Government of Jammu and Kashmir

STATE DISASTER MANAGEMENT PLAN

Department of Disaster Management, Relief, Rehabilitation and Reconstruction.

Notified vide SRO No. 218, Dated: 22.5.2017

Jammu and Kashmir State Disaster Management Plan

Submitted to:
The Government of Jammu and Kashmir

Developed by:
Tata Institute of Social Sciences, Mumbai

Abbreviations

ACD	Assistant Commissioner Development
ASHA	Accredited Social Health Activist
ATI	Administrative Training Institute
ANC	Anti Natal Care
BDO	Block Development Officer
BIS	Bureau of Indian Standards
BOCA	Building Operations Controlling Authority
BPL	Below Poverty Line
BQ	Black Quarter
BRO	Border Roads Organisation
CAPD	Consumer Affairs and Public Distribution
CBO	Community Based Organizations
CCPD	Chief Commissioner for Persons with Disabilities
CDMA	Code Division Multiple Access
CEO	Chief Executive Officer
CFC	Cooperative Finance Corporation
CHC	Community Health Centre
CLW	Community Level Workers
CME	Continuous Medical Education
CMO	Chief Medical Officer
COR	Revenue Commissioner / Commissioner of Relief
DCC	District Coordinator Committee
DCR	Development Control Regulations
DDMA	District Disaster Management Authority
DDMAP	Department of Disaster Mitigation and Prevention
DFO	District Forest Officer
DIETs	District Institutes of Education and Technology
DM	Disaster Management
DMHP	Disaster Mental Health Providers
DMS	Disaster Management Store
DMU	Disaster Management Unit
DRR	Disaster Risk Reduction
ECEW	Emergency Coordination & Early warning
EIA	Environmental Impact Assessment
EMSA	Emergency Medical Services Authority
EOC	Emergency Operations Centre
ERC	Emergency Response Centres
ESF	Emergency Support Function.

FIR	First Investigation Report
FMD	Foot and Mouth Disease
FPF	Forest Protection Officer
FPRM	Flood Probability Reduction Measures
FReM	Flood Resilience Measures
GIS	Geographical Information System
GPRS	Global Packet Radio Services
GPS	Global Positioning System
GSI	Geological Survey of India
GSM	Global System for Mobile Communications
HFA	Hyogo Framework for Action
HFL	Highest Flood Level
HPC	High Power Committee
HRA	Hazard, Risk, Vulnerability Analysis
HSC	Hazard Safety Cells
IAP	Incident Action Plan
IASC	Inter-Agency Standing Committee
IAY	Indira Awas Yojana
IBHAS	Institute of Human Behaviour and Allied Sciences
ICDS	Integrated Child Development Scheme
ICP	Incident Command Posts
IDRN	International Disaster Response Network
IEC	Information, Education and Communication
IMD	India Meteorological Department
IMPA	Institute of Management, Public Administration and Rural Development
ISR	Incident Stress Response
ISRO	Indian Space Research Organisation
ITBP	Indo-Tibetan Border Police
IWMP	Integrated Watershed Management Programme
JKPCC	Jammu and Kashmir Project Construction Corporation
KVK	Krishi Vigyan Kendra
LGBMH	Lokopriya Gopinath Bordoloi Regional Institute of Mental Health
LHZ	Landslide Hazard Zonation
MARGS	Mutual Aid and Response Groups
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MHA	Ministry of Home Affairs
MHPSS	Mental Health and Psychosocial Support
MIS	Management Information System
MoU	Memorandum of Understanding
NCC	National Cadet Corps

