om Prakash	Ad. SP, Police Advisory Bureau	0151-2241380	2240187	9468572011
Sh. Dewanand	Ad. SP, Crime	0151-2226117	2226116	9413940268
Sh. Pawan Bhadoriya	Dy. SP, Traffic	0151-2220102		8769438985
Sh. Devendra Soni	Incharge Cyber Crime Response Cell			9772756062
Ms. Pawan Bhadoriya	CO City	0151-2226118	2226119	8003773147
Smt. Shalini Bajaj	CO Sadar	0151-2226106		9829232422 8764852081
SH. Rameshwar Lal Saran	CO, Dungargarh	01565-223121		9414092767
Sh. BHawani Singh Inda	CO, Nokha	01531-221574	221575	7023078134
Sh. Arvind	CO, Kolayat	01534-236063		7877087979 7976319415
Sh. Vinod Kumar	CO, Khajuwala	01520-232310	233144	7891663733
Sh. Noparam Bhakar	CO, Loonkaransar	01528-272951		9717977651
SH. Mukesh Soni	CO, Gangasahar			9971658399
Sh. Ramesh Sarwata	Line Officer	0151-2226108		9950080524
Sh. Inshwaranand	Incharge, Police Control Room	0151-2226123		9413164743
Sh. Dharamveer Janu	Dy SP, Abahay Command & Control Center	0151-2226140		9784000187
Sh. Deepak Kumar Sharma	Dy SP Crime & Vigilance	0151-2226117		9610514681 8955753386
Sh. Heera Lal	MTO			8619199229 9414968826
CO Sadar				
Vedpal Shivran	SHO Sadar	0151-2226106		9001881948
Mahaveer Prasad	SHO JNVC			9414653532
Mahesh Kumar Shila	SHO Napasar			9460767503
Navneet Singh	SHO Gangashahar			9413739008
Mahendra Dutt Sharma	SHO Bichhwal			9414635389
Vikram Singh	SHO Nal			941376111
CO Dungargarh				
Ashok Bishnoi	SHO Dungargarh			9461633330
Ramchandra Dhaka	SHO Seruna			9828550096
CO Khajuwala				
Chandra Prakash	SHO Khajuwala			9410213383
Hansraj Luna	SHO Chhatargarh			8852000000
Vikas Bishnoi	SHO Pugal			9414411901
Devilal	SHO Dantor			9410213383
CO Nokha				
Ishwar Prasad	SHO Nokha			9460217888
Rooparam	SHO Deshnok			9414511935

				8385983777
Manoj Kumar	SHO Panchu			9664235271 818841254
Jagdish Prasad	SHO Jasrasar			9772254254 8118841254
CO Kolayat				
Balwant Kumar	SHO Kolayat			7014009209 9799662179
Rakesh Swami	SHO Bajju			9530325239
Dharmendra Singh	SHO Gajner			9414507966
Bhoop Singh Saran	SHO Ranjeet pura			9982486753
Begraj Meena	SHO Hadan			8949489398
CO Lunkaransar				
Chandra Jeet Singh	SHO Lunkaransar			9928110024
Anil Kumar	SHO Mahajan			9928055346
Suresh Singh	SHO Kalu			9414282242 7014797239
Indra Kumar	SHO Jamsar			9413388881

महानिरीक्षक पुलिस बीकानेर रेंज, श्री ओम प्रकाश, मो.नं. 9649412345 (ऑफिस 2226100 / 2226101)				
E-Mail igp-bik-rj@nic.in / igp.bikaner@rajpolice.gov.in				
जिला पुलिस अधीक्षक, तेजस्वनी गौतम 9871064211 / 9983886688 (ऑफिस 2226111 / फैक्स 2204213)				
E-Mail sp-bik-rj@nic.in / sp.bikaner@rajpolice.gov.in				
क्र.सं.	पद	नाम	मोबाईल नंबर	कार्यालय
01.	अति.पुलिस अधीक्षक (शहर)	श्री ओमप्रकाश (अति. चार्ज)	9468572011	2226114
02.	अति.पुलिस अधीक्षक (ग्रामीण)	श्री दीपक कुमार शर्मा	9610514681 8955753386	2226134
03.	अति.पुलिस अधीक्षक, (पुलिस परामर्श केन्द्र)	श्री ओमप्रकाश	9468572011	2241380
04.	अतिरिक्त पुलिस अधीक्षक अभय कमाण्ड एंड कंट्रोल सेंटर	श्री देवानन्द	9413940269	2220602 2206992
05.	अतिरिक्त पुलिस अधीक्षक अभय कमाण्ड एंड कंट्रोल सेंटर	श्री धर्मवीर जानू	9784000187	2220602 2206992
05.	अति. पुलिस अधीक्षक (अपराध एवं सतर्कता)	श्री दीपक कुमार शर्मा (अतिरिक्त चार्ज)	9610514681 8955753386	2226117
06.	अति. पुलिस अधीक्षक पुलिस SIUCAW	श्री सुखविन्द्र पाल सिंह	9414365524	
07.	उप पुलिस अधीक्षक (यातायात)	श्री पवन भदौरिया (अतिरिक्त चार्ज)	8769438985	2220102
08.	यातायात निरीक्षक	श्री रमेश सर्वटा, पु.नि.	9950080524	2226120
09.	आर. आई. पुलिस लाइन	श्री रमेश सर्वटा, पु.नि. (अतिरिक्त चार्ज)	9950080524	2226110
10.	प्रभारी, जिला विशेष शाखा	श्री प्रदीप सिंह, पु.नि.	9414100041 9166722222	
11.	अपराध सहायक कार्यालय हाजा.	श्री आनन्द कुमार	9460126171	2226139
12.	प्रभारी, साईबर काईम रेस्पॉन्स सैल	श्री देवेन्द्र सोनी, उ.नि.	9772756062	
13.	रीडर, कार्यालय हाजा.	श्री हेमराम स.उ.नि.	9414738235	2226139
14.	उप पुलिस अधीक्षक कमाण्ड एण्ड कंट्रोल सेंटर			
15.	उप पुलिस अधीक्षक एस.सी./एस.टी. सैल	श्रीमती शालिनी बजाज (अतिरिक्त चार्ज)	9680168446 8949663768	
16.	उप पुलिस अधीक्षक SIUCAW	श्री		
18.	साईबर सैल	श्री दीपक यादव, है.का.	9829755294 7014443141	
19.	कंट्रोल रूम	श्री ईश्वरानन्द, पु.नि.	9413164743	
20.	एम.टी.ओ.	श्री हीरालाल, उ.नि.	8619199229 9414968826	
श्री पवन भदौरिया 8769438985 वृत्ताधिकारी (शहर)				2226118
01.	थानाधिकारी, पुलिस थाना, कोटगेट	श्री गोविन्द सिंह, पु.नि.	8003773147	2226126
02.	थानाधिकारी, पुलिस थाना, कोतवाली	श्री संजय सिंह, उ.नि.	9414002007	2226127
03.	थानाधिकारी, पुलिस थाना, नया शहर	श्री वेदपाल शिवरान, पु.नि.	9001881948	2226128
04.	थानाधिकारी, पुलिस थाना मुक्ता प्रसाद	श्री अरविन्द भारद्वाज, पु.नि.	9414475996	2946229

श्री सुखविन्द्रपाल सिंह, अति. पुलिस अधीक्षक SIUCAW 9414365524				
01.	थानाधिकारी, पुलिस थाना महिला	श्री रमेश न्योल, पु.नि.	9414634948	2226131
श्रीमती शालिनी बजाज, वृत्ताधिकारी वृत्त (सदर) 9680168446 / 8949663768				2226106
01.	थानाधिकारी, पुलिस थाना, सदर	श्री लक्ष्मण सिंह, पु.नि.	9414140231	2226125
02.	थानाधिकारी, पुलिस थाना, जेएनवीसी	श्री महावीर प्रसाद, पु.नि.	9414653532	2226129
03.	थानाधिकारी, पुलिस थाना, बीछवाल	श्री महेन्द्र दत्त शर्मा, पु.नि.	9414635289	2250251
श्री मुकेश सोनी वृत्ताधिकारी, (गंगाशहर) 9971658399				
01.	थानाधिकारी पुलिस थाना गंगाशहर	श्री नवनीत सिंह, उ.नि.	9413739008	2226130
02.	थानाधिकारी पुलिस थाना, नाल	श्री विक्रम सिंह, पु.नि.	9413376111	2886725
03.	थानाधिकारी पुलिस थाना, नापासर	श्री महेश कुमार शिला, पु.नि.	9460767503	2762421
श्री भवानी सिंह इन्दा, वृत्ताधिकारी (नोखा) 7023078134 (01.07.23 तक कोर्स में) (दि.01.07.23 तक अतिरिक्त चार्ज, आर.पी.एस., श्री मुकेश सोनी 9971658399)				01531 221574
01.	थानाधिकारी, पुलिस थाना, नोखा	श्री ईश्वर प्रसाद, पु.नि.	9460217888	220060
02.	थानाधिकारी, पुलिस थाना, देशनोक	श्री रूपाराम, उ.नि.	9414511935 8385983777	0151 2825246
03.	थानाधिकारी, पुलिस थाना, पांचू	श्री मनोज कुमार, उ.नि.	9664235271 9413178009	01532 255513
04.	थानाधिकारी, पुलिस थाना, जसरासर	श्री जगदीश प्रसाद, उ.नि.	9772254254 8118841254	01531 264464
श्री अरविन्द, वृत्ताधिकारी (कोलायत) 7877087979 / 7976319415				01534 236063
01.	थानाधिकारी, पुलिस थाना, कोलायत	बलवन्त कुमार, उ.नि.	7014009209 9799662179	236044
02.	थानाधिकारी, पुलिस थाना, गजनेर	श्री धर्मेन्द्र सिंह, उ.नि.	9414507966	275052
03.	थानाधिकारी, पुलिस थाना, बज्जू	श्री राकेश स्वामी, उ.नि.	9530325239	01535 232043
04.	थानाधिकारी पुलिस थाना रणजीतपुरा	श्री भूप सिंह सारण, पु.नि.	9982486753	
05.	थानाधिकारी, पुलिस थाना, हदां	श्री बेगराज मीना, उ.नि.	8949489398	
श्री विनोद कुमार, वृत्ताधिकारी (खाजूवाला) 7891663733				01520 232310
01.	थानाधिकारी, पुलिस थाना, खाजूवाला	श्री चन्द्रप्रकाश आरपीएस	9410213383	232217
02.	थानाधिकारी, पुलिस थाना, दंतौर	श्री देवीलाल, उ.नि.	9460872507 7300323507	01523 265715
03.	थानाधिकारी, पुलिस थाना, पूगल	श्री विकास विश्णोई, पु.नि.	9414411901	01523 265410
04.	थानाधिकारी, पुलिस थाना, छत्तरगढ	श्री हंसराज लूणा, उ.नि.	8852000000	01520 242222

श्री नोपाराम भाकर, वृत्ताधिकारी (लूणकरणसर) 9717977651				01528 272951
01.	थानाधिकारी, पुलिस थाना, लूणकरणसर	श्री चन्द्रजीत सिंह, उ.नि.	9928110024	272038
02.	थानाधिकारी, पुलिस थाना, जामसर	श्री इन्द्र कुमार, पु.नि.	9413388881	01522 260915
03.	थानाधिकारी, पुलिस थाना, महाजन	श्री अनिल कुमार, पु.नि.	9928055346	01526 244425
04.	थानाधिकारी, पुलिस थाना, कालू	श्री सुरेश सिंह, उ.नि.	9414282242 7014797239	01528 243800
श्री रामेश्वरलाल सारण, वृत्ताधिकारी (श्रीडूंगरगढ) 9414092767				01565 223121
01.	थानाधिकारी, पुलिस थाना, श्रीडूंगरगढ	श्री अशोक विश्वा, पु.नि.	9461633330	222121
02.	थानाधिकारी, पुलिस थाना, शेरुणा	श्री रामचन्द्र ढाका, उ.नि.	9828550096	222120
श्री पवन भदौरिया, वृत्ताधिकारी वृत्त (शहर) 8769438985				
01.	थानाधिकारी, पुलिस थाना साईबर	श्री देवेन्द्र सोनी, उ.नि.	9772756062	
पुलिस कन्ट्रोल रूम, बीकानेर -0151-2220602 / 2206992 / 2220564 मो.नं. 8764852634				

Health and Medical Services					
S.N.	Name of Officer	Designation	Phone No.		
			Office	Residence	Mobile
1.	Dr. Abrar Panwar	CMHO	2226331, 2226335	2226343	9414117860
2.	Dr. R K. Gupta	Dy CMHO	2544122		9414895659

CONTACT NUMBER OF EDUCATIONAL INSTITUTIONS

SN	Name/Designation	Institution	Contact Number
1.	Registrar	RAJUVAS, Bikaner	9460617520
2.	Registrar	SKRU, Bikaner	0151-2250025 9414421595
3.	Registrar	MGSU, Bikaner	0151-2970177 8905760937
4.	Dr. Digvijay Singh Shekhawat, AD	College Education, Bikaner Region, Bikaner	9414452369 9983007575 9079041619
5.	Dr. Bela Bhanot, Principal	Govt. Dungar College, Bikaner	0151-2528036 2528047 9414242977
6.	Dr. Umakant Gupt, Principal	M.S. College, Bikaner	151-2528163 9414243010
7.	Dr. Vibha Sharma, Principal	Govt. Law College, Bikaner	9351090951
8.	Dr. Anant Joshi, Principal	BJS Rampuria Law College, Bikaner	9829791393
9.	Principal	Binnai College, Bikaner	151-2211621
10.	Dr. Bhanwar Lal Bishnoi, Principal	Gyan Vidhi Law College, Bikaner	9414084505
11.	Commandant, NCC	7 th Raj Battalion, NCC, Bikaner	0151-2528831
12.	Prof. Vimla Meghwal	National Vice President, Scout & Guide, Bikaner	9413940444
13.	Dr. Prashant Bissa	Nehru Sharda Peeth, Bikaner	9829280717
14.	Dr. Shivram Singh Jhaharia	Basic College, Bikaner	9460228220

OTHER IMPORTANT CONTACT NUMBERS

1.	Fire Station	Fire Station	101, 0151-2226915/14
2.	PBM Hospital	PBM Hospital	0151-2226335
3.	BPCL, Khara	BPCL, Khara	0151-2260160
4.	Sh. Narendra Jalthuria	Sr. Factory Inspector	0151-2544709
5.	Sh. Rakesh Mathur	Pollution Board	9509111111

NDRF

Name	Designation	Address	Tele.	Fax.	Mobile
Sh. Prakash Mishra, IPS	DG	Directorate General, National Disaster Response Force (NDRF), Sector-1, RK Puram, New Delhi-66	011-26712851 011-26161442	011-26105912	9818916161
Sh. J K S Rawat	DIG	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26105910 011-26260369	011-26105912	9968262466
Sh. Mukul Goel	IG	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26160252 011-26113014	011-26105912	9871115726
Sh. Rakesh Ranjan	Dy Commandant (Proc)	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26107921	011-26105912	8860136649
Sh. Keshav Kumar	DC (Adm)	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26107934	011-26105912	9015243611
Sh. R K Srivastava	DC (Ops/Trg)	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26181519	011-26105912	9990572600
Sh. Ashok Malhotra	Sr AO	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26105911	011-26105912	011-26105912
Sh. Sudhir Thapa	Inspector Control Room	Directorate General, NDRF, Sector-1, RK Puram, New Delhi-66	011-26107953	011-26105912	9711448595

SDRF

Name	Designation	Address	Tele.	Fax.	Mobile
Control Room, SDRF		Head Quarter Jaipur	0141-2759903	011-26105912	8764873114
Sh. Rajeev Kumar Sharma	DGP SDRF	Jaipur	0141-2740690		9868200221, 9982899999
Sh. Alok Kumar Vashisth	Add. IG, SDRF	Jaipur	0141-2741927		9414178080, 9530428612
Sh. Rajkumar Gupta	Comandant, SDRF	Jaipur	0141-2758422		9928503200, 9829159158
Sh. Dinesh Kumar Rajora	Dy. Commandant	Jaipur			9414581007

	(ADM)				
Sh. Kishna Ram	Company Commandar	SDRF, Polotechnic Collage Hostel, Bikaner			8209016903
SH. Bhagirath Singh	HC	SDRF, Polotechnic Collage Hostel, Bikaner			9413049984
Sh. Sanjay Kulhari	HC	SDRF, Polotechnic Collage Hostel, Bikaner			9887092453

1. SDRF G Company, Bikaner Conducted Rescue Operation During Last 8 Years

Year	Total Rescue	Human Being	Death	Animals
2016	02	-	-	-
2017	09	179	11	-
2018	05	-	05	-
2019	09	15	14	-
2020	20	26	22	06 Chinkara
2021	25	325	23	-
2022	41	211	25	-
2023	07	-	10	-
Total	118	756	115	06

2- Sanction Post in SDRF Bikaner:-

Sr. No.	Company	CC	HC	DVR	CT/MCT	Total
1	G Company Bikaner	1	9	3	82	95

CIVIL DEFENCE

Office Contact No :- 0151-2202014, Control Room Contact No. :- 0151-2202015

Sr. No.	Name Of Official	Designation	Contact No.
1	Smt. Savina Bishnoi	Dy. Controller, Civil Defence	9414273156
2	Sh. Nandram Yadav	SI, Wireless	9214866544
3	Jaiprakash	AAO II	8963002025
4	Sh. Jitendra Kumar Goswami	UDC	9261598415
5	Sh. Shubham Suthar	LDC	8949892562
6	Sh. Khemdas Vaishnav	FireMan	9829722954
7	Sh. Bhagwan Singh	Fireman	9214403403
8	Sh. Ajeet Singh	Fireman	9413769766
9	Sh Sushil Kumar	Driver	7976458909
10	Sh Kishan Singh	Sandesh Wahak	9460021273
11	Smt. Manju Devi	Peon	8302914650