NDMA	National Disaster Management Authority
NDRF	National Disaster Response Force
NEOC	National Emergency Operation Center
NGO	Non-Governmental Organization
NHRM	National Rural Health Management
NIDM	National Institute of Disaster Management
NIMHANS	National Institute of Mental Health and Neuro Sciences
NIRD	National Institute for Rural Development
NMEW	National Mission for Empowerment of Women
NMHP	National Mental Health Programme
NRDWP	National Rural Drinking Water Programme
NRHM	National Rural Health Mission
NRLM	National Rural Livelihoods Mission
NRSA	National Remote Sensing Agency
NSS	Network Security Services
NYKS	Nehru Yuva Kendra Sangathan
OAR	Organized Avalanche Response Team
PDA	Personal Digital Assistant
PDC	Power Development Corporation
PDNA	Post Disaster Needs Assessment
PFA	Psychosocial First Aid
PGIS	Participatory GIS
PHC	Primary Health Care
PHE	Public Health Engineering
PIO	Public Information Officer
PMRDF	Prime Minister Rural Develop Fellow
PRI	Panchayati Raj Institutions
PRO	Public Relation Officer
PSS	Psychosocial Support
PSSMH	Psychosocial Support and Mental Health
PSSMHS	Psycho-social Support and Mental Health Services
PSU	Public Secor Undertaking
PWD (R&B)	Public Works Department (Roads and Building)
RGSY	Rashtriya Gram Swaraj Yojana
RKVY	Rasthriya Krishi Vikas Yojana
SAR	Search and Rescue
SASE	Snow and Avalanche Study Establishment
SCP	Special Component Plan
SDM	Sub-Divisional Magistrate
SDMA	State Disaster Management Authority

SDMC	School Disaster Management Centre
SDRF	State Disaster Response Force
SDRN	State Disaster Resource Network
SEC	State Executive Committee
SGRY	Sampoorn Grameen Rojgar Yojana
SIA	Social Impact Assessment
SICOP	Small scale Industrial Development Corporation Limited
SIDCO	State Industrial Development Corporation
SIHFW	State Institutes of Health and Family Welfare
SMHA	State Mental Health Authority
SOP	Standard Operating Procedure
SP	Superintendent of Police
SPDC	Sate Power Development Corporation
SRC	Special Relief Commissioner
TFCR	Task Force Control Room
TISS	Tata Institute of Social Sciences
TOT	Training of Trainers
UDD	Urban Development Department
UNICEF	United Nations International Children's Emergency Fund
UNISDR	United Nations International Strategy for Disaster Reduction
VHF	Very high frequency
VIP	Very Important Person
VSAT	Very Small Aperture Terminal
WHO	World Health Organization
WINSOC	Wireless Sensor Network with Self Organization
WMD	Weapon of Mass Destruction

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TOWARDS A SAFE, DISASTER-RESILIENT JAMMU AND KAHMIR

Essential First Steps

A State-level Disaster-Management Plan is a comprehensive document that covers the entire range of disaster management and disaster risk reduction activities at the level of the entire State. As a result of this mandate, such a document will be a lengthy and complex one, covering the range of policies and actions that must be undertaken by a number of Government departments.

However the efficacy of a Disaster Management Plan depends entirely on the extent to which various elements of the Plan can be made operational or brought to the level of active implementation. In this zeroth chapter in the Disaster Management Plan for the state of Jammu & Kashmir we emphasise some key elements that need to be taken up urgently in order to speedily operationalise and implement several parts of the Plan.

Setting up and operationalising an Emergency Operations Centre

A full-fledged Emergency Operations Centre is the first priority, especially in light of the recent Jammu Srinagar National Highway (NH1A) landslide (2015) and the massive Urban Flood (2014). While deciding on its permanent location, it must be immediately made operational at any possible location, with adequate floor space and the facilities and amenities that have been indicated in the Plan and in the separate initial report submitted earlier. A main EOC and a backup EOC are required because of the movement of the government machinery between Jammu and Srinagar and also as a clear operational requirement.

Most importantly, the Emergency Operations Centre will also be the centrepiece of the implementation of the Disaster Management Plan. The EOC will become the nodal point for facilitating and monitoring the process of implementation, under the supervision of the State Disaster Management Authority. It will register, over time, the development of various components of the State Disaster Management Plan. At any given point of time, it will provide ready information of the progress of implementation, the available infrastructure, the level of readiness in human resources and capacities and a transparent view of the remaining gaps and deficiencies. These will need to be classified according to different levels of disasters.