Civil Defence Swimmer and Diver List :-

Sr. No.	Voluntier Name	Member Ship / Year	Contact No.	Comment
1	Sh. Mohd. Shreef	35/2016	9665636446	CD Member
2	Sh. Dinesh Kumar Sharma	37/2016	9672719090	CD Member
3	Sh. Shiv Singh Rajpurohit	32/2016	8769904891	CD Member
4	Sh. Ravi Shankar Sharma	03/2017	9610618500	CD Member
5	Sh. Manmohan Sharma	01/2017	9928509061	CD Member
6	Sh. Gopal Sharma	08/2017	9636728803	CD Member
7	Sh. Shiv Shankar Sharma	11/2017	9001325315	CD Member
8	Sh. Tapan Kumar Sharma	04/2017	9413130956	CD Member
9	Sh. Kaluram	34/2017	9799798390	CD Member
10	SH. Ramniwas Kaswan	26/2020	9660289404	CD Member

HOME GUARD/CIVIL DEFENCE

S.N.	Name of Officer/Employees	Post	Mobile
1	Sh. Chandra Ram	C.C.	9001533939
2	Sh. Banwari Lal	P.C.	7790977230
3	Sh. Mahendra Singh	P.C.	9414582122
4	Sh. Ganga Singh	H.C.	9413940072
5	Sh. Amar Singh	H.C.	9602987672
6	Sh. Shyam Pratap Singh	H.C.	9413159780
7	Sh. Karni Singh	Const.	7340351027

CMHO:

Name of Office	Name of D.D.O.	Mobile No.	E-mail ID
Office Of The Chief Medical & Health Officer, Bikaner	Dr. Abrar Panwar	9414117860	cmho-bik-rj@nic.in
RCHO, Office Of The Chief Medical & Health Officer, Bikaner	Dr. Ramesh Kumar Gupta	9414895659	rchobikaner@yahoo.com
Dy.CMHO (H.), Office Of The Chief Medical & Health Officer, Bikaner	Dr. Indira Prabhakar	7597416864	bikaner_idsp@yahoo.co.in

Dy.CMHO (FW), Office Of The Chief Medical & Health Officer, Bikaner	Dr. Yogendra Taneja	9413155056	fwbikaner@yahoo.com
DTO, Bikaner	Dr. Chandrashekhar Modi	9829236700	dtorjbkn@rntcp.org
PMO, District Hospital, Bikaner	Dr. B.L. Hatila	9414449966	sdm_hospitalbkn@yahoo.com
NCD Cell, Office Of The Chief Medical & Health Officer, Bikaner	Dr. Jethmal Ranka	9413190899	ncd.bikaner.raj@gmail.com

PWD:-

Sr. No.	Name of Official	Designation	Contact NO
1	Sh. Sudhir Kalani	Addl. Chief Engineer	2226500, 2226501
2	Sh. Mukesh Gupta	SE	9828509642
3	Sh. Vijay Sharma	Ex. En. Div I	9828503771
4	Sh. Mukesh Gahlot	Ex. En. Div II	9828521395
5	Sh. Sanjay Choudhary	Ex. En. Nokha Div	9829218339
6	Sh. P R Khudiwal	Ex. En. PMGSY Nokha	7023477966
7	Sh. D.P. Soni	Ex. En. Qual. Control	9871952014
9	Sh. Naresh Joshi	XEN. City Dn.	9828115012
10	Sh. Raghuveer Singh Bithu	Ex.En. PPP	7976005115
11	Sh. Ashok Kumar Goyal	XEN. Electric Dn.	9468794663
12	Sh. Shalini Mohan	J.En. Electric Dn. chrg	9667626069

Child Development and Welfare Department:-

Sr. No.	Name of Official	Designation	Contact NO
1	Smt. Sharda Choudhary	Deputy Director	8619844689
2	Sh. Jugal Kishor	Accountant	9414416705
3	Smt. Kavita Swami	Child Empowerment AD	9509618978

RTO:

Sr. No.	Name of Official	Designation	Contact NO
1.	Sh. Gyandev Vishwakarma, RTO	RTO, Bikaner	9413365477
2	Sh. Jugal Mathur, DTO	DTO, Bikaner	9414143388

Animal Husbandry :

Sr. No.	Name of Official	Designation	Contact NO
1.	Sh. Hukma Ram	Addl. Dir.	8114488140
2	Dr. Virendra Netra	Jt. Dir.	9413481311

CHAPTER 12

STANDARD OPERATING PROCEDURES (SOPs) AND CHECKLIST

Standard Operating Procedure/Guideline is required for handling each of the contingency/emergency situations. The guidelines/Standard Operating Procedures are not to be taken as exhaustive of all the measures necessary for handling particular emergencies. The following are the essential components of SOP.

SOP 1 : Early Warning

Hazards	Nodal Department	Support Departments
Flood	<ul style="list-style-type: none"> • IGNP • Meteorology • Irrigation 	<ul style="list-style-type: none"> • Revenue & Disaster Management • Public Relations • NIC • Police • Development and Panchayat • IS&H, RIICO and DIC • Food and supplies • Municipal Corporation/ Committee • Rajatshan Roadways • Agriculture
Hailstorm, Extreme Temperature, Storms, Heavy Rain	<ul style="list-style-type: none"> • Agriculture 	<ul style="list-style-type: none"> • Revenue & Disaster Management • Public Relations • NIC • Police • Development and Panchayat • IS&H, RIICO and DIC • Food and Supplies • Municipal Corporation/ Committee • Rajatshan Roadways • Irrigation

DEPARTMENT-WISE TASKS/DUTIES

Task	Responsible Person as per IRS	Time Frame
Agriculture (Hailstorm, Extreme Temperature, Storms, Heavy Rain)		
1. Coordinate with IMD and meteorological department at HAU for weather updates	Deputy Director Agriculture as member of T&SC	Ongoing
2. Notify immediately about weather updates to the DC Office, Bikaner and District Control Room	Deputy Director Agriculture as member of T&SC	Within 15 mins of weather update received

Irrigation		
1. Monitor situation round the clock and constantly update directly DC office and District Control Room ²	XEN, Bikaner as RBD	Ongoing
2. Monitor water level for all the surface water bodies like canal, drainage, etc	XEN, Bikaner as RBD	Ongoing
3. Provide information for rising water level and any breach of embankment or likely incident to DC Office and District Control Room	XEN, Bikaner as RBD	Every 24 hrs at fixed time for the month of June to September and immediately in case of any sudden change.
District Administration		
1. Activate District Control Room	DC as RO	Immediately on receiving notification
2. Issue warning based on information recived from HAU, IMD, CWC and other departments/ agencies.	DC as RO	Immediately
3. Forward these warnings to District Control Room for dissemination to all concerned departments.	DC as RO	Within 15 minutes
Revenue & Disaster Management		
1. Share ongoing rainfall data with DC Office and District Control Room	SDM of the Block	Ongoing
2. Ensure dessimination of early warning to concerned tehsildars	SDM of the Block	Within 15 mins of notification received
3. Ensure dessimination of early warning to concerned Patwaris and report back to DRO	Tehsildar	Within 15 mins of notification received
4. Patwari will spread the warning and report back respective tehsildar	Patwari	Within ½ an hour of notification received
5. Finalise safe location for relief camps and temporary shelters	Tehsildar	Within 1 hour of notification received
Development and Panchayati Raj		
1. Ensure dessimination of early warning to concerned BDOs	CEO, Bikaner as a member of T&SC	Within 15 mins of notification received
2. Ensure dessimination of early warning to concerned Village Secretaries	BDO as RBD	Within 15 mins of notification received
3. Ensure dessimination of early warning to concerned villages	Panchayat Samiti Secretary as SRUL	Within ½ an hour of notification received

and areas with the use of public address system available in places like temples, mosque, gurudwara, panchayats and other possible means.		
Police		
1. Ensure dissemination of early warning received to concerned police stations.	Ad.S.P. (Urban/Rural) as DS	Within 15 mins of notification received
2. Ensure dissemination of the information to concerned police posts.	SHO as SRUL	Within 15 mins of notification received
3. Police Stations and Police Posts will be responsible for warning people with the help of public address system.	SHO as SRUL and Inspectors as Single Resource Units	Ongoing
NIC		
1. Upload and update warning status District administration website	DIO, Bikaner	Ongoing
2. Disseminate early warning through mass messaging	DIO, Bikaner	Within ½ an hour of notification received
3. Get information from IMD and CWC website and update District Control Room regarding the same.	DIO, Bikaner	Ongoing after receiving weather update from agriculture, Irrigation, Revenue & Disaster Management and District Control Room
Public Relations		
1. Disseminate information to Newspapers, TV channel including local cable channels and radio which would involve information about current status of Hazard and warning related information	PRO, Bikaner as IMO	Within 24 hours or depending upon the need it can be done earlier also
2. Use publicity van for disseminating early warning	PRO, Bikaner as IMO	With in 1 hour of notification from credible source
Municipal Corporation/ Committee		
1. Ensure dissemination of early warning with the use of public address system of various places like temple, mosque, gurudwara	Commissioner (Nagar Nigam/MC) & EO/Secy. (Municipal Committee)	Within ½ an hour of notification received
RIICO		
1. Inform hazardous units/ industries about the situation	District Industrial Officer (RIICO)	Within 15 mins of notification received

for necessary actions.		
Food and Supplies		
1. Inform all godowns and market committees for necessary action	DSO, Bikaner	Within 1/2an hour of notification received
Roadways		
1. Keep buses in stand-by for evacuation and relief activities.	Chief Manager, Roadways	Within 15 mins of notification

SOP 2 : Communication

Hazards	Nodal Department	Support Departments
All types of hazards	<ul style="list-style-type: none"> Police 	<ul style="list-style-type: none"> District Administration NIC BSNL Development & Panchayati Raj Telecom Companies NGOs

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
District Administration		
1. Activate District Control Room (DCR)	District Collector as RO	Immediately on receiving information
District Control Room		
1. Ensure continuous communication at local, state, national level.	District Collector as RO	Ongoing
2. Maintain communication with various departments and other control rooms in the district.	District Collector as RO	Ongoing
3. Ensure continuous communication with various facilities like Incident Base, Incident Command Post, Staging Area, Relief Camp, etc.	District Collector as RO	Ongoing
Police		
1. Maintain 24-hour continuous communication at local, state, and national level.	District Radio Officer as Com. UL	Ongoing
2. Ensure that in special cases like bomb blast, terrorist attack Police Control room acts as District Control Room and follows the crisis contingency	SP (HQ) as a member of T&SC	Ongoing

plan		
3. Establish (temporary) control room wherever required with the help of SP (HQ)	District Radio/Officer as Com. UL	Within 1 hour of notification
4. Provide emergency communication using Wireless Sets & Walkie Talkie sets, HAM Radios.	District Radio/Comm. Officer as Com. UL	Ongoing
NIC		
1. Facilitate video conferencing at district level.	DIO, Bikaner	Immediately
BSNL, Telecom Companies		
1. Provide communication facility as and when required.	GM/Manager as a member of T&SC	Immediately
2. Restore communication in the affected areas as early as possible.	GM/Manager as a member of T&SC	Immediately
Development and Panchayati Raj		
1. Establish communication centre at block level	BDO as RBD	Immediately
2. Establish communication centre at village level.	Panchayat Samiti Secretary as SRUL	Immediately
All Departments		
1. Maintain continuous communication of departmental control room with field level and District Control room	Second in charge of each frontline department as RBD	Ongoing

SOP 3 : Evacuation

Hazards	Nodal Department	Support Departments
All types of hazards	<ul style="list-style-type: none"> Revenue and Disaster Management 	<ul style="list-style-type: none"> Police SDRF Civil Defence Home Guards Rajasthan Roadways RTA Health Fire Services Public Relations NIC Indian Railways Zila Parishad and Panchayat Samiti Nagar Nigam/Municipalities

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
Revenue and Disaster Management		
1. Ensure information of evacuation to disseminated to all tehsildars/ NT	DRO, Bikaner	Within 10 minutes of notification
2. Disseminate evacuation information to Patwaris	Tehsildar of affected area	Within ½ an hour of notification
3. Ensure evacuation in coordination with Police in urban areas	Tehsildar of affected area	Immediately on notification
4. Ensure evacuation at village level in coordination with village secretary and village level teams. Also take help from Police if required.	Patwari of respective village	Immediately on notification
5. Ensure grievances and doubts of people to be addressed.	Tehsildar of affected area	Ongoing
6. Ensure arrangement of food, water, sanitation, electricity, safety & security and safe shelter for evacuated people	Tehsildar of affected area	With in 1 hour of people being brought to that location
7. Ensure cattles are set free so that they can find safe evacuation	Patwari of respective village	Immediately
Municipal Corporation/ Committee		
1. Ensure dissemination of information regarding evacuation with help of ward members, RWAs, etc.	Commissioner (Municipal Corporation) & EO/Secy. (Municipal Committee)	Within ½ an hour of notification received
2. Ensure dissemination with the use of public address system of various places like temple, mosque, gurudwara	Commissioner (Municipal Corporation) & EO/Secy. (Municipal Committee)	Within ½ an hour of notification received
Development and Panchayati Raj		
1. Inform all the BDO about evacuation.	CEO, Zila Parishad, Bikaner	Within 15 mins of notification
2. Ensure village secretaries get information on evacuation	BDO as RBD	Within ½ hour of notification
3. Ensure information is disseminated at village level	Secretary, Panchayat Samiti as SRUL	Within 1 hour of notification
Police		
1. Cordon off the area	SHO of affected area as SRUL	Immediately
2. To maintain law and order at evacuated sites	SHO of affected area as SRUL	Ongoing
3. Ensure safety of evacuating people specially old aged, disabled, girls and women (including widow), orphan	SHO of affected area as SRUL	Ongoing

children.		
4. Avoid incidents of mobbing in evacuated area.	SHO of affected area as SRUL	Ongoing
5. Protect property and provide security to evacuated areas.	SHO of affected area as SRUL	Ongoing
6. Ensure that each and every person is being evacuated.	SHO of affected area as SRUL	Ongoing
7. Ensure control of human trafficking with special consideration of women, girls & children in coordination with ICDS.	SHO of affected area as SRUL	Ongoing
8. Ensure information on safe route in coordination with traffic police.	SHO of affected area as SRUL	Immediately
Civil Defence and Home Guards		
1. Follow deployment plan of police and assist police, patwari and village sect if needed in the process of evacuation and crowd management.	Commandant	Ongoing
2. Control access to and within an affected area so as to assist rescue, medical, fire, and other essential services.	Dy. Commandant	Ongoing
3. Assist Police in protection of property and provision of security of evacuated areas.	Dy. Commandant	Ongoing
Rajasthan Roadways		
1. Provide appropriate vehicles for evacuation of people and also that for livestock	Chief Manager Roadways as a member of T&SC	Immediately
RTA		
1. Provide appropriate vehicles for evacuation of people and also that for livestock	Joint Secy. RTA as TBD	Immediately
Health		
1. Ensure provision of ambulances for evacuation of sick, old age people and people with disability.	CMHO as MUL	Ongoing
Fire Services		
1. Activate response teams.	AFO as RBD	Within 15 minutes of call for evacuation
Public Relation		
1. Provide information of evacuation and safe sites to TV channel, radio, newspaper.	PRO, Bikaner as IMO	within 1 hour of notification of evacuation
2. Any information of evacuation	PRO, Bikaner as IMO	Ongoing

for media has to approved by DPRO or designated person by DPRO(which include print media, electronic media and internet)		
NIC		
1. Provide information of evacuation, safe sites, and shelter on on the website of District.	DIO, Bikaner	Ongoing
Indian Railways		
1. Provide railway services for evacuation if needed	DRM, Bikaner as Group Incharge (Railway Operations)	As required

SOP 4: Damage and Need Assessment

Hazards	Nodal Department	Support Departments
All types of hazards	<ul style="list-style-type: none"> Revenue and Disaster Management 	<ul style="list-style-type: none"> Police NIC Social Welfare All Departments Housing Board Civil Society Independent Organisations/ NGOs

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
District Administration		
1. Conduct aerial assessment, if devastation is very large.	District Collector as RO	Immediately
2. Ensure transportation needs of Damage & Need Assessment Team are met	Chief Manager, Roadways as LO	Ongoing
3. Activate the Damage & Needs Assessment Team (DNAT) specific to hazard and ensure the team is sent at field.	ADM as IC	Immediately
4. Ensure culture sensitivity through the damage and need assessment	DNAT	Ongoing
5. Prepare Rapid Damage & Need Assessment (RDNA) Report and submit to Control Room	DNAT	Within 1 hour
6. Prepar Preliminary Damage & Need Assessment (PDNA) Report and submit to Control Room	DNAT	Within 24 hours