District-level Emergency Operations Centres must be set up following closely on the setting up of the State-level EOC. The threshold for escalating a disaster threat or a disaster response from the district level to the State level must be laid down in an adequate manner.

Implementing the Disaster Management Plan is a structured, time-bound process

The Disaster Management Plan projects a number of infrastructural requirements, operational structures and modalities of action for a safe and disaster-resilient state. These will not become a reality immediately. It requires financial, technical and human resources to be deployed, which will inevitably take some time. It would be a grave error to assume that, with an available Plan, we have a ready to hand blueprint that will enable the state machinery and other stakeholders to immediately take

action for the next subsequent disaster. With the receipt of the Plan, the government and its various departments need to plan a structured, time-bound process of implementation and realization.

Ensuring an adequate framework for Disaster Governance

The importance of a clear, unambiguous framework for disaster governance at the State and district level cannot be overemphasised. Currently, in the state of Jammu & Kashmir, some elements of the recommended framework are in place, whereas other elements are not. Such ambiguities may hamper emergency response, operational readiness as well as long-term planning. It is also essential to ensure that all statutory bodies in the disaster governance framework have an adequate secretariat and offices, ear-marked funds for specific activity and an adequate site from which they function. The State government also has various functional arrangements for disaster management, already in place, with a number of senior and other officers, key government offices and various departments of the government tasked with various aspects of disaster management. Their role in the new framework with State and District level disaster management authorities needs to be adequately clarified or revamped.

Among the key issues that need to clarified are the strengthening of the State Disaster Management Authority with an adequate secretariat, clarification of the role of the Finance Commissioner (Revenue) and Divisional Commissioners in line with standard governance in all other matters, and the provision of designated funds for expenditure to enhance disaster preparedness and the designation of suitable authority for undertaking such expenditure.

Developing Human Resources and their Capacities for Implementation is the Key

No Disaster Management Plan at any level will be of value if there is not adequately trained human resources to understand, implement and when necessary upgrade the Disaster Management Plan. Currently, there is considerable need for enhancing the capacities of State Government officials, staff and employees in all departments in general aspects of disaster management and specific aspects of their work. It is imperative that no allocated budget for training and capacity-building in disaster management be allowed to lapse, and be utilised to the fullest. These trainings must be carefully designed, have the necessary inputs from suitable experts, utilise the expertise of agencies such as the NDMA and the NDRF, and avail of knowledge from best practices throughout the country.

District Disaster Management Plans must be followed up with immediately

The process of developing a disaster management structure cannot stop with the development of State level plans. District Disaster Management Plans that will assist in developing community-based disaster risk reduction and deal with disaster management at the district level are essential to complete the structure of the disaster management framework.

Awareness generation, capacity building and simulation exercises with all stakeholders

The implementation of a State-level disaster management plan will not be feasible without the co-operation of various sections of different stakeholders. While Government should take the lead, especially in major or critical situations, the extent of successful implementation of a State-level DM

plan, requires careful co-ordination with all stakeholders. These may include teachers, medical personnel at all levels, craftsmen, technicians and skilled workers from various specific trades, large establishments in the service or industrial sectors, members of civil society organisations and so on. There is considerable scope and urgent need to sensitise key sections among such stakeholders.

Large-scale simulation exercises involving all or several stakeholders are a must for coping with disasters in the future. Awareness generation, capacity building and simulation exercises must be rapidly undertaken to enable successful implementation of the disaster management plan.