7. Prepare Detailed Damage & Need Assessment (DDNA) (Report and submit to Control Room	DNAT	Within 72 hours
8. Prepare Interim Report ⁴ of damages caused and needs changing from time to time at the field and submit to Control Room.	BDOs and EO/Secy., MC as Task Force Leaders	Every 24 hours, after the first 72 hours
9. Compile various reports from all the teams and submit to PSC and IC for analysis and planning.	District Planning Officer as SUL	Ongoing
10. Ensure the needs of critical areas are prioritised	ADM as PSC	Ongoing
11. Classify the needs as most urgent/urgent/normal so as to further plan methods to meet them most effectively.	ADM as PSC	Ongoing
12. Monitor and evaluate the efficiency, effectiveness and impact of relief operations as per the needs assessment reports and recommend follow-up.	Jt. Commissioner/SDM as OSC	Ongoing
13. Carry out continuous needs assessment throughout the recovery process in affected areas.	ADM as IC	Ongoing
Police		
1. Ensure safety & security of Assessment Teams at field.	Ad. SP, Bikaner as SO	Ongoing
NIC		
1. Provide technical assistance to develop assessment forms, questionnaires and other per-forma	DIO, Bikaner	Ongoing
2. Provide appropriate Management Information System (MIS) software for data analysis (of the information received from field and other departments)	DIO, Bikaner	Ongoing
All Departments		
1. Ensure that specialist reports are prepared with technical details of all impacts of disaster caused to their respective departments and submit to Control Room.	HODs of all departments as members of T&SC	Ongoing
Social Welfare		
1. Ensure the needs of most	District Social Welfare	Ongoing

vulnerable groups in the affected population is assessed & prioritised.	Officer as a member of T&SC	
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SOP 5: Fire Fighting

Hazards	Nodal Department	Support Departments
Fire	<ul style="list-style-type: none"> Fire Services 	<ul style="list-style-type: none"> Nagar Nigam/Municipal Corporation/Committee Police SDRF Home Guard PWD PHED Health Electricity Private agencies for Fire Fighting Services

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
Fire Services		
1. After getting the information, quickly rush to the scene of emergency/disaster.	FO as DS	Immediately
2. Check for supply of power and then cut power supply of incident area as and when required.	FO as DS	As required
3. Assess type of fire and start fire fighting operation.	FO as DS	Immediately
4. Deploy personnel, equipment and supplies during firefighting operations as per requirement.	FO as DS	As required
5. Procure personnel, equipment and supplies from private agencies as required.	AFO as RBD	As required
6. In case of hazardous material mishap, equip the fire fighting teams with Personal Protective Equipments	FO as DS	As required
7. Carry out necessary evacuation in and around incident area.	FO as DS	Immediately
8. Safe guard the adjacent property/ population from fire by confining the fire spread.	FO as DS	Immediately
9. Search and rescue injured/ trapped/ buried persons and casualties.	FO as DS	Immediately

Police		
1. Cordon-off affected area.	SHO as SRUL	Immediately
2. Clear traffic for emergency service vehicles.	Traffic Inspector	As required
Home Guard		
1. Assist in carrying out necessary evacuation, search and rescue operations in and around incident area.	Commandant	As required
PWD		
1. Ensure debris clearance on roads in its jurisdiction for unhindered passage of emergency service vehicles.	SE as DS	Immediately
UIT		
1. Ensure debris clearance on roads in its jurisdiction for unhindered passage of emergency service vehicles.	Secretary as DS	Immediately
Nagar Nigam/Municipal Corporation/ Committee		
1. Ensure debris clearance on roads in its jurisdiction for unhindered passage of emergency service vehicles.	SE as DS	Immediately
Health		
1. Provide necessary health and ambulance services to the affected people.	CMHO, Supdt, PBM Hospital as DS	Immediately
Electricity		
1. Cut and restore power supply of incident area as and when required.	SE as DS	As required
PHED		
1. Provide water for fire tenders	SE as DS	As required

SOP 6 : Hazardous Material Safety Services

Hazards	Nodal Department	Support Departments
All Hazards	Industrial Safety & Health	<ul style="list-style-type: none"> • Police • Fire Services • Health • Civil Defence • Home Guard • Rajatshan Roadways • Rajatshan State Pollution Control Board • Public Relations

		<ul style="list-style-type: none"> • Agriculture • Animal Husbandry & Dairying • Public Relations • IMD • SDRF • IOCL • BPCL • NCC, NSS, Scout & Guide
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DEPARTMENT-WISE TASKS/DUTIES

Task	Responsible Person as per IRS	Time Frame
Industrial Safety & Health		
1. Provide information regarding precautions (handling and packaging), modes of transportation of hazardous substances, methods of containment and disposal, antidotes, etc. to the responders.	Assistant Director (Chemical)	Immediately
2. Prepare a Rapid Assessment Report (as per Annexure III) of the hazardous materials by detection or identification and affected site in coordination with Police, Health and Fire and communicate the same to the District Control Room.	Assistant Director (Chemical)	Immediately
3. Facilitate expertise/ external assistance if needed.	Dy. Director as a member of T&SC	Immediately
Police		
1. Provide coordinated response to actual or potential discharges/ releases of hazardous materials in coordination with Fire, Health and Transport.	Ad. SP as a member of T&SC	Immediately
2. Cordon off the affected area.	SHO of affected area as SRUL	Immediately
3. Ensure crowd management in coordination with Civil Defence and Home Guards.	SHO of affected area as SRUL	Immediately
4. Assist in safe evacuation in coordination with Home Guards, Fire Services, Rajatshan Roadways and RTA.	SHO of affected area as SRUL	Immediately
5. Respond to highways and road blockages involving hazardous materials in coordination with Roadways, NHAI and RTA.	Traffic Inspector as member of Single Resource Unit	Immediately

6.	Restrict traffic movements near or around affected or exposed area.	Traffic Inspector as member of Single Resource	Immediately
7.	Ensure rerouting of traffic if required.	Traffic Inspector as member of Single Resource Unit	Immediately
8.	Participate in Search and Rescue with Civil Defense, Fire and Health.	SHO of affected area as SRUL	Immediately
9.	Provide communication assistance if needed.	District Radio/Communication Officer as Com. UL	Ongoing
Health			
1.	Conduct triage.	MO as SRUL	Immediately
2.	Conduct appropriate testing for symptoms due to exposure and provide necessary health care, also maintain the records of the same.	SMO (CHC), MO (PHC)	Ongoing
3.	Arrange for relevant emergency medicine, blood and antidote in sufficient quantity.	Dy. CMHO (Medical) as MUL	Ongoing
4.	Arrange for isolation and decontamination ward for the exposed individuals if needed.	Dy. CMHO (Health) as RBD	Immediately
5.	Determine all possible health hazards due to exposure to hazardous material.	SMO of affected area as DS	Immediately
6.	Ensure proper mechanism of disposal of medical waste	PMO, SMO (CHC), MO (PHC)	Ongoing
Rajasthan Roadways			
1.	Identify vehicle for rescue operation.	Chief Manager as a member of T&SC	Immediately
2.	Help in evacuation of the general public.	Traffic Inspector as a member of Road Operations Group	Immediately
Fire Services			
1.	Contain, clean up and dispose the released hazardous materials in coordination with Industrial Safety & Health.	FO as DS	Immediately
2.	Conduct search and rescue in coordination with Police, Civil Defense and Home Guards.	FO as DS	Immediately
Rajasthan State Pollution Control Board (RSPCB)			
1.	Assess the effects of pollutants on environment.	RO, PCB as a member of T&SC	Within 24 hours
2.	Provide expertise on environmental effects of	RO, PCB as a member of T&SC	Within 24 hours

releases of hazardous substances, pollutants, contaminants & oil discharges and environmental pollution control techniques.		
3. Ensure communication with District Control Room (DCR)	RO, PCB as a member of T&SC	Within 24 hours
4. Predict and monitor pollutant movement, dispersion and characteristics (atmospheric or marine) over time.	RO, PCB as a member of T&SC	Within 24 hours
Agriculture		
1. Acquire and disseminate weather data, forecasts and emergency information in coordination with IMD and other reliable sources.	Dy. Director as a member of T&SC	Ongoing
Animal Husbandry & Dairying		
1. Assess health hazards of the affected livestock and take necessary measures.	Dy. Director as a member of T&SC	Within 24 hours
Public Relations		
1. Ensure rumour management and provide necessary information regarding precautions and dos and don'ts.	PRO, Bikaner as IMO	Within 24 hours
2. Ensure use of public address system if needed.	PRO, Bikaner as IMO	Within 24 hours
3. Ensure dissemination of information regarding possible health hazards to the community.	PRO, Bikaner as IMO	Ongoing

SOP 7 : Search and Rescue

Hazards	Nodal Department	Support Departments
All Hazards	Police	<ul style="list-style-type: none"> • Civil Defence • Electricity • Fire Services • Rajatshan Roadways • Health • Home Guard • PHED • PWD • Regional Transport Authority • Revenue and Disaster Management • District Administration • Civil Aviation

		<ul style="list-style-type: none"> Defence forces NDRF/SDRF/BSF Universities/Colleges/Schools
DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
Police		
1. Cordon off the affected area	SHO as SRUL	Immediately
2. Mobilise specialised human resources and equipments required for the operation	SHO as SRUL	Immediately
3. Provide security to personal belongings and corpses	SHO as SRUL	Ongoing
4. Provide communication equipments for the operation	District Radio Officer (DRO) as Com. UL	Immediately
5. Ensure safe transportation of dead bodies	SHO as SRUL	Ongoing
6. In case of hazardous material mishap, equip the search and rescue teams with person protective equipments (PPEs)	ACP (HQ) as SO	Immediately
Electricity		
1. Cut and restore power supplies to affected area as required.	SE as DS	Immediately
2. Arrange power supply to facilitate search and rescue operation	SE as DS	Immediately
Fire Services		
1. Control fire to facilitate other operations	LFM as SRUL	Immediately
2. Conduct search and rescue operation	LFM as SRUL	Immediately
3. Coordinate with Department of Industrial Health and Safety for handling, control and disposal of hazardous material	Fire Officer as DS	Immediately
4. Deploy resources from private agencies if required	Commissioner, Nagar Nigam as RBD	Immediately
PHED		
1. Ensure adequate water supplies for fire tenders	SE as DS	Immediately
PWD		
1. Clear routes/ debris/ building structures to carry out the necessary search and rescue operation.	SE as DS	Immediately
UIT		

1. Clear routes/ debris/ building structures to carry out the necessary search and rescue operation.	SE as DS	
Nagar Nigam/Municipal Corporation/ Committee		
1. Clear routes/ debris/ building structures to carry out the necessary search and rescue operation.	AE as DS	Immediately
RIICO		
1. Clear routes/ debris/ building structures to carry out the necessary search and rescue operation.	SE as DS	Immediately
Home Guards		
1. Provide volunteers required for the operation	Commandant	Immediately
Civil Defence		
1. Provide volunteers and equipments required for the operation	Commandant	Immediately
Medical and Health		
1. Provide ambulance at the site of operation	Dy. CMHO as MUL	Immediately
2. Perform Triage	MO as SRUL	Immediately
3. Provide first aid and emergency health services to the survivors	MO as SRUL	Immediately
4. Transport victims to hospitals, if required	MO as SRUL	Immediately
Revenue and Disaster Management		
1. Deploy trained human resources, divers and swimmers, if required.	DRO as LSC	Immediately
2. Provide equipments like boats, oars, OBM, etc for search and rescue operation	DRO as LSC	Immediately
3. Maintain record of belongings recovered in coordination with Police	Patwari of affected area	Immediately
Rajasthan Roadways		
1. Provide vehicles and equipments for execution of search and rescue operation.	Chief Manager, Roadways as a member of T&SC	Immediately
Regional Transport Authority		
1. Procure and provide vehicles wherever required	RTO as TBD	As required

Indian Railways		
1. Provide human resources and equipments for search and rescue operation, in case of railway accident	DRM, Bikaner	As required
Civil Aviation		
1. Provide aircraft and air support for execution of search and rescue operation, if required	Chief Manager, Civil Aviation, Nal Airport	As required

SOP 8: Medical and Health

Hazards	Nodal Department	Support Departments
All Hazards	Medical and Health	<ul style="list-style-type: none"> • Police • Irrigation • Fire Services • PWD • Indian Railways • District Administration • Private Health Institutions • NDRF/SDRF • NGOs • NSS/NCC/Scout & Guide • Bhamashaah

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
Health		
1. Conduct triage and provide health care as per need.	MO as SRUL	Immediately
2. Screen and isolate the patients from that area if needed.	MO as SRUL	Immediately
3. Assess the medical needs of the affected area.	MO as SRUL	Within 24 hours
4. Increase patient treatment capacities and surgical capacities as per the need.	Dy. CMHO as RBD	Ongoing
5. Ensure adequate stock of regulated drugs, biologics (including blood and vaccines), medical devices (including radiation emitting and screening devices), and other medical products.	Dy. CMHO as MUL	Ongoing
6. Ensure quality check on medical supplies received during relief.	Drug Inspector	Ongoing
7. Ensure availability of blood and blood products through	MO as a member of T&SC	Ongoing

Blood Bank Officer..		
8. Provide behavioral and mental health care wherever required and set up a separate unit for it.	SMO of affected area as DS	Ongoing
9. Facilitate adequate ambulance service for the affected area.	SMO of affected area as DS	Ongoing
10. Ensure proper medical waste disposal.	MOs of affected area as SRUL	Ongoing
11. Establish Public Information Booth	MOs of affected area as SRUL	Immediately
12. Monitor and provide information to families of the victims through public information booth.	MOs of affected area as SRUL	Ongoing
13. Coordinate with IMA to provide with the additional medical necessities and doctors and nurses from private hospitals in times of disaster when the local resources are inadequate/ limited.	MO as a member of T&SC	Ongoing
14. Establish medical posts at shelter and camp site.	MO of affected area as SRUL	Immediately
15. Assess and address nutritional need of affected population.	MO of affected area as SRUL	Ongoing
16. Conduct health surveillance within that area.	SMO of affected area as DS	Ongoing
17. Issue official statements concerning the post-disaster health situation.	MO as a member of T&SC	Immediately
Police		
1. Manage crowd at hospitals and medical posts.	SHO of affected area as SRUL	ongoing
2. Ensure Traffic control.	SHO (Traffic) as SRUL	Ongoing
3. Ensure safety of belongings of injured and dead people at hospital.	ASI of affected area as member of Single Resource Unit	Ongoing
4. Ensure Dead Body Management.	DSP (HQ) as a member of T&SC	Ongoing
Irrigation		
1. Ensure dewatering of flood water/ rainwater in health institutions.	JEn as SRUL	Immediately
Fire Services		
1. Ensure fire safety at hospitals and medical posts.	Commissioner, Nagar Nigam as RBD	Immediately
Indian Railways		
1. In case of train accidents,	DRM as Group Incharge	Immediately

provide immediate medical aid.		
2. Deploy recovery van to the disaster site.	DRM as Group Incharge	Immediately
PWD		
1. Construct temporary site of medical camp.	XEn as RBD	Ongoing
District Administration		
1. Provide air ambulance if needed.	ADM City as LO	Ongoing

SOP No. 9: Dead Body Management

Hazards	Nodal Department	Support Departments
All Hazards	Police Department	<ul style="list-style-type: none"> • Revenue and Disaster Management • Health • Forest • Civil Defence • Nagar Nigam/Municipal Corporation/Committee • Zila Parishad • Town & Country Planning • Public Relations • Development & Panchayati Raj • NGOs • Panchayat and Ward Representatives

DEPARTMENT-WISE TASKS/DUTIES		
Task	Responsible Person as per IRS	Time Frame
Police		
1. Identify dead body with the help of Development and Panchayat, ward member, panchayat member and Resident Welfare Association	SHO as SRUL	Ongoing
2. Maintain record of dead bodies and missing persons through photograph, description, ID, etc	SHO as SRUL	Within 3 days
3. Ensure collection of finger prints, dental examination and other identification marks for forensic identification.	Ad.SP as a member of T&SC	Within 24 hrs.
4. Protect dead bodies	SHO as SRUL	Ongoing
5. Protect belongings of dead bodies	SHO as SRUL	Ongoing
6. Maintain record of temporary disposal of unidentified dead bodies	SHO as SRUL	Ongoing
Health		
1. Ensure post mortem of dead bodies	MO as a member of T&SC	Ongoing

2. Ensure that DNA sample of unidentified dead bodies are taken.	MO as a member of T&SC	Ongoing
3. Arrange Temporary Mortuary	MO as a member of T&SC	Ongoing
Food Supplies		
1. Arrange fuel for cremation and burial	FSO as DS	Ongoing
Revenue and Disaster Management		
1. Identify land for temporary burial in coordination with M.C and District Town and Country Planning.	Tehsildar of affected area	Ongoing
2. Ensure temporary disposal of unidentified dead bodies in coordination with MC, ZP, NGOs, Panchayat, Police, representative of local media and DPRO	Tehsildar of affected area	Ongoing
Forest		
1. Arrange wood for cremation	BFO as DS	Ongoing
Civil Defence		
1. Provide human resource for disposal and other activities	Commandant	As required

SOP 10: Food and Supplies

Hazards	Nodal Department	Support Departments
All Hazards	Food and Supplies	<ul style="list-style-type: none"> Revenue & Disaster Management Warehousing Association/Krishi Mandi Market Committees RTA Health Police Home Guards Women and Child Development Development & Panchayati Raj NGOs Religious institutions Paramilitary forces NDRF/SDRF Defence forces Donor agencies/Bhamashaah NSS/NCC/Scout & Guide

DEPARTMENT-WISE TASKS/DUTIES

Task	Responsible Person as per IRS	Time Frame
Food and Supplies		

1. Based on 'Need Assessment' and availability of stock, procure essential food items with special care for baby food, pregnant ladies, old persons, etc	DSO, Bikaner as a member of T&SC	Within 24 hours after Need Assessment
2. Arrange storage facilities within the staging area for sufficient food storage. If required arrange warehouses in coordination with Warehousing Corporation, HAFED, CONFED, FCI and Market Committees, etc	DSO, Bikaner as a member of T&SC	Ongoing
3. Ensure safety of stored food grains in godowns/ warehouses, etc against inundation and water logging, fire, pest attack and other possible hazards	ADSO as DS	Ongoing
4. Ensure proper arrangement for set-up of community kitchens & ensure its maintenance.	Food & Supplies Inspectors as SRUL	Ongoing
5. Prepare food packets/ kits as per the need assessment.	ADSO as DS	Ongoing
6. Distribute food items with the help of depot holders, fair price shops, NGOs and voluntary agencies.	Food & Supplies Inspectors as SRUL	Ongoing
7. Provide cooking kits (utensils, cooking oil, stove, fuel, match box/lighter, spices, etc) to affected families.	Food Inspectors as SRUL	Ongoing
8. Monitor and coordinate flow of food items to the affected area.	DSO as RBD	Ongoing
9. Keep a check on hoarding and black marketing of relief food material in association with Police.	ADSO as DS	Ongoing
Health		
1. Assess the nutritional need of women, children, old persons and affected population as per minimum standards of relief.	SMO as DS	Ongoing
2. Ensure hygienic conditions from cooking to consumption.	MO as SRUL	Ongoing
3. Check the expiry date of packed food items and ensure the quality of cooked food items.	Food Safety Officer (FSO)	Ongoing
Warehouse Association/Krishi Mandi		
1. Arrange warehouses for food storage wherever needed.	Heads as members of T&SC	Ongoing
Police		

1. Ensure safety and security of food and other commodities in godowns, warehouses and community kitchen and also during transportation and distribution.	Ad.SP as SO	On going
2. Keep a check on hoarding and black marketing of relief food material	Ad.SP as DS	Ongoing
Women and Child Development		
1. Assess the nutritional need of women (lactating, pregnant, old) and children (0-6 years) in affected population	Project Officer as a member of T&SC	Immediately
2. Assist Food and Supplies Department in preparation of food packets/ kits and for bulk distribution of food items	CDPO	Ongoing
Revenue and Disaster Management		
1. Ensure equitable distribution of food items through food and supplies department in all affected areas.	Patwari of the affected area	Ongoing
Development & Panchayati Raj		
1. Ensure equitable distribution of food items through food and supplies department in all affected areas.	Panchayat Secy. & Sarpanch	Ongoing
RTA		
1. Provide Transportation for food material to godowns and affected areas	RTO as TBD	Ongoing
Home Guards		
1. Assist Food and Supplies Department in preparation of food packets/ kits and for bulk distribution of food items	Volunteers	Ongoing

Chapter 13

Measures of Child Safety

13.1 INTRODUCTION

Disasters often strike quickly and without warning. They are frightening for adults, and can be traumatic for children. In any disaster, children are more likely to be injured, and unable to access help or health care. They are also more vulnerable to infections and malnutrition, and are also exposed to greater danger through separation from their families or caregivers. In most disasters, more than a half of the deaths occur in children. The high mortality and morbidity rates among children during and after extreme events was particularly evident following the 2004 Indian Ocean Tsunami, where the largest numbers of fatalities were women and children. The long-term consequence of disasters also affects children more than adults. Consequent psychological problems such as post-traumatic stress disorders and depression impact their physical and mental health, as well as nutrition and education. Therefore the special reference of child safety finds a place in this plan because children are the future custodian of the nation

13.2 DISASTER VULNERABILITY OF CHILDREN

In any natural or manmade disaster, children comprise a particularly vulnerable group because disasters affect children differently than they do adults.

- i. Children are mainly susceptible to aerosolized biologic or chemical agents because they usually breathe more times per minute than adults. It means that they would be exposed to larger amount of these agents in the same period of time. They are also susceptible because some agents (like chlorine) are heavier than air and tend to accumulate close to the ground, precisely in the breathing zone of children.
- ii. Children are extra susceptible to agents that act through the skin because their skin is thinner and they have a larger skin surface-to-body mass ratio than adults.
- iii. Children are more susceptible to the vomiting or diarrhoea producing agents because they have less body fluid reserve than adults. This feature enhances their risk for fast dehydration.

- iv. Children have lesser circulating blood quantities than adults. Hence, without quick intervention, comparatively little quantity of blood loss can rapidly trigger reversible shock into deep irreversible shock or death.
- v. Children consume proportionately greater amount of food and drink than adults hence they are more vulnerable during a food or agriculture incident.
- vi. Young children have an innate inquisitiveness and a propensity to put their hands and objects in their mouths without cleaning them. Therefore they are more susceptible to spread of communicable disease and poisonous substances. Moreover, their immune systems are still developing and they are smaller than adults, hence they usually have a profound impact to these diseases and substances.
- vii. Children also have some noteworthy developmental vulnerability that is not exhibited by adults. Young children do not have the motor skills to run away from the location of an extreme event. Even if they are able to walk, they do not completely able to comprehend how to escape from hazardous situation and keep themselves safe or follow instructions from others.
- viii. When children are exposed to situations that are outside the normal range of human experience (such as hazardous event or a terrorist attack), they may develop a variety of symptoms associated to post traumatic stress disorders. Exposure to media (on television) or being interviewed by the media would traumatize children further.

Therefore every effort should be made to safeguard children from these hazardous situations. Their ongoing needs must be addressed by their parents or other caregivers. When children are separated from their caregivers (whether because of displacement or medical evacuation) priority support should be given to them.

13.3 MITIGATION AND PREPAREDNESS MEASURES

Children are highly vulnerable to disasters and for their survival they are completely dependent upon their parents, their broader families and communities, the institutions and organisations that care for them and teach them. They also do not have the resources or independence to prepare for disasters, so they are often reliant on adults to make evacuation decisions, secure shelter, and provide resources. In disaster planning, there is often an assumption that parents will protect their children in a disaster event; however children are often separated from their parents when they are at school, childcare centres, home alone, or with friends. Therefore disaster mitigation

and preparedness plan for children should give focused attention to safety at the school as well as at the family.

Children are expected to spend majority of their time at school, schools can be a safe haven to help them slowly move back to normalcy. In this context, 'Safe Schools' attain very high importance with a view to ensuring the safety and well being of them. "School Safety" has been defined as the creation of safe environments for children starting from their homes to their schools and back. This includes safety from large-scale 'natural' hazards of geological/climatic origin, human-made risks, violence as well as more frequent and smaller-scale fires, transportation and other emergencies, and environmental threats that can adversely affect the lives of children. A global consensus has developed to a level that school should be not only resumed at the earliest in the aftermath of a disaster but also they should be reinforced with all possible measures to mitigate the adverse impacts of disasters. The school safety planning therefore needs to be undertaken at the district level as well as at the school level.

1. Planning at the district level

The National School Safety Policy Guidelines 2016 drew the attention of the decision makers to the urgent need to strengthen risk resilience of schools in rural as well as urban areas of the country. The Guidelines emphasize on the need for active mainstreaming of disaster risk reduction in all the school education initiatives in the country. This would require a collaborative approach between the district education departments and the district disaster management machinery. Collaboration would be necessary especially for capacity development activities such as sensitization of officials, public awareness on disasters, training of students and teachers; pre-positioning equipments for emergency response, creation of educational material on disasters and, monitoring of risk. The District Disaster Management Plans (DDMPs) therefore need to incorporate concerns and solutions for addressing safety related gaps in all the schools in the district and their surrounding environs. Moreover schools often serve as emergency shelter locations in the immediate aftermath of a disaster. Hence the DDMPs need to make sure that school safety is given due attention in the DDMPs.

In this reference DDMA should strive to:

- Strengthen institutional commitment to safe learning environment for children through co-opting its senior officials at the district level as part of District Disaster Management Authority (DDMA). Constitute a school safety advisory committee at the district level and establish a mechanism for monitoring safety parameters in all schools on a regular basis.
- Plan for safety by preparing design of child friendly spaces for emergencies in advance, ensuring all new schools include safety features and preparing block-wise inventory of schools to be made safer.
- Implementation of safety actions in line with national and state norms on school safety and that all existing as well as new schools conform to safety standards as per the National

Building Code and review progress on non-structural safety measures in schools

- Examine proximity of emergency and crisis service agencies, their capabilities and consequently their expected response time;
- Examine physical capacity of school infrastructure and facilities to resist known hazards that are relevant to the local context;
- Collect information related to existing resources and capacities within the school and the community with regard to disaster management;
- Collect information related to hazards and risks posed by other facilities in the vicinity of the school e.g. any industrial establishments producing hazardous materials.

2. Planning at the school level

Planning for emergencies at the school level cannot be done in isolation from the school community and the official structures responsible for schools. Therefore the planning exercise must be inclusive – involving wide range of representatives from the school and its neighbouring communities, including school administrators, school principals, school staff, students and key representatives from the community.

It is equally important to recognize that planning for safety at the school level is not a one time or static process; it is an on-going dynamic process involving identification of safety needs, developing prevention, response and preparedness protocols, evaluating physical facilities, and providing communication and training for staff members and students.

Therefore schools should develop a School Disaster Management Plan defining procedures to confine, contain, consolidate and control the emergency and crisis, with inputs from DDMA. This plan should include among other aspects, system of warnings, communication protocols within and outside the school, identification of evacuation routes, access by emergency vehicles and care of children with special needs. The School Disaster Management Plan should also include stock piling of emergency equipment and materials, regular maintenance of emergency equipment, arrangements for orderly release of students to guardians and temporary shelter, in case required. A site map should be included in the plan, designating planned evacuation routes and assembly areas. The same should be displayed on each floor of the school. A copy of the plot map and floor plan for each school with these details should be submitted to the DDMA for inclusion in the DDMP.

Implementation of safety actions:

The National Policy on Disaster Management 2009 and the National School Safety Policy Guidelines 2016 highlights the need for structural as well as non- structural safety in schools and educational institutions.

A. Structural safety measures in schools

The structural safety in schools includes appropriate site, design and detailing in new schools and repairing of existing schools. All existing as well as new schools need to conform to safety standards as per the National Building Code. In addition, any other norms prescribed by the state government need to be adhered to. Some of these actions are given below:

- New schools should be located, on a site that has adequate mitigation measures already in place against any imminent natural hazards. Existing schools located in a vulnerable location should either be relocated at a safer site or they should be provided adequate support to mitigate the effect of any natural hazards that may affect the area.
- All new school constructions should include disaster resilient features. Existing vulnerable schools need to be repaired to the desired level of resilience with regard to local disaster risks.
- Prescribed designs may be adapted to accommodate safety and child friendly features.

- For design of structural standards of school building and its components such as corridors, staircases, side areas, quality of construction should be as per the National Building Code 2005. Only non-combustible, fire-proof, heat resistant materials shall be used in school construction.
- Vertical expansion of existing schools shall not be carried out without a fitness certificate for the building from a certified civil / structural engineer.
- Additional classrooms or any other structures requiring horizontal expansion shall be designed taking into account the space availability and while constructing as a continuous unit to the existing structures, these should be designed to have less impact of seismic forces.
- Each class room should have two doors for easy evacuation; adequate openings for ventilation and lighting are some of the essential elements that need to be accommodated in the design.
- Doors opening outside, into open areas or corridors of adequate width are key details that need to be incorporated to make schools safer.
- Schools can have secure shelter rooms, which can be used as library, gym or other facilities when not needed as shelters, thus ensuring they are well maintained and familiar to the school community.

B. Non-structural safety measures in schools

Besides structural safety measures, non structural elements within the school campus need to be addressed to ensure safety. These are mostly low cost, regular maintenance items that the school should address on a regular basis from their own funds. Some of these items have been listed below:

- All items of furniture such as almirahs, shelves, black boards etc., as well as any other items that may fall and cause injury to students and teachers such as ceiling fans, coolers, water tanks etc. need to be secured to the walls or floor.
- Any electrical items such as loose wires that may cause an exigency should be addressed promptly by the school.
- Chemical and any hazardous materials in the school laboratory should be handled and stored as per instructions to prevent any harm to students and school staff.
- Open areas including corridors and evacuation routes including staircases and ramps should be kept free from any hurdles and barriers so that evacuation is smooth and swift.

- Pots / planters in the play ground or corridors should be kept in a manner that does not affect smooth evacuation
- Any derelict or unused building, rubble, etc should be removed to prevent any harmful animals or pests from accessing children.
- Traffic movement outside the school should be managed to minimize risk to students at the time of assembling and dispersal of school.
- During excursions, schools should carefully choose the location of excursion and the itinerary so that exposure to hazard is minimized. Extra precautions should be taken when students are being taken close to water bodies, narrow mountainous tracks etc.
- Buses or any other vehicles owned / hired by the school need to be maintained properly so that students are not at risk of accidents. Drivers need to be appropriately trained on speed limits, stoppage of vehicles as well as crisis management so that children remain safe during their travel to and from schools.
- Emergency equipment such as fire extinguishers, first aid kits, ropes etc. Need to be procured and maintained regularly by the School Authorities.

Fire Prevention and Fire Safety: Fire Prevention and Fire Safety measures should be part of initial school design, and also require regular maintenance and testing. The following must be ensured:

- Flammable and hazardous materials sources are limited, isolated, eliminated, or secured. This includes electrical lines and appliances, heaters and stoves, natural gas pipelines and LPG canisters, flammable or combustible liquids;
- Exit routes are clear to facilitate safe evacuation in case of fire or other emergency;
- Detection and alarm systems (especially urban set ups) are working;
- Fire extinguishers are regularly refilled;
- Other fire materials and equipment are regularly maintained;
- Electrical systems are maintained and operable, in compliance with fire safety design criteria.

Capacity Building for Safe Schools

Capacity building for school safety covers a range of actions spanning from awareness generation and sensitization to training on direct actions required by different stakeholders. Additionally, capacity building is not a one-time activity; it

requires follow up of knowledge and skills imparted and regular value additions in the day to day working of teachers, students and school staff.

Training of students and school staff is important for capacity building for safe schools. It should focus on delineating their expected roles, procedures and responsibilities in relation to any emergency. This training would include strengthening understanding of:

- a. Potential disasters that may affect the school community;
- b. Warning signals, emergency and crisis instructions and mitigation actions for different levels of response.
- c. Evacuation routes, and knowledge of safe spaces and shelter locations;
- d. First-aid and basic life support
- e. Availability of personal and group counselling and support following a disaster; and
- f. Updates in the disaster management plan that affect the total population of the school.

These trainings are necessary for preparation and regular updation of school level disaster management plans as well as for effective execution in case the need arises. Therefore regular practice through mock-drill exercises involving teachers together with children is critical for sustaining the impact of safety initiatives.

3. Planning at the family level

Preparing for disaster helps everyone in the family accept the fact that disasters do happen, and that they can do something about it. Families should work together to identify and collect the resources needed to meet basic needs during and after disaster. When people feel prepared, they cope better.

Families can take following actions to get prepared:

- Call local disaster / emergency management agency and ask about the specific hazards in their community and about the risk to these hazards.
- Learn about community response plans, evacuation plans and routes, community warning systems, and nearby buildings that are designated as disaster shelters.

- Learn about the emergency plans and procedures that exist in priority places where people spend time. Priority locations include places of employment, schools, and childcare centres.

Create a Family Disaster Plan

- Discuss with the family the hazards that could impact local area, the potential for community evacuation or sheltering, and community's warning systems and what to do if they are used.
- Determine where to meet in the event of an emergency. Designate one location right outside the home in case of a sudden emergency, like a fire, and another location outside in the neighbourhood in case one can't return home.
- Ask an out-of-town friend or relative to be the emergency contact. Following a disaster, family members should call this person and tell them where they are.
- Make a communication plan where all family members know how to contact each other.
- Include provisions for pets in family disaster plan.
- Practice the plan. Once the plan is developed, the family need to practice and maintain it. For example, ask questions to make sure that the family remembers meeting places, phone numbers, and safety rules. Conduct routine fire and emergency evacuation drills, test fire alarms, and replace and update disaster supplies.

Assemble a disaster supplies kit

Every household should assemble a disaster supplies kit and keep in up to date. A disaster supplies kit can help a family stay safe and be more comfortable during and after a disaster. Though local officials and relief workers will be on the scene after a disaster, they cannot reach everyone immediately. Also, if one needs to evacuate at a moment's notice he probably will not have the opportunity to shop or search for the supplies his family will need.

- Pack disaster supplies in an easy-to-carry container, such as a duffel bag or backpack and label the container clearly.
- Ask children to think of items that they would like to include in the kit, such as books, games or non-perishable snack food items.

Include such items as:

- Three-day supply of non-perishable food and manual can opener.
- Three-day supply of water (3 litre of water per person per day).
- Portable, battery-powered radio or television and extra batteries.
- Flashlights and extra batteries.
- First aid kit and first aid manual.
- Photocopies of credit cards and identification cards.
- Sanitation and hygiene items (hand sanitizer, moist towelettes and toilet paper).
- Matches in a waterproof container.
- Whistle.
- Clothing, blankets, kitchen accessories and cooking utensils.
- Special needs items, such as prescription medications, spare eye-glasses, hearing aid batteries.
- Items for infants, such as formula, diapers, bottles and pacifiers.
- Tools, pet supplies, a map of the local area, and other items to meet unique family needs.

Ask children to help keep the kit updated by marking dates on a calendar to regularly review and update the kit. Consider having emergency supplies in each vehicle and at place of employment.

13.4 RESPONSE AND RELIEF MEASURES

Evacuation plans should specifically address children, particularly in schools and other places where children gather in large numbers. Child care programs, schools, and before and after school programs must be prepared to evacuate children, take them to a safe place, notify parents, and reunite children with their families.