Specific Consideration and Recommendation in the light the extra ordinary Floods of September, 2014

Recommendations:

1. The low carrying capacity of the Jhelum rivers is due to very mild slope of the order of 1/10000 between Sangam and Wullar Lake resulting in very low flow velocity in the river reach of about 96 km. This slope also results in steep rise of water level in case of high discharge in river. The bowl shaped of the Valley and very mild slope of river makes the area between Sangam and Wullar Lake susceptible to flooding in case of heavy rainfall in the drainage area. This aspect needs to be considered while taking any future development work in the adjoin area of Jhelum between Sangam and Wuller Lake.
2. All the components of the comprehensive flood management scheme needs to be planed and implemented simultaneously in time bound manner to get intended benefit.
3. Based on the analysis of the current floods in J&K, as mentioned above, the recommended measures to manage floods in J&K may be categorised in three groups, depending upon the implementation time that may be required:
    - **a.** Immediate (to be implemented before next flood season).
    - **b.** Short term(to be implemented within 2 or 3 years) and
    - **c.** Long term (to be implemented within 5-10 years).

(A) **Immediate Measures:**

- **i.** Closing of breaches: All the breaches needs to be closed before next monsoon and the section of the embankment restored including pitching, if required.
- **ii.** Development of flood forecasting and warning networks: A rainfall based floods forecasting model may be developed along with establishment of protocol for generation of operational forecast followed by its dissemination and appropriate action by the disaster management authority. Due to bowl shape of Srinagar Valley the conventional flood forecast techniques like gauge to gauge correlation may not serve the desired purpose. In such type of terrain a mathematical model comprising of rainfall- run off, hydrodynamic/hydrological routing and flood forecast components shall be required. MIKE-11 may be considered o be one of the time tested platform to develop such operational flood forecasting tool. Based on established flood forecasting procedures and considering Sangam as a base station, the available warning time for Srinagar will be about 3-4 hours only.

However, advisory forecasts based on rainfall can be issued with a lead time about 6 hours after validating the model for two to three seasons. Surveys for the river cross sections between Sangam and Wullar Lake including those in flood spill channels may be initiated immediately for the model development to meet the deadline. Further work to be made in this direction is covered in long term measures.

(B) **Short-term Measures:**

i. Raising/Strengthening of existing embankments: the design of existing embankments may be revisited and appropriate raising/strengthening may be planned and implemented wherever required. Proper maintenance of embankments may also be ensured by State Govt., suitable anti-erosion measures as may be required may also be undertaken at vulnerable areas.

ii. Enhancement of carrying capacity of existing Foods Spill Channels (FSC): with the passage of time, the carrying capacity of existing FSC got reduced from 481.45 cumecs (17000 cusec) to nearly 100 cumecs (3531) cusecs. As informed by Officials of J&K Govt., works were undertaken to enhance its capacity under scheme "Flood threat of river Jhelum-urgent works "but the same are yet to be completed. The balance works may be completed to maintain the designed capacity of river Jhelum passing near Srinagar City.

iii. Dredging of Out Fall Channel (OFC) to increase its carrying capacity: OFC is the only drainage outlet taking off surface flow out of valley. It was informed by Officials of J&K that dredging was carried out to avoid siltation from 1950-1986 in the OFC which was latter discontinued. Dredging requirements of OFC may be ascertained immediately and may be taken up so that discharge through OFC is increased.

iv. Setting up of Rapid Action Dewatering Facilities in urban areas: A number of low lying areas have been urbanised. Hence, flooding even under a lesser magnitude, can't be ruled out. The State Govt. may consider to plan and implement storm drainage network in consultation with drainage experts.

v. Establishment of adequate emergency response measures and rescue areas: By establishing high flood marks, the areas likely to be available for temporary relief may be identified and provisions for evacuation to these areas within the forecast time available may be taken up State Disaster management Authority.

(C) **Long Term Measures:**

i. Additional supplementary Flood Spill Channel: The Officials of Govt. of J&K informed, as river Jhelum has very limited carrying capacity, an additional supplementary Flood Spill Channel, just downstream of Sangam was contemplated earlier. The same may be useful, however, this may only be considered after detailed study and its effect/impact on environment/ecology/ habitation and the economics involved in between crossings over existing channels including Dudh Ganga.

ii. Creation of Storage: Small storages on various tributaries of Jhelum for general power and/or flood purposes as per provisions of Indus water treaty 1960 may be planned and created. This will help in moderating the floods and also enable in reducing the sediment load of river Jhelum.