The importance of family-centred care is critical given the likely unwillingness of many parents to be separated from their children in a disaster, even if both the parent and child are injured and in need of medical care. Children frequently receive more appropriate and more effective care when they are accompanied by a parent or other caregiver. Children should not be separated from their families or caregivers to the maximum extent possible during evacuation, transport, sheltering, or the delivery of other services. If separation was unavoidable, children should be reunited with their

families or caregivers as soon as possible. In particular, children must be transported with at least one parent or caregiver during evacuation of medical facilities. In addition, this transportation and care must be coordinated so patients are moved to facilities with appropriate paediatric resources, whether they are evacuated from field providers, inpatient units, or specialized advanced facilities. Communications must be maintained between medical providers and patients' families or guardians if they are not together.

During a no-notice or mass evacuation, children will likely be gathered in large numbers away from their parents, whether at schools, child care facilities, summer camps, hospitals, or other locations. Plans must account for their safe transportation and reunification with caregivers. Child-specific supplies, such as clothing, food, water, formula, and diapers must be present at evacuation sites and en route, with the assumption that large numbers of children may be transported together.

District administration and NGOs need to determine how to provide quality care for children whose caregivers may be killed, ill, injured, missing, quarantined, or otherwise incapacitated for lengthy periods of time. Legal and other issues must be addressed when these children are taken into the care of the state. Special consideration must also be given to those children who are already wards of the state, either through the foster care or the judicial system. Preventive planning and creation of a system to identify, monitor, and care for these children will help to ensure their needs are met at a time when they may not otherwise be supported or protected.

Children may be at increased risk for being abducted, abused, or neglected during a disaster or times when their parents or caregivers are experiencing unusual stress. If there is a disaster or emergency situation, adults should take care to ensure that children are supervised by sight and sound at all times, reinforce safety rules, and talk to children about what they should do if they need help. Also, professionals who assist with rescue and recovery should recognize that children involved in a disaster may exhibit signs and symptoms similar to those who have been maltreated, and they should consider whether each child may have been victimized or abused. Because most abuse occurs within the family or by someone known to the child, an emergency or disaster can cause increased stress to the family or a child, and children may choose that time to disclose that they have been maltreated. Reports by children of any form

of abuse or neglect should be taken seriously and pursued in an appropriate manner. Lastly, disaster planning efforts should include methods for tracking sexual and other adult predators, especially during evacuations or times when children may need to be housed in a shelter or other communal area.

DISTRICT PROFILE

1. Historical Background

The region of Bikaner, stretching across northern Rajasthan State in India, was earlier known as Jangladesh. It included the present-day districts of Bikaner, Churu, Ganganagar and Hanumangarh. It is bounded on the south by Marwar and Jaisalmer regions, on the east by Ajmer-Merwara region. The Bikaner State was a princely state that was founded in the 15th century in this region. After becoming a British protectorate in 1818, it persisted until shortly after India's Independence in 1947.

Prior to middle 15th Century rule, the region that is Bikaner was a barren wilderness called "Jangladesh". The north-eastern and north-western Rajasthan, known by the name Jangala Desh since Mahabharata times, was inhabited by Jat clans ruled by their own chiefs and largely governed by their own customary law. The chiefs enjoyed a large amount of autonomy, from their nominal overlord, the sultanate of Delhi.

In the year 1465 Rao Bika, a Rathore Rajput, and an elder son of Rao Jodha, king of Marwar, provoked by a stray comment by his father, left Marwar (Jodhpur) with a small contingent of Rathore warriors (500 soldier and 100 cavalrymen) to create his own kingdom. He was accompanied by his uncle, Rawat Kandhal, who provided politico-strategic advice.

Encouraged by the mystic Karni Mata, whom he had met early in his travels, he took advantage of the internal rivalries of the Jat clans so that by 1485 he was able to establish his own territory and build a small fort called Rati Ghati at the city which still bears his name. In 1488 he began the building of the city itself. In the beginning the neighboring Bhati chiefs were suspicious of the new growing power in their vicinity. Karni Mata, who had become the *kuladevi* of Rao Bika brought the rivalry between the Rathore & Bhatias to an end by inspiring Rao Shekha - the powerful Bhati chief of Pugal, to give the hand of his daughter in marriage to Rao Bika. This consolidated Rao Bika's power in the region and proved to be a milestone in the history of the state.

Upon Rao Jodha's death in 1488 Rao Bika stormed Mehrangarh Fort, an event that was to lead to 200 years of intermittent wars between Marwar and Bikaner.

2. Location and Extent

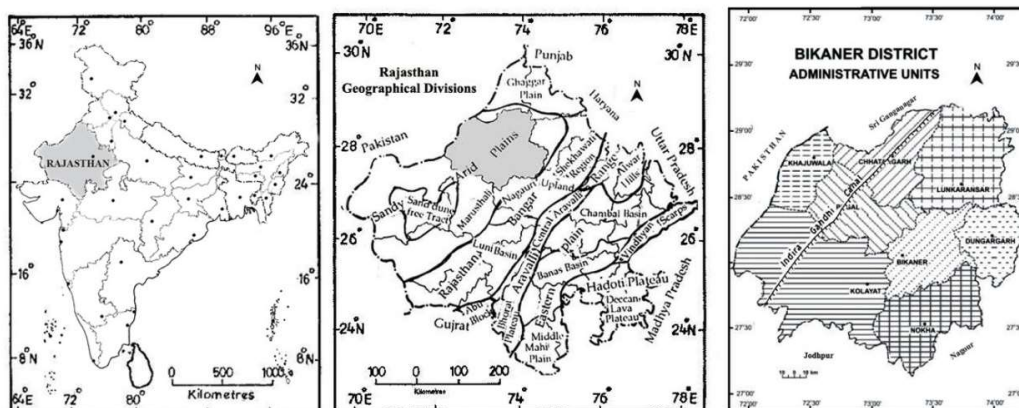
Bikaner district is spread over an area of 30289.62 sq. km. and lies in the north-north western part of Rajasthan. It is located between 27°11' and 29°03' north latitudes and 71°54' and 74°12' east longitudes. It is bounded by Sri Ganganagar district in the north, partly by Jaisalmer district and Pakistan in the west, Churu and Hanumangarh districts in the east and Nagaur and Jodhpur districts in the south and south-west respectively. Its international boundary with Pakistan is 170 km. The location, area and altitude of Bikaner district are given in following Table 1.

Table 1: Location, Extent and Altitude of Bikaner District

Tehsil	Area (sq km)	Latitude North	Longitude East	Height above MSL (m)
Bikaner	3192.52	27°15'-28°22'	72°06'-73°46'	238
Lunkaransar	5036.58	28°17'-29°03'	73°05'-74°12'	200
Sridungargarh	3045.62	27°44'-28°22'	73°39'-74°22'	290
Nokha	3800.97	27°11'-27°58'	73°00'-73°53'	334
Kolayat	7957.62	27°27'-28°23'	71°54'-73°10'	230
Pugal	3276.23	28°02'-28°42'	72°29'-73°13'	184
Khajuwala	2038.91	28°23'-28°52'	72°12'-72°44'	161
Chhatargarh	2157.15	28°17'-28°58'	72°44'-73°15'	215
Bikaner district	30289.62	27°11'-29°03'	71°54'-74°22'	150-353

Source: District Statistical Outline, Bikaner 2004.

Map 1: Location of Bikaner District



3. Geohydrological Formation

The most part of the district is covered with aeolian and alluvial of Quaternary age. Towards the west and south-west of Bikaner city, sandstone and conglomerates with calcrete, belonging to the Quaternary Age itself, occur in Kolayat tehsil mainly. The thickness of the underlying alluvial deposits is more than 30 m in northern and north-eastern parts of the district. Towards the east and south of Bikaner city, alluvial deposits are 10-30 m thick. In the west, these are 2 to 5 m thick. Alluvial deposits are overlain by Aeolian deposits, which are more than 50 metres thick in northern parts, between 25-50 m in the eastern parts but are reduced to 1-5 m only towards south-west of Bikaner city. Calcretes are common to Quaternary and even older landscapes. Though sometimes concealed by Aeolian sediments, the calcretes mostly lie at or close to the surface. They form the calcic horizon of the upper soils. Their thickness is such that it can be concluded that calcretisation has been an integral part of the aggradation process of the alluvial plains. Huge masses of secondary lime in the area may be due to arid to semi-arid moisture regime in the area during the Quaternary (Dhir, 1977a).

The district has hydro-geologically been divided into four formations - Alluvium, Tertiary, Nagaur and Bilada. The northern parts along the Indira Gandhi Canal comprising Khajuwala, Pugal, Chhatargarh and western parts of Lunkarnsar and Kolayat tehsils have alluvium formation. It is a good aquifer but has saline water which is not suitable for drinking and irrigation. The depth of water is 10-40 m. Kolayat, Bikaner, Dungargarh and southern parts of Lunkaransar tehsils have tertiary formation. It is a potable water belt and has good quality of water with 40-120 m deep water table. The dominance of Nagaur and Bilada formations is in the south-eastern parts of Bikaner district, having normal potable water with some pockets of saline water. The depth of water table ranges from 90-130 m. Here, the water level is decreasing 3-4 feet annually, which shall create water crisis in the coming years.

4. Physiographic Structure

Almost the entire district is devoid of rocky exposures, except near Kolayat and at a few places in the southern parts of Nokha and Dulmera. The district of Bikaner is, thus, a vast sandy tract. All eight revenue tehsils except Kolayat, are covered with sand. Rocks, locally known as *magra*, are found in parts of Kolayat

tehsil. In the magra area, various types of sand stone, clay and limestone are found at different levels.

The attitude of the district roughly varies from 150 m to 330 m. Average elevation of the undulating desert terrain is about 200 m. The regional slope is towards the west and southwest. The major part of the district is comprised of desolate and dreary area which forms part of the Great Indian Thar Desert. There are two natural divisions of the district namely (i) North-western desert, and (ii) South-eastern semi-desert.

The district has no rivulets or streams of any significance. Small ephemeral streams flow in the vicinity of Gajner, Kolayat and Gura. Natural inland depressions retaining some water during the Rainy season, are located near Lunkaransar, Kolayat, Jamsar and Nal. The former is an example saline depression (ran or plays), which occur at several places in the desert of Thar.

Sand dunes and interdune plains of recent origin cover most part of the district. Most of the high sand dunes belong to earlier arid phase or phases. At present Aeolian processes are mostly dominant to the west of 250 mm isohyet. Isolated barchans with an average height of 2 to 8 m are found in the district. These barchans move north-eastward, driven by the south-west winds during summer. Transverse dunes occur in a small area west of the district as well as in the Dungargarh tehsil. Parabolic dunes are a major component of the dune fields. In most cases, the parabolic occur in clusters. Majority of dunes were formed in an earlier dry phase and are now stabilized with natural vegetation. Many stable dunes are variously reactivated due to human and livestock pressures. Migrating sand is threatening the canals and roads, besides spreading eastwards.

5. Climate

The district has a dry climate, with large variations of temperature and scanty rainfall. Hot winds blow in summer, sweeping away and creating new sand dunes. Summers are very hot and dry. Days are very hot with scorching sun. Sometimes maximum temperature of day time reaches up to 49°C in the month of May and June. The mean maximum temperature remains between 31-42°C during summers. May is the warmest month of the year. Winters are severe and the temperature sometimes touches freezing point. The winter season enjoys clear sky, low humidity, high diurnal

ranges of temperature and mild easterlies. The mean temperature of this season ranges between 14-16°C. The minimum temperature touches 2°C due to cold wave coming from the Himalayas, and western disturbances. Due to western disturbances, cyclonic conditions occur in north-west India from November to May. It causes rainfall in the winter season which is popularly known as *mewat* in Rajasthan. January is the coldest month of this season.

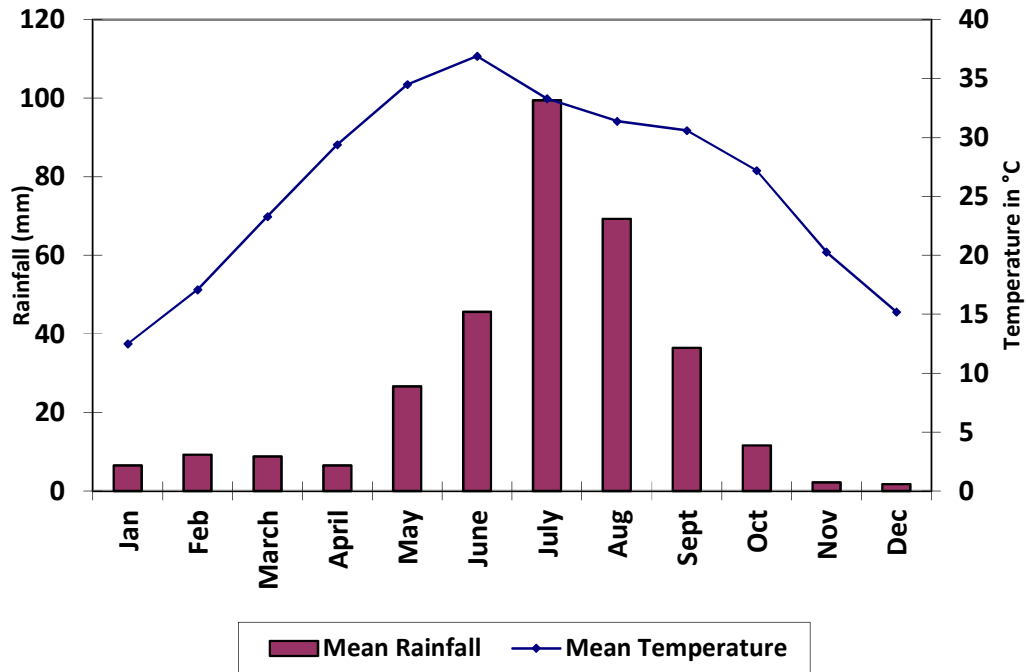
Normal annual rainfall in the district is 23.37 cm and the average humidity percentage is 45. The rainfall is irregular and uncertain. Some rain occurs in winter due to western disturbances. It decreases towards north-western parts of the district. Bikaner district is influenced by cold wave during winter and warm winds (*loo*) in summer. Winds during most part of the year are south-western which associate with dust storms in summer due to their swiftness. In winter, the dominating winds are north and north-eastern. These chilly Himalayan winds bring down the temperatures. Relative humidity is an important phenomenon of climate. It changes daily and annually but generally remains low. The maximum relative humidity is found during rainy season from July to September and during winter from December to February (Table 2 and Fig. 2).

Table 2: Climatic Conditions in Bikaner District

Months	Mean rainfall (mm)	% of annual	Mean Temp (°C)	Relative Humidity (%)	Seasonal % value
Jan	6.5	2.0	12.5	47.0	12.5
Feb	9.2	2.8	17.1	41.0	
March	8.8	2.7	23.3	31.5	
April	6.5	2.0	29.4	21.0	
May	26.6	8.2	34.5	22.5	
June	45.6	14.0	36.9	37.5	18.0
July	99.5	30.6	33.3	56.5	
Aug	69.3	21.3	31.4	61.5	
Sept	36.4	11.2	30.6	56.0	
Oct	11.6	3.5	27.2	38.5	69.8
Nov	2.2	0.6	20.3	40.0	
Dec	1.7	0.5	15.2	48.0	

Source: Indian Meteorological Department, Bikaner

Fig. 2: Mean Rainfall and Temperature in Bikaner



6. Soils

Most of the district is covered with aeolian sediments. As far the soils on these sediments, dunes and associated sandy plains lack evidence of pedogenesis. These are pale-brown to yellowish-brown in colour, structureless, very friable and slightly calcareous. These sediments may occasionally be altered towards a higher yellowish-brown surface, soil layer and a little redistribution of lime as root casts and thin laminae. Such soils are called *Torrripsamments*.

The Aeolian plains that remain stable for a long period undergo reworking by water and show some pedogenic features, including slightly higher content of clay and silt as also a very weak development of structure, as compared to dunal soils. Partial leaching of lime, as secondary lime, leads to soft spongy or partially crystalline nodules at 70-120 cm. These soils are now placed in a new sub-group *Psammentic camborthidsi*. The floor of the basins is not only more calcareous, but also shows moderate to strongly developed layer of hard and crystalline lime modules 0.5-3 cm in size, forming 50-80 percent volume of the soil. The low-lying areas and interdunes show light grey soils with a weakly blacky structure. These are extraordinarily enriched with lime and gypsum and are, accordingly, called as *Calcic/Petrogyptic*

gypsiorthids. All such soils occur to the north, east and south of the district.

In the areas adjacent to Ganganagar district, coarse loamy Comborthias with youngest alluvial *Torripluentic Comborthids* or with salt *salic Torrifluentic Comborthids* occur. The gently sloping plains in Kolayat have shallow soils where the upper stratum is strongly cemented by lime to form a hard-indurated layer. These are, sometimes, covered with aeolian and alluvial sediments. Such hard-pan soils are referred to as *Paleorthids* (Dhir, 1977b).

Soils of the district are reasonably fertile, wherein even the coarser soils of the dunes have adequate potasium, calcium and micro nutrients (Sharma *et al.*, 1985). The humus and nitrogen contents are low to very low but still don't hinder a healthy natural vegetation cover, inspite of scanty rainfall.

7. Minerals

Fuller's earth (*Multani mitti*), gravel, lignite and gypsum, white clay, yellow ochre and grit are important economic minerals produced in the district. Gypsum beds upto 30 m thick, and the best quality available in India are found in large quantities in Jamsar village of Bikaner tehsil and, to a lesser extent at Lunkaransar, Dulmera and Dhirera. There are deposits of Fuller's earth at villages Palana (Bikaner tehsil) and *Mudh* (Kolayat tehsil). Red sandstone quarries are located near Khari and Dulmera villages in Lunkaransar tehsil. Impure limestone, known as *Kankar*, is excavated all over the district. Glass sand is found near *Mudh*. Lignite is available at various places in Kolayat tehsil and village Palana.

Sandstone, limestone, gravel and grit are the main building materials found in the district. The sandstone quarries at Dulmera are of fine red brown colour. The deposits of limestone occur in Nokha tehsil. The limestone found there is high in dolomite. The main source of grit and gravel are at Gangashahar, Garsisar, Shivbari, Darbari and Nal which are used locally for lime burning as well as for ballast.

Especially Bikaner is not endowed with metallic minerals. But it is fairly rich in minerals which are formed by deposition of sediments. Bikaner has a wealth of non- metallic minerals such as silica sand, gypsum, lignite, ball clay and building material viz gravel, sandstone and limestone. The important minerals available in Bikaner district are follows:

Although Bikaner district does not enjoy bounty of metallic minerals, it is

fairly rich in sedimentary minerals such as: silica sand, gypsum, lignite, ball clay and building material viz gravel, sandstone and limestone. Almost the entire district is devoid of rock exposures except near Kolayat and at a few places in the southern parts of Noha and Dulmera. District Bikaner is thus a vast sandy track except Kolayat are covered with sand of Rock locally known as “Magra’ are found in parts Kolayat tehsil. In the Magra areas various types of sand stone, clay and lime stone are found at different levels.

Table 3: Production and Sale of Minerals in Bikaner (2001)

S. No.	Minerals	Production ('000 ton)	Average employed person / per day (in No.)
1.	Ball clay	599.46	374
2.	Ochre's	0.63	2
3.	Gypsum	1780.58	220
4.	Salenite	5.09	4
5.	Brick earth	4268.28	17073
6.	Grit kankar	718.29	958
7.	Masonry stone	138048	553
8.	Multani mitti	---	---
9.	Limestone	13.23	52
10.	Gravel	810.69	1080
11.	Fuller's earth	1.53	5
12.	Lime kankar	0.50	1
13.	Silica sand	3.732	2
14.	Sand stone	15.25	243
15.	Salt Peter	4.79	-

Source: Office of the Director, Mines and Geology Department, Udaipur, Government of Rajasthan.

8. Flora and Fauna

The Indian desert is characterized by high temperatures in summer and low temperatures in winter, low rainfall, the annual precipitation being below 30 cm in certain parts and large sandy treeless areas often formed into high and shifting sand dunes. Even with such an inhospitable environment, the desert is fairly rich in animal life though much of it except birds, some mammals and a few others are largely hidden from view because they live in their own special niches such as under stones, among plant roots, burrows (rodents and reptiles) and long tunnels (termites and ants).

Vegetation shows obvious adaptations to desert conditions by acquiring such characteristics as thick sap, fleshy parts, reduction of leaves, and presence of thorns etc. In some areas, plants may grow profusely at certain seasons. Some plants remain beneath the ground in the form of bulbs, corms, tubers and fleshy roots, but the perennials remain above ground in all seasons.

The vegetation of Bikaner district falls under the broad natural division of tropical dry forest. Due to scanty rainfall and extremes of temperature, there is high evaporation and loss of moisture, converting the district into a typical arid tract, however, where the moisture accumulates to some extent during rains a few scattered stunted trees not taller than 6 m high are found. The trees and bushes which grow there are insufficient even to fulfill the local requirements for construction of houses, making agricultural implements and for fuel purposes.

The most common trees found in the district are *Khejri* (*Prosopis cineraria*), *Rohira* (*Tecoma undulata*), *Ber* (*Ziziphus jujub*) and *Jal* or *Pilu* (*Salvadora oleoides*). Some other trees found on embankments in the vicinity of tanks or in the gardens are *Shisham* (*Dalbergia sissoo*), *Ber* (*Ficus bengalensis*), *Pipal* (*Ficus religiosa*), *Siris* (*Albizia lebeck*) etc. Among the shrubs found in the region mention may be made of *Aak* (*Calotropis procera*), *Jhar Ber* (*Ziziphus nummularia*), *Phog* (*Calligonum polygonoides*), *Bui* (*Aerva tomentosa*), *Pala* (*Ziziphus rotundifolia*), *Karel* (*Capparis aphylla*) and *Thor* (*Euphorbia nivulia* and *Euphorbia royleana*). *Bhurat* (*Cenchrus barbatus*), *Sewan* (*Elionurus hirsutus*), *Munj* (*Saccharum griffithii*) and *Kans* (*Saccharum spontaneum*) are some of the important grasses that grow in the district.

9. Landuse

Bikaner district has 30.35 lakh ha (8.86%) of the total reported area of Rajasthan state. Out of the total reported area of the district 3.11 % area is under forest, 9.87 % area under land not available for cultivation, 22.76 % is other uncultivated land excluding fallow lands and 12.10 % fallow land and 12.04 lakh ha. Therefore, it can be concluded that half of the total area is not available for agricultural purposes and only 11.25 % area of the district is area under sown more than once in Bikaner district.

Table 4 : Landuse in Bikaner district

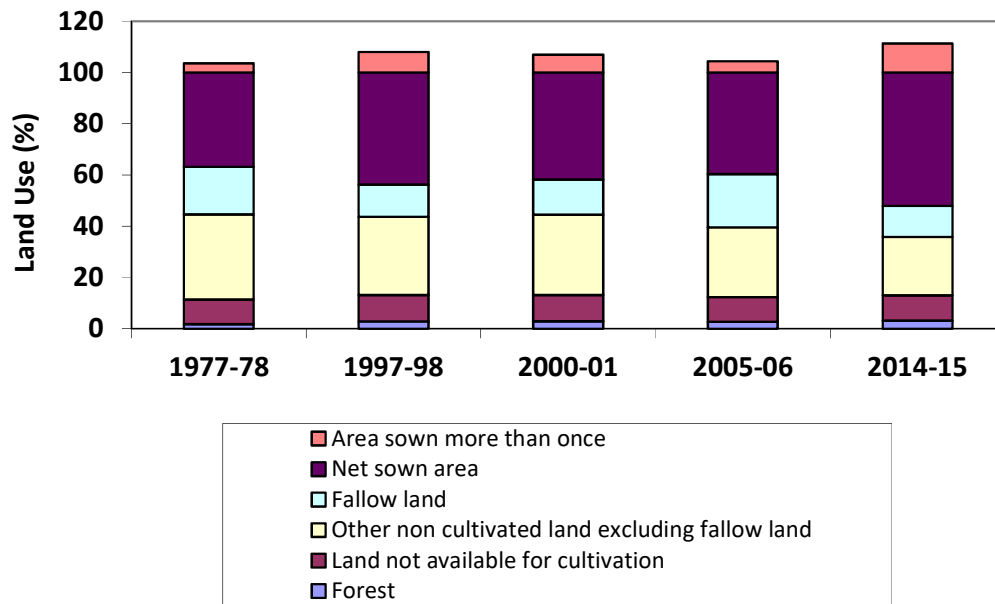
(in %)

Land use classification	1977-78	1997-98	2000-01	2005-06	2014-15
Forest	1.8	2.83	2.90	2.72	3.11
Land not available for cultivation	9.57	10.26	10.29	9.63	9.87
Other non-cultivated land excluding fallow land	33.17	30.59	31.24	27.24	22.76
Fallow land	18.56	12.54	13.79	20.75	12.10
Net sown area	36.9	43.78	41.78	39.66	52.14
Area sown more than once	3.56	8.00	6.87	4.28	11.25

Source: Department of Land Records, Bikaner

The landuse data given in table 4 indicates that the area under forest which was 1.8% in 1977-78 increased to 2.83% in 1997-98, 2.9% in 2000-01 but again it decreased to 2.72% in 2005-06, but it has slightly increased to 3.11% in 2014-15. In the same way, the area under land not available for cultivation which was 9.57% in 1977-78 increased to 10.26% in 1997-98, 10.29% in 2000-01 but it has also decreased to 9.63% in the year 2005-06 and 9.87% in 2014-15. The trend of area under other non-cultivated land is decreasing, it was 33.17% in 1977-78 but it decreased to 30.59% in 1997-98, again it slightly increased in 2000-01 (31.24%). In the year 2005-06 it reduced to 27.24% and 22.76% in 2014-15 in Bikaner district.

The maximum area was under the category net sown area (41.78%), followed by other than fallow land 31.24%, fallow land 13.79%, land not available for cultivation 10.29%, area sown more than once 6.87% and the minimum 2.9% under forest in 2000-01. The area under forest (2.72%), land not available for cultivation (9.63%), other than fallow land (27.23%), and new sown area (39.66%) and area sown more than once (4.28%) have decreased whereas the area increased under fallow land (39.66%) in the year 2005-06. The net sown area has gone up to 52.14% in 2014-15, that show the increase in irrigated area (Fig. 2).

Fig. 3 : Land use in Bikaner District (1977-78 to 2014-15)

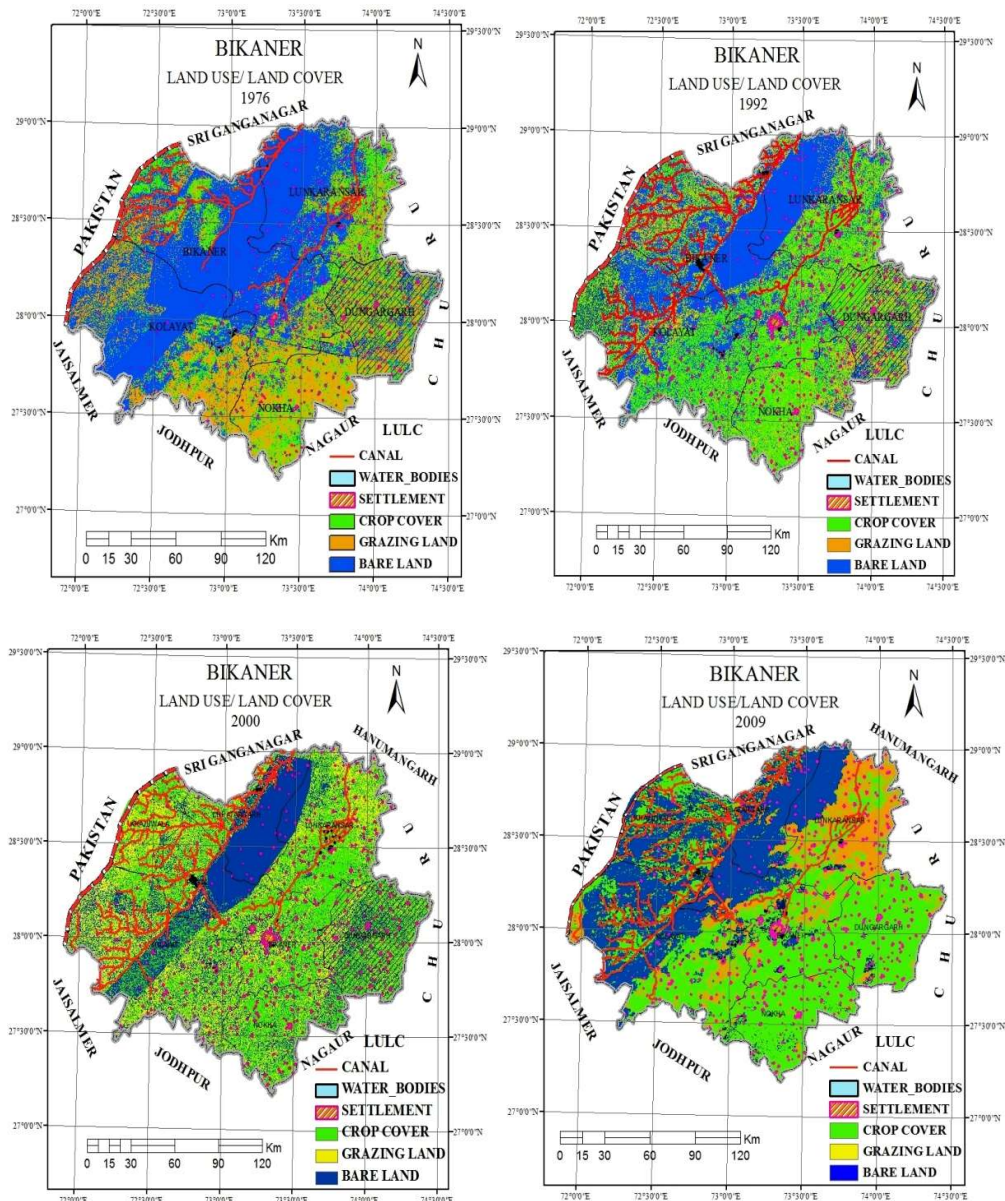
The data obtained through satellite imageries indicate increase in crop land (1.63 times), range/ grazing land (1.11 times), settlements (3.46 times) and water bodies (3.47 times) during 1976 and 2009 whereas the area under bare land has decreased during the same time.

Table 5 : Bikaner District – Land use/Land cover

Type of LULC	Area (km ²)			
	1976	1992	2000	2009
Crop Land	6159.72	10309.38	9973.91	10078.49
Range / Grazing Land	9769.38	11048.91	11965.49	10897.38
Bare Land	14264	9697.02	9058.47	9480.96
Settlements	92.04	216.69	272.30	318.87
Water-bodies	4.01	17.62	19.45	13.92
Canal Length (km)	1018.36	1642.68	1862.88	1988.86

Source: Data calculated with help of Satellite Imagery

Fig 4 : Bikaner District - LULC Pattern (1976)



Source: Prepared with help of Satellite Imagery

10. Irrigation Facilities

As proportion of the district, the tehsil-wise irrigated area is maximum 61724 hectares (18.46%) in Kolayat tehsil and minimum 29648 ha (8.897%) in Nokha tehsil, Khajuwala tehsil ranks second with 16.92%, Sridungargarh third with 13.04% followed by Pugal 12.10, Lunkaransar 10.70% and Bikaner 10.63. There is no canal irrigation in the tehsils of Nokha and Sridungargath, while Khajuwala, Pugal and Chhatargarh have only canal irrigation.

There are mainly two sources of irrigation in Bikaner district, i.e., wells and tubewells, and canal. It can be concluded by the table 2.9, that the total area under irrigation was negligible in 1960-61. It was only 7 hectares under well irrigation. The canal irrigation (156 ha) was started in 1969-70. The area under canal irrigation increased to 0.11 lakh ha in the year 1974-75 which shared about 97.19%. The irrigated area under this category went upto 1.13 lakh ha (91.80%) in 1994-95 and 1.85 lakh ha (69.39%) in the year 2003-04. Although area of the canal irrigation increased between 1994-95 and 2005-06 yet its share decreased to (65.87%) due to expansion in the well and tube-well irrigated area. It is very important to note here that the extraction of groundwater through energized wells, tube-wells and pumping sets started during 90s in the area. Its share is 30.59% out of the total irrigated area in Bikaner district. Tank irrigation is almost negligible in Bikaner district.

Table 6 : Source-wise Total Irrigated Area in Bikaner District (ha)

Year	Canal	Wells & Tube-wells	Others	Total
1960-61	-	7	-	7
1968-69	-	39	90	129
1969-70	156	-	92	248
1974-75	10899	48	265	11214
1977-78	10186	-	-	10186
1981-82	25338	2	181	25521
1990-91	83570	30	66	83666
1994-95	94430	2528	9	96967
1997-98	113186	10027	79	123292
1999-00	233850	27714	212	261776
2000-01	175995	33202	908	210105

Year	Canal	Wells & Tube-wells	Others	Total
2003-04	184604	81402	16	266022
2005-06	220212	114087	-	334299
2014-15	613284	390772	8	1004064

Source: District Statistical Outline, Bikaner

11. Agriculture

There is dominance of food crops in Bikaner district. Out of the total 4.32 lakh ha of food crops area, bajra ranks first with 1.40 lakh ha (32.43%), followed by gram 0.61 lakh ha (14.17%) and wheat 0.40 lakh ha (9.6%). The other food crops grown here are jowar (0.28%) and barley (0.25%). The area under major food crops has increased from 2000-01 to 2014-15 in the all the main crops except jowar. The area under bajra cultivation has increased by 1.55 times, gram 2.55 times and wheat 1.26 times.

12. Livestock Wealth

The major livestock wealth in Bikaner district was 11.17 lakh in 1966 which increased to 16.93 lakh in 1988, 19.34lakh in 1992, 24.57 lakh in 1997 but it decreased to 23.57 lakh in the year 2003. The reasons behind the decrease of livestock population are droughts, lack of feed and fodder and inadequate irrigation. Sheep, goats, cows and buffaloes are the main milch animals. There is 4.95% livestock wealth of Rajasthan in Bikaner district (Table 7).

There is dominance of cow and sheep wealth since 1966 to 2012 though their share out of the total livestock wealth is decreasing gradually, whereas the proportion of buffalo and goats is increasing rapidly. The reasons behind it are shrinkage of grazing land, mechanization of agriculture and development of dairy industries.

Table 7: Livestock in the Bikaner District (2012-2023)

Year	Total Animals	Percent Share			
		Cows	Buffalo	Sheep	Goats
1966	1116928	31.80	4.0	52.20	11.90
1972	843551	26.50	3.44	47.60	22.40
1988	1631710	27.70	3.40	50.60	18.30
1992	1934474	23.50	3.70	49.30	23.50

1997	2457506	22.80	4.40	46.70	26.10
2003	2356728	25.80	5.60	39.40	29.10
2007	2572950	26.08	5.10	31.08	35.35
2012	2773315	32.67	6.97	23.55	34.68
2019	2722411	43.88	7.65	24.32	23.02

Source: Department of Animal Husbandry, Bikaner

Bikaner district has a good number of veterinary facilities and services. Apart from having a veterinary university, it has 75 veterinary hospitals, 29 Ist grade hospitals, 3 Mobile veterinary units, and 198 veterinary sub-centres.