iii. Development and Enhancing the Capacity of Wullar Lake: As informed by the Officials of J&K Govt., the live storage capacity of Wullar Lake has reduced due to siltation etc., which has further reduced its capacity to absorb the floods. Therefore the same may be restored by appropriate measures. This shall help in reducing the Black Water Effect and absorb more flood waters, thereby reducing the impact of floods in its upstream area.

iv. Flood Plain Zoning: Flood plain zoning bill may be enacted on priority by State Govt. The process of flood plain zoning may be completed at the earliest and regulation of flood plains may be ensured.

v. Lot of Sewage/Solid waste from urban areas goes to Jhelum and connecting lakes which also cause reduction in the capacity of flow channel due to growth of algae. Necessary measures in this regard may be taken by the State Govt.

vi. Afforestation and Catchment area treatment along the Hill Slopes may be beneficial in reduction of silt load in Jhelum and maintaining the carrying capacity of the channels.

vii. The Flood warning times can be improved further from 8 hours in long term after establishing of further reliable point/gridded rainfall prediction with in a relatively narrow variation range by joint effort by IMD and CWC.

1. Introduction

This plan will be known as the **'Jammu and Kashmir State Disaster Management Plan'** and will be applicable in the State of Jammu and Kashmir, India.

1. Vision

TO BUILD SAFE AND DISASTER RESILIENT JAMMU AND KASHMIR

2. Theme

The plan document envisages the accurate assessment of risk and vulnerability to disasters in the State of Jammu and Kashmir. A significant thematic component will be the mainstreaming of disaster management concerns in development plans/projects/ and programmes. The plan proposes to achieve its stated goals by enhancing capacities and designing preparedness measures that are rooted in socio-cultural, economic, ecological and technological determinants of risks and uncertainties, which affect diverse populations of the State. This plan outlines strategies for proper coordination and allocation of roles and responsibilities of each government department and other stakeholders involved. The plan also has provisions of reviewing and updating plan annually.

3. Objectives

a. To protect the lives of people in Jammu and Kashmir from any kind of natural disasters.

b. To minimize the suffering of vulnerable population and the loss of property/infrastructure in the State due to disasters.

c. To achieve maximum efficiency in reducing vulnerability of people to disasters in the State.

d. To promote a culture of disaster resilience in the State.

e. To design appropriate prevention and mitigation strategies across various levels of stakeholders in the State.

f. To enhance the capacities of all relevant stakeholders in disaster risk reduction.

g. To mainstream disaster risk reduction as integrated component of development planning in the State.

h. To nurture and establish efficient disaster response/relief mechanism in the State.

i. To provide clarity on roles and responsibilities for all stakeholders concerned with disaster response and recovery.