Table 8 : Veterinary Facilities in Bikaner

Facilities	2012-13	2013-14	2014-15	2022-23
Hospitals	75	87	84	75
Ist grade Hospitals	0	0	0	29
Dispensaries	10	9	9	0
Artificial Insemination centres	88	95	95	95
Mobile Veterinary Hospitals	9	9	9	3
Veterinary Sub Centres	35	52	56	198

Source: Department of Animal Husbandry, Bikaner

13. Energy Resources

The main sources of electricity in the district are Bhakra hydel power, Suratgarh thermal power, Kota thermal and nuclear power stations. The thermal station is at present kept as a stand-by to feed part of Bikaner city in case of failure of power supply from Bhakra. Electric transmission lines of single circuit or 132 KV (Ratangarh to Bikaner, 126 km and Bikaner to Bajju 92 km) and 66 KV (Ratangarh to Bikaner, 132 km) have been set up. The total length of electric transmission lines is 1556.8 km of 33 KV, 8050 km of 11 KV and 3068 km of LT lines have been setup. During 2014-15, there are total 306176 consumers of electricity, out of which the maximum number 233500 (76.26%) are domestic consumers followed by 32677 (10.67%) commercial consumers, 29262 (9.55%) are irrigation/agricultural consumers and 6065 (1.9%) are industrial consumers in Bikaner district.

It is very interesting to mention here that out of the total consumption of electricity, the maximum consumption (74.66%) is done in irrigation and 9.8 percent in domestic and residential followed by PHED, Industrial and Commercial sectors.

Out of the total 891 inhabited villages, 831 are electrified till the year 2015.

14. Industries and Labour

District Bikaner has not yet come on the industrial map of the State due to lack of knowledge and infrastructure required for industrial growth. Large scale industries are almost non-existent. However, there is a spurt in the small-scale industries due to intensive efforts made under Rural Industrialization Scheme. Many of the small scale and a few medium scale industries have come in the vicinity of Bikaner city and its surrounding areas. J.K. Woollen mills and the Urmul Dairy and ceramic industries are prominent among them. Other units are mostly engaged in manufacture of pottery, steel processing, wool based industries, printing press, cold storage and ice factories. Chemical and ayurvedic pharmacies, Guar gum manufacturing, distilled water and battery acid, electronics, machines and cycles etc. are other small-scale industries. Among cottage industries, mention may be made of hand spinning and weaving, steel fabrication, dyeing and printing, wood carving and toys making, bhujia and rasgulla manufacturing industries. There are eight industrial estates developed by RIICO, three in Bikaner city (Rani Bazar, Karni, Bichhwal), one in Napasar, Khara Industrial Growth Centre, Khajuwala, Lunkaransar and Nokha. Besides, there are other industrial units too.

By the end of 31 March, 2015 there are about 15000 registered factories in the industrial sector of the district giving employment to about 1 lakh persons. Of these the maximum number was of food based followed by woollen industries. The woollen factories are engaged in manufacturing of woollen garments and blankets, wool purifying, wool bailing and processing. There are very good prospects for further development of wool processing industries in the district.

15. Trade and Commerce

Woollen carpets, Ghee, Sugar-candy, cattle-bones, hides, mustard, taramira and blankets etc. are the articles that are exported from this district while steel, cloth, garments, rice, tobacco, metal goods, *Kirana* (groceries), coal and jewellery etc. are the items generally imported. The yield of milk from cattle in this part of the area of the State is fairly good, and sweets especially *rasgulla*, prepared from it are being exported in large quantities out of the districts.

16. Education

There are 1486 pre-primary and primary schools, 1118 upper primary schools, 730 secondary and higher secondary schools, 4 professional schools and 27 colleges in the district during 2014-15. The district has a medical college, one general university, one agricultural university and a university of veterinary sciences.

17. Medical and Health Services

The district had 120 government hospitals and dispensaries (including 2 TB hospitals). It includes 5 maternity and child welfare centres, 10 PHCs, 2 CHCs, 106 Ayurvedic Hospitals and 1 Yog & Natural Hospital. There are 121 medical doctors, 349 staff nurse and sisters, 3 food inspectors, 90 Ayurvedic and Unani Doctors and 56 Nursing Compounders in Bikaner district. Except these medical facilities, district has PBM Hospital, which is the largest hospital of north-western Rajasthan having all essential facilities.

18. Population and Urbanisation

The growth of population in an area depends upon the availability of resources and status of their development. The decadal growth rate of population during 1951-61 was 29.56 percent which declined to 28.94 percent during the following decade. It has increased by 48.08 percent during 1971-81. The highest decadal growth rate of 57.05 percent was attained in 1991-2001, which amounted to 5.70 percent per annum. High population growth rates after 1971 are the consequence of the development of agriculture, as also industry and trade, following the development of irrigation through Indra Gandhi Canal Project (Table 9 and Fig. 4).

Table 9: Population and Its Growth Rate in Bikaner District

Year	Population	Decadal Growth Rate (%)
1941	315418	34.29
1951	343091	8.77
1961	444515	29.56
1971	573149	28.94
1981	848749	48.08
1991	1211140	42.70
2001	1902110	57.05
2011	2363937	41.19

Source: Census, 2011

Industrialisation is supposed to be closely related to growth of urban centres and urbanization. Level of urbanization in the district was 33.65 percent in 2001 which, however, is not a true picture of the phenomenon. The urbanization status is modified by the presence of Bikaner city, which is the major urban centre of the Thar Desert. Besides it, there are only three more urban centres in the district namely Nokha, Sridungargarh and Deshnok, the last one being a pilgrim centre. Urbanisation is very low in Nokha (15.10%) and Sridungargarh (19.76%) tehsils. The Bikaner tehsil, containing Bikaner city and Deshnok as urban areas, has 3/4th of its population as urban based. The overall population density in the district is 63 persons per sq km but rural density is just 42 due to desertic conditions. Population density is much higher in urban areas, being 8185 in Sriganganagar tehsil, 4452 in Nokha and 3194 in Bikaner tehsil. Bikaner city and Nokha are major industrial centres too.

Occupational distribution of the population shows a majority of cultivation and associated activities for all tehsils, except Bikaner, where household industry (5.38%) and other occupations (69.78% workers) are the highest amongst all tehsils. The data are over-shadowed by the high population concentration in Bikaner city, where *bhujia*, *papad* and *bari* are produced household level. Industrial employments, government servants, military and para-military services and tertiary sector dominate in Bikaner city. There is also a divisional headquarters of Border Security Force and military station, which changes the whole occupational scenario of Bikaner tehsil too. Agricultural labourer is on the high side in Khajuwala and Pugal tehsils due to irrigated crop production through IGNP.

Table 10: Occupational Structure in Bikaner District

Tehsil	Cultivators %	Agricultural Labourers (%)	Household Industry (%)	Other Workers (%)
Bikaner	22.04	2.79	5.38	69.78
Pugal	74.08	8.76	3.15	14.01
Kolayat	72.40	6.76	1.90	18.95
Lunkaransar	77.95	5.83	1.25	14.97
Nokha	72.39	6.24	2.68	18.69
Khajuwala	65.88	14.86	1.45	17.81
Chhatargarh	85.92	5.34	0.85	07.89
Sirdungargarh	81.24	5.03	1.69	12.04
Whole District	59.75	5.51	2.97	31.77

Source: District Census Handbook, 2011

19. Transport and Communication

The district is well connected with metalled road to all the adjoining districts namely Jodhpur, Nagaur, Churu, Hanumangarh and Sriganganagar and neighbouring states as well. The important routes are Bikaner-Ganganagar (via Anupgarh), Bikaner-Suratgarh (via Lunkaransar), Bikaner-Phalodi, Bikaner-Nagaur, Bikaner-Ratangarh and Bikaner-Sardarshahar. In 2022-23, the total length of roads is 7204.33 km in Bikaner district. Out of which, national highways 330.80 km, gravel roads 303.81 km. There are 796 villages connected with roads. There are 2957 registered private cars and jeeps, 62 private buses, 21092 motor cycles and auto-ricksaws, 2897 heavy motor vehicles and 3419 tractors registered during 2014-15.

The district has direct rail connections with Delhi, Guwahati, Bilaspur, Chennai, Trivendrum, Jammu, Mumbai, Kolkata, Agra and Bhatinda. Two main lines and two branch lines pass through the district. One main line connects Bikaner city with Sadulpur (Churu district) enroute to Delhi, while the other connects it with Merta Road (Nagaur) to Jodhpur. A branch line goes to Hanumangarh, while the other links it to Kolayat and Jaisalmer. The district has air link (civil aviation) with other parts of the country. There is an airport at Nal Air Force Station at a distance of 14 km from Bikaner city. The district has 267 post offices, 2346 E Mitras in the year 2023.

Annexure-II

LIST OF RESOURCES

बाढ़ नियन्त्रण/बचाव कार्यो हेतु उपलब्ध संसाधनों की सूची वर्ष 2023

क्र. सं.	उपलब्ध संसाधनों का विवरण	विभागों के नाम													योग
		एसडीआरएफ 9783890810 8209016903	नागरिक सुरक्षा 01512202015	नगर निगम 01512226910	नगर विकास न्यास 0151.2226012	पी डब्ल्यू डी 01512226502	राज कृषि विश्वविद्यालय 01512251083	मुख्य चिकित्सा एवं स्वास्थ्य विभाग 01512226341	आर ए सी 01512226143	जल संसाधन उपखण्ड बीकानेर 01512226456	एस पी ऑफिस 01512226111	जेडीविविएनएल 01512226206	जिला वन विभाग 01512544951	इंगानप 838585628	
1	डायमंड टिप चैन शॉ	1													1
2	बेलचा	2	16												18
3	इलास्टिक ड्रिल शॉ	1													1
4	एक्स मट किट मय एसेसरिज	1													1
5	विकिटम लोकेटिंग इक्यूपमेन्ट	2 (1 नग रिपेयररिंग हेतु)													2
6	स्मोक वेंटिलेटर	1													1

7	पोर्टेबल फायर एक्सटींग्यूटर	5													5
8	कारपेन्टर हैमर	6													6
9	डस्ट मास्क	20													20
10	ब्रीथिंग अपार्टस सेट मय स्पेयर सिलेन्डर	1(1 नग रिपेयररिंग हेतु)													1
11	प्राईबार	1													1
12	हेन्ड सा मय वुडन हेन्डल	1													1
13	सीन टेप 100 मीटर	2													2
14	टूल बाक्स मय एसेसरीज														0
15	बायनाकुलर (दूरबीन)	4													4
16	ग्लॉब्स लेदर	60													60
17	वाटरजेल ब्लेकेंट	2													2
18	मोसन स्कॉट	10													10
19	फ्लोरोसेंट पैंट	3													3
20	हाईड्रोलिक जैक 20 टन	1													1
21	जनरेटर 10 के वी मय एसेसरीज	1													1
22	जनरेटर 2.5 के वी	3													3
23	आस्का लाईट मय एसेसरीज	2													2
24	लाइफ डिटेक्टिव टाईप प्रथम	1													1

25	ड्रेगन लाईट	24 (3 नग रिपेयररिंग हेतु)														21
26	सेफ्टी टॉर्च	3														3
27	हैड लाईट	13														13
28	सेफटी लाईट बार	6														6
29	जीपीएस सेट	2 (2 नग रिपेयररिंग हेतु)														0
30	वॉकी टॉकी सेट मय एसेसरीज	9														9
31	एयर लिफ्टिंग बैग सेट मय एयर सिलेन्डर	1														1
32	हेवी डस्ट मास्क	25														25
33	हेल्मेट विद कैमरा	2														2
34	आर पी सा	1														1
35	चिपिंग हेमर	1														1
36	रोटरी हैमर ड्रिल	1														1
37	रोटरी रैस्क्यू शॉ	3														3
38	बोल्ट कटर मैन्यूअल	1														1
39	स्नेक कैचर	1														1
40	प्लायर (प्लास) 8	3														3
41	वाईस ग्रीप 10	1														1

42	टिन स्त्रिप 12	2													2
43	क्रो बार	1													1
44	छिजल (छैनी)	6													6
45	फावड़ा	2	11	50											63
46	गेती	2		50											52
47	कुल्हाडी	3	10												13
48	हेमर ब्रिक्स	3													3
49	हेमर स्लेज	3													3
50	हेमर क्लो	3													3
51	हार्ड टो बूट जोडी	41													41
52	कौटन ग्लॉब्स	110													110
53	रोड स्टॉपर मय टेप	18													18
54	सेफटी हेलमेट	100													100
55	मेगा फोन	4													4
56	विसल	40													40
57	स्प्रे मशीन	1													1
58	इंटीग्रेटेड हूड मास्क	2													2
59	तिरपाल	7													7
60	रिफ्लेक्टिव जेकेट	123													123
61	AA सेल	35													35
62	AAA सेल	12													12

63	2 U हाईपर	30													30
64	फाइबर रेस्क्यू बोट मय ओबीएम	1													1
65	ओबीएम	7													7
66	ओबीएम स्टैंड	8													8
67	ओबीएम टूल किट	1													1
68	इन्फ्लेटेबल रबर बोट	6(1 नग रिपेयरिंग हेतु)													5
69	लेडर फॉर बोट	3													3
70	प्लास्टिक रोप नायलोन	750 मीटर													750 मीटर
71	वाटर रोप 8 एमएम	400 मीटर													400 मीटर
72	रेस्क्यू थ्रो बैग	3													3
73	लाइफ जेकेट	92													92
74	लाइफ बॉय	72													72
75	वन ड्राइवर अन्डर वाटर कम्यूनिकेशन सेट	1													1
76	पर्सनल ड्राइविंग किट मय एसेसरीज	2													2
77	स्कूबा सिलेन्डर	2													2

78	एयर कम्प्रेसर मशीन	1													1
79	अण्डर वॉटर टार्च	2													2
80	नाईफ स्कूबा डाइव	1													1
81	रेन सूज जोडी	127													127
82	रेन सूज जोडी लॉक	90													90
83	रेन कोट	79													79
84	प्लास्टिक शीट	200													200
85	वाटरप्रुफ ड्रेगन लाईट	1													1
86	बैट सूज डीप डाईविंग एसेसरीज फुल बॉडी	4													4
87	फिच, स्नोरकल डाईव फस मास्क	7													7
88	फ्ल्ड रेस्क्यू हेलमेट	10													10
89	फयूल कंटेनर मेटल	2													2
90	पावर ब्रिथर सिस्टम	2													2
91	रबर बोट कवर	3													3
92	स्लीपिंग बेग	20													20
93	इमरजेंसी रेस्क्यू स्ट्रक्चर मय पाईप	5													5
94	बिलाई	3													3

95	ऑक्सीजन सिलेन्डर छोटे मय एसेसरीज	25													25
96	ऑक्सीजन सिलेन्डर बड़े मय एसेसरीज	2													2
97	आई प्रोजेक्टर	100													100
98	न्यूमेटिक स्पिलिन्ट	10													10
99	ओटोक्लेव	1													1
100	फेस शील्ड मास्क पैकेट	7													7
101	बैग पाल्वप मास्क अडल्ट	31													31
102	बैग पाल्वप मास्क चार्डल्ड	30													30
103	किट कैरिंग बैग	25													25
104	पेडल बोर्ड स्पिलिन्ट लॉग	45													45
105	पेडल बोर्ड स्पिलिन्ट मिडियम	45													45
106	पेडल बोर्ड स्पिलिन्ट शार्ट	45													45
107	फलैक्सिबल स्पिलिन्ट	50													50
108	कॉलर स्टैफ नेक टोल	37													37
109	कॉलर स्टैफ नो नेक	378													378
110	एम एफ आर बॉक्स	5													5
111	सी पी आर पैकेट मास्क	25													25
112	सी पी आर मेनिकिन एडलट	5													5
113	सी पी आर मेनिकिन चार्डल्ड	5													5

114	चाईल्ड बर्थ किट डमी	3													3
115	वुडन स्पाइन बोर्ड फुल	25													25
116	वुडन स्पाइन बोर्ड हाफ	25													25
117	पेन लाईट	450													450
118	स्टेथोस्कोप	25													25
119	पेपर कप	10													10
120	ग्लॉब्स लेटेस्ट	625													625
121	मास्क एनआरबी अडल्ट	25													25
122	मास्क एनआरबी चाईल्ड	50													50
123	डी प्रेसेर ट्रिनव	25													25
124	पेरा मेडिकल सीजर	25													25
125	बाइट स्टिक	25													25
126	स्टिफ नेक कालर	20													20
127	स्टिफ नेक कालर शार्ट	20													20
128	स्टिफ नेक कालर रेगुलर	20													20
129	स्टिफ नेक कालर पेडरिक	20													20
130	सर्जिकल फेस मास्क	610													610
131	कोविड 19 पीपीई किट	12													12
132	प्लस ऑक्सीमीटर	1													1
133	सुगर टेस्ट मीटर	1													1
134	थर्मल स्कैनर	1													1

135	डिजिटल डायल बीपी कोप	10													10
136	मास्क कॉटन	150													150
137	एन 965 मास्क	250													250
138	लेटेसट ग्लॉब्स	12													12
139	रोलर बैंडेज 3 इंच	12													12
140	मेडिकल ट्राईएज	5													5
141	पर्सनल प्रोटेक्टिव सूट	200													200
142	स्ट्रक्चर फोल्डिंग	6													6
143	ब्लीचिंग पावडर	0													0
144	कैजुअल्टी बेग हाफ	1													1
145	कैजुअल्टी बेग फुल	1													1
146	प्लास्टिक शूट मय कोम्बो	1													1
147	स्ट्रक्चर स्पाइन बोर्ड एससरीज	2													2
148	रोलर बैंडेज 10 इंच	100													100
149	रोलर बैंडेज 6 इंच	12													12
150	क्लीनिकल आइसोलेसन फेस	100													100
151	मल्टीकेबल विंच	1													1
152	रेमसेट विद मैचिंग फुटपंप	1													1
153	कम अलोग (चेन पुली)	2													2
154	रोप सिंथेटिक कर्नामेटल 8 एमएम	400 मीटर													400 मीटर

155	रोप सिंथेटिक कर्नामेटल 10 एमएम	400 मीटर													400 मीटर
156	रोप सिंथेटिक कर्नामेटल 12 एमएम	400 मीटर													400 मीटर
157	रोप रेपलिंग 8 एमएम	400 मीटर													400 मीटर
158	रोप रेपलिंग 10 एमएम	400 मीटर													400 मीटर
159	रोप रेपलिंग 12 एमएम	400 मीटर													400 मीटर
160	पी पी रोप 16 एमएम	60 किलो													60 किलो
161	स्ट्रेप फास्ट लिंक एंकर एक्सएल	1													1
162	रेस्क्यू पेली सिंगल	9													9
163	रेस्क्यू पेली डबल	5													5
164	मिन्टोस जोडी	50													50
165	स्टैंडर्ड फिगर 8	9													9
166	असेंडर	11													11
167	सीट हार्नेस हाफ बाडी	25													25
168	सीट हार्नेस फुल बाडी	25													25

169	कॉशिविनर	27													27
170	कॉशिविनर डबल नोक	5													5
171	एज प्रोटेक्टर एआरसी 2	1													1
172	वेट लिफ्टिंग सीलिंग बेल्ट	2													2
173	ईयर प्लग	15													15
174	नी पेड जोड़ी	64													64
175	सिस्टम सर्वाइवर 8 ऐस्कैप	1													1
176	बर्मा पम्प सैट				3										3
177	10 एच पी पम्प सैट				3										3
178	5 एच पी पम्प सैट				9										9
179	4 इन्च पाईप पीवीसी				250 फीट टुकड़ों में										250 फीट टुकड़ों में
180	2 इन्च पाईप				100 फीट										100 फीट
181	6 इन्च कैनवास पाईप				500 फीट										500 फीट
182	8 इन्च कैनवास पाईप				500 फीट										500 फीट
183	फुटबाल 6 इन्च				4 नग										4 नग

184	फुटबाल 5 इन्च			4 नग										4 नग
185	फुटबाल 3 इन्च			4 नग										4 नग
186	पम्प साफ्ट			5 नग										5 नग
187	4 इन्च पाईप पीवीसी			150 फीट										150 फीट
188	पम्प सेट		8 सेट											8 सेट
189	मोटा रस्सा		4000 फुट											4000 फुट
190	बरसाती		25 नग											25 नग
191	टॉर्च		10 नग											10 नग
192	गम बुट		20 नग											20 नग
193	रेत के कटटे		7000											7000
194	जेसीबी		10											10
195	फायर वाहन	1	12											13
196	जाल		3											3
197	ड्रेगन टॉर्च		2											2
198	कडाई		50											50
199	पैट्रोमैक्स		3											3
200	बांस		50											50

201	डीजल मढ पम्प 6 एचपी									2					2
202	डीजल मढ पम्प 12 एचपी									2					2
203	डीजल मढ पम्प 26 एचपी									1					1
204	आयरन सोल्ड		2												2
205	चैन पुली		12												12
206	माइक्रोफोन		4												4
207	फायरमैन एक्स		7												7
208	लाइफ जैकेट सोलार्ज		24												24
209	नाइलोन रोप		15												15
210	रस्सा शीशल 2 व 1.5 इंच		11												11
211	अमरजेन्सी लाइट		4 (अक्रियाशील)												0
212	कटर मशीन		2 (अक्रियाशील)												0
213	एल्युमिनियम लेडर		4												4
214	सेफटी टार्च														0
215	हेलमेट		16												16
216	हेण्ड ऑपरेटड सायरन		5												5
217	गेतीमय हेण्डल		4												4

218	सबल		15												15
219	हथोडा		8												8
220	करोत		1												1
221	आरी		5												5
222	जैक		10												10
223	पुली 1 पहिया		6												6
224	पुली 2 पहिया		13												13
225	पुली 3 पहिया		13												13
226	तारो का रस्सा		10												10
227	कम्बल		8												8
228	सर्च ड्रेगन लाईट		1												1
229	इलेक्ट्रीक ड्रील मशीन		1												1
230	एंगल कटर		1												1
231	बूट टो स्टील		12												12
232	मेगाफोन		12												12
233	फेसमास केनस्टार		12												12
234	स्ट्रेचर वुडन/स्टील		20 (अक्रियाशील)												0
235	लाइफ बोय		12												12
236	फुल बोडी हारनेस		12												12

237	हाइड्रोलिक जैक		4											4
238	सेफटी नेट		12											12
239	चैन शॉ		1											1
240	रेपलिंग रोप		8											8
241	बी ओ बी रोप		3											3
242	Earth movers												37	37
243	Trailer												2	2
244	ट्रक					1								1
245	चार चक्का गाडी					3	7		12		46	7	18	93
246	पानी टैंकर						4				1			5
247	Water Tanker Medium capacity								2				4	6
248	Heavy Truck / Truck						1	1	7		3	12	8	32
249	Bus / Mini Bus						2	1	11		5			19
250	Motor Cycle								7					7
251	Electric Generator (10 kv)						2		5					7
252	Search light								33		24			57
253	Inflatable Light Tower								1					1
254	Extension Ladder								12					12
255	Tent 80 Kgs								16		32			48

256	Tent extendable 4 meters								15		5				20
257	Light Ambulance Van							14			2				16
258	Drone With Camera										1				1
259	Cranes Heavy Duty, Fork type											2		2	4

Source:

DDMP,

Bikaner

Annexure-III

NODAL AND ASSISTANT NODAL OFFICERS IN DEPARTMENTS OF BIKANER DISTRICT

S N	Department	Nodal/Assistant Nodal	Post	Phone	Mobile	e-mail
1.	Collectorate	Sh. Om Parkash	ADM (A)	0151-2226002/31	9983219251	admabkn@gmail.com
		Sh. Jagdish Prasad Gaur	ADM City	0151-2226006	9414302990	admcitybikaner@gmail.com
2.	Police	Sh. Balwantram	Police Inspector	0151-2226110	9462177834	rplbikaner@gmail.com
		Sh. Charan Singh	Ass.Sub Inspector	0151-2226110	9530414914	rplbikaner@gmail.com
3.	SDRF	Sh. Kishna Ram	Company Commandar		8209016903	gcoy.sdrf.raj@gmail.com
		SH. Bhagirath Singh	HC		9413049984	gcoy.sdrf.raj@gmail.com
4.	SDM BIKANER	Sh. Yaksh Choudhary	SDM	0151-2226014	8011026490	sdo.bikaner@rajasthan.gov.in
		Sh. Bhawani Shankar	TDR		8209921677	tdrbkn@gmail.com
5.	SDM KOLAYAT	Pradeep Kumar	SDM	01534-236082	9414403178	SDMKOLA@gmail.com
		Ramswaroop Meena	TDR	01534-236031	9602501970	kolayat.tdr@gmail.com
6.	SDM NOKHA	Kalpiti Shivran	SDM	01531-220992	9928541327	sdmnokh@gmail.com
		Sh. Narendra Baperiya	TDR	01531-220067	9636011239	
7.	SDM DUNGARGARH	Sh. Mukesh Chaudhary – I	SDM	01565-223672	8827425220	
		Sh. Rajveer Kadwasara	TDR	01565-222039	9414579679	
8.	SDM LUNKARANSAR	Sh. Sanjeev Kumar Verma	SDM	01528-271258	9782464520	
		Sh. Ramnath Sharma	TDR	01528-272026	9414580712	
9.	SDM CHHATARGARH	Rajendra Kumar	SDM	01520-242241	9549777454	sdmchha@gmail.com
		Ms. Dipti	TDR	-----	7891369029	tdrchha@gmail.com
10.	SDM POOGAL	Sh. Sita Sharma	SDM	01523-265449	9413869369	
		Sh. Rameshwar Lal	TDR	01523-232253		
11.	SDM KHAJUWALA	Sh. Shyoram Verma	SDM	01520-232182	6350604691	
		Ms. Darshna	TDR	01520-265439	9694942837	
12.	SDM BAJJU	Harisingh Shekhawat	SDM	01535-294555	7727044479	
		Sh. Girdhari Singh	TDR		9166868657	
13.	Panchayat Samiti, Bikaner	Hanuman Dan Depawat	Assistant BDO	0151-2226761	9057232822	psbikaner@rediffmail.com
		Mohd Saleem Panwar	Assistant BDO	0151-2226761	9460492507	psbikaner@rediffmail.com

14.	Panchayat Samiti, Kolayat	Multan Panwar	Assistant BDO	9799498280	9413278280	pskolayat@rediffmail.com
		Mahendra Singh	LDC	9799498280	9828601685	psbikaner@rediffmail.com
15.	Panchayat Samiti, Panchu	Jasvant Singh Bishnoi	BDO		7742132229	pspanchoo@gmail.com
		Shrawan Kumar	Assistant BDO		8209733044	pspanchoo@gmail.com
16.	Panchayat Samiti, Nokha	Rajesh Vyas	Charged BDO		8279293483	
		Gopal Dan	Assistant BDO		9983312726	
17.	Panchayat Samiti, Lunkaransar	Sheela Devi	BDO		9468576101	
		Ishwar Lal Solanki	Assistant BDO		9950311939	
18.	Panchayat Samiti, Dungargarh	Ram Chandra Jaat	BDO		9413131345	
		Kishan Nath Sidh	Assistant BDO		9414452325	
19.	Panchayat Samiti, Khajuwala	Rajendra Joiya	Charged BDO		8696324354	
		Jai Prakash Sindhi	Assistant BDO		9166331617	
20.	Panchayat Samiti, Poogal	Rajendra Joiya	BDO		8696324354	
		Prabhat Parihar	Assistant BDO		9414283326	
21.	Panchayat Samiti, Bajju	Raghvendra Bika	Charged BDO (A. En.)		9928056643	
		Sohan Ram	Assistant BDO		9929889675	
22.	PWD	Naresh Joshi	X. En. City Division Bikaner	01512226506	9828115012	citybkn@rediffmail.com
23.	Home Guards	Sh. Veer Singh Gill	Commandant		9982699850	cmdt.bik.rj@nic.in
24.	Factory & Boiler	Anirudh Meena	Sr. Inspector	0151-2544709	6380862323	Sifb.bikaner@rajasthan.gov.in
25.	Animal Husbandry	Sh. Hukma Ram	Addl. Dir.		8114488140	adpolybkn@gmail.com
		Dr. Virendra Netra	Jt. Dir.		9413481311	
26.	RTO	Sh. Gyandev Vishwakarma	RTO Bikaner		9413365477	rto.bikaner.trport@rajasthan.gov.in

		Sh. Jugal Mathur	DTO Bikaner		9414143388	rto.bikaner.trport@rajasthan.gov.i
27.	IGNP	Vivek Goyal	S.E. SECOND STAGE CIRCLE Ist	0151-2226426	7891519440	vivek.goyal7@gmail.com / sessc1bkn@gmail.com
		Ashok Barjatya	Xen & TA to SE		9460616702	sessc1bkn@gmail.com
28.	JVVNL	Rajeev Kumar Mittal	XEn	0151-2226206	9413359542	sedcjdvnlnbkn@gmail.com
29.	Water Resources	Manmeet Singh	A. En.		8890992531	aewrdbkn@gmail.com
		Rakesh Puniya	J. En.		7877711864	aewrdbkn@gmail.com
30.	Dungar College	Dr. Vipin Saini	Asso. Prof.	0151-2528036/47	9314167292	sainivipin21@yahoo.co.in
31.	CMHO	Dr. Abrar Panwar	CMHO	0151-2226331	9414117860	cmho-bik-raj@nic.in
		Dr. R K. Gupta	Dy. CMHO		9414895659	bikaner_idsp@yahoo.co.in
32.	SP Medical College	Dr. Gunjan Soni	Principal	0151-2226301	6350332265	
33.	PBM Hospital	Dr. P. K. Saini	Supdt.	0151-2223604	9352587597	
34.	RAJUVAS	Dr. Parveen Bishnoi	Chief Investigator	0151-2521282	9982361529	cdmtarajuvas@yahoo.in
		Sh. Shailendra Singh	Teaching Associate		7790931983	shekhawatramsara@gmail.com
35.	Nagar Nigam	Sh Kesar lal Meena	Commn.	0151-2226905	9414000317	nagarnigambikaner@gmail.com
36.	UIT	Sh. Mukesh Barath	Secratary	0151-2226012		
37.	PHED	Sh. Subhadh Janagal	A.En.	0151-2226471	9521242837	aenphedpdr10bkn@gmail.com
		Sh. Rajendra Chouhan	A.En.	0151-2226466	9588226625	aenpdr11@gmail.com
38.	MGSU	Arun Prakash Sharma	Registrar	0151-2970064	8905760937	

Annexure-IV

Annexure-V

RAPID DAMAGE AND NEED ASSESSMENT

Date and time of report:

1. Initial Identification

1.1. Type of disaster	
1.2. Level of Disaster (L0, L1, L2, L3)	
1.3. Date and time of event	
1.4. Affected area	
1.5. Possibility of after effects	

2. Estimate of Effects**(Very Approximate Numbers)**

- 2.1. Dead
- 2.2. Injured
- 2.3. Missing
- 2.4. In need of shelter and/or clothing
- 2.5. In need of food
- 2.6. In need of water
- 2.7. In need of sanitation
- 2.8. Damage to lifeline systems

3. Initial Need for External Assistance

3.1	Search and Rescue	Yes/No
3.2	Evacuation	Yes/No
3.3	Protection	Yes/No
3.4	Medical and Health	Yes/No
3.5	Shelter and clothing	Yes/No
3.6	Food	Yes/No
3.7	Water	Yes/No
3.8	Sanitation	Yes/No
3.9	Repair of lifeline systems	Yes/No
4.0	Restoration of Communication System	Yes/No

The next report, with more details, will be sent at ----- (date/time)

Annexure-VI

PRELIMINARY DAMAGE AND NEED ASSESSMENT

Date and time of report: _____

After effects to disaster	
----------------------------------	--

Estimate of Effects

Details	Numbers
2.1. Dead	
2.2. Injured	
2.3. Missing	
2.4. In need of shelter and/or clothing	
2.5. In need of food	
2.6. In need of water	
2.7. In need of sanitation	
2.8. Damage to lifeline systems	

Initial Need for External Assistance

	Number of affected population who require	Response status	Requirement (Equipments + Human Resource)	Priority
Search & Rescue				
Evacuation				
Safety and Security				
Medical and Health				
Shelter and Clothing				
Public Works				
Food				
Water, Sanitation and Hygiene				
Other Needs				

The next report, with more details, will be sent at (date/time)

Annexure-VII

DETAILED DAMAGE AND NEED ASSESSMENT

Disaster Type				Ongoing			
District							
Area				Pt. of Contact			
1. Affected Population							
	Male	Female	Children	Orphan	Infants		
Evacuated							
Injured							
Sheltered							
Dead							
Displaced							
Missing							
2. Affected livestock							
	He Camel/She Camel	Horse/mare	Buffalo	Bullock	Cow	Poultry	He Do
Evacuated							
Injured							
Sheltered							
Dead							
Displaced							
Missing							

3. Damage Details				
	Destroyed	Majorly Affected	Minorly Affected	Unaffected
Single Family Homes				
Building				
Business				
Industrial Units				

Total Damage			
Unemployment Number due to disaster			
	Number of affected population who require assistance	Response status	Requirement Human Res
Search & Rescue			
Evacuation			
Safety and Security			
Medical and Health			
Shelter and Clothing			
Public Works			
Food			
Water, Sanitation and Hygiene			
Other needs			

Crop affected						
Name of the Crop(s)	Extent of damaged area (*in Acres)					
<ul style="list-style-type: none"> • Wheat • Paddy • Sugarcane • Cotton • & Other Crops 	26% to 50%			51% to 75%		
	No. of Small Farmers affected	No. of Marginal Farmers affected	No. of other than small & Marginal Farmers affected	No. of Small Farmers affected	No. of Marginal Farmers affected	No. of other than small & Marginal Farmers affected

Remark:

Signature:

Annexure-VIII

TENTATIVE TEAM FOR DAMAGE AND NEED ASSESSMENT

Damage And Need Assessment	PWD(B&R)
	Revenue and Disaster Management
	Police
	Fire
	Irrigation
	Health
	Electricity along with Electrical Wing of PWD (B&R)
	PWD (B&R)
	IS&H
	RIICO
	BMC
	Civil Defence and Home Guards
	PHED
	Municipal Corporation
	Food & Supplies
	Development and Panchayat

Annexure-IX**STRUCTURAL DAMAGE ASSESSMENT**

Damage %	Impact
100	Structure is unusable. Cannot be repaired.
> 75	Major structural damage. Unsafe for use. Repairable within 1 month.
> 50	Significant structural damage. Unsafe for use. Repairs will take more than 1 week.
> 25	Some structural damage but safe for limited use. Repairable within 1 week.
< 25	Minor structural damage. Usable.

Source: WHO