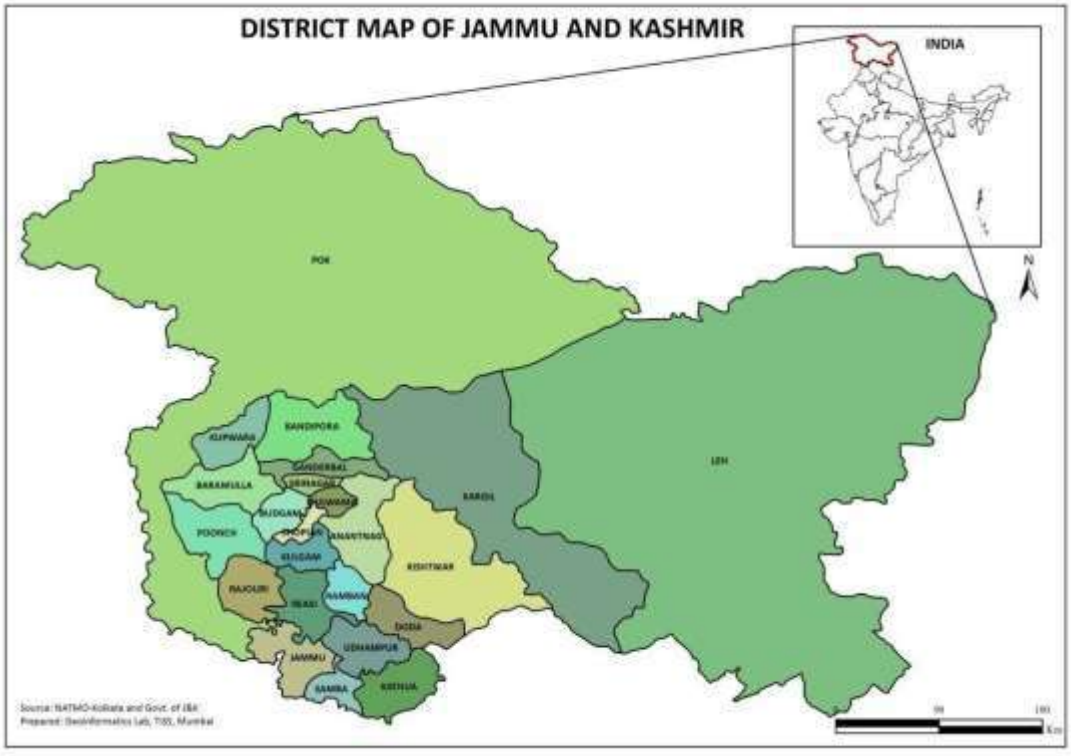
j. To ensure co-ordination and promoting constructive partnership with all other agencies related to disaster management.

2. Hazard, Risk and Vulnerability Profile

2.1 State Profile

Jammu and Kashmir covers the northern most extremity of India and lies between latitudes 32º. 17' to 36º.58' north and longitudes 73º.26' to 80º.26' east. The state occupies a strategic position in India with borders touching Pakistan in the west, China and Tibet in the north and east and in the south Indian States of Punjab and Himachal Pradesh. The State has a geographical area of 2,22,236 sq. km comprising 6.93% of the total area of the Indian territory, which includes 78, 114 sq. km under illegal occupation of Pakistan and 5180 sq. km illegally handed over by Pakistan to China and 37, 555 sq. km under illegal occupation of China in Ladakh. Physically the state comprises of three distinct regions which correspond with its three administrative Divisions. Of the three divisions, Ladakh alone covers about 70% of the total area of the state, Jammu accounts for 19% and the valley of Kashmir accounts for the remaining 11%. The state has no homogeneity with regard to its physical features but represents an interesting morphology.

Figure 2.1 District Map of Jammu and Kashmir



Morphologically the state is divided into three distinct micro regions which are as follows:-

1) The Outer hill division

2) Jhelum valley division

3) Indus valley division.

The Outer hill division starts from the plains in the south to Pir-panjals in the north. Its topography being rugged and at times it is being called as Kandi. Rainfall in this region is scantly and is more or less dry. Southern part of this division is known as sub-mountainous region and the northern part is known as semi-mountainous region. The average altitude of the former being 369 meters and of the latter it is 1385 meters above the mean sea level. River Chenab forms the main drainage system of the division. The outer hill division is separated by the Pir-panjals from the Jhelum valley in the south. Near Kulu the central Himalayas bifurcate into two, one going towards the north-western direction and is known as Zanaskar range and the other towards the south-west called as the Dhauleder range. In between these two ranges is the valley of Kashmir. The northern most extremity of the country is the extensive mountainous territory of Ladakh or the valley of Indus. Extending from the Zanaskar in the south to the Karakoram, the Nunkun and the Nanga Parbat in the north, Ladakh is almost a plateau desert and mostly is devoid of vegetation. The average altitude of this division is 3692 meters above the sea level. River Indus which rises from the Mansarowar Lake forms the main drainage of the region.

The climate of the state differs from region to region on account of great variations in altitude. The tropical heat of the Punjab and the arctic cold of Ladakh are the extremes, and there are certain places where snow makes the life stagnant for about seven months in a year. In the outer hilly region of the Jammu Province, climate has three main seasons: (i) hot weather from April to June, (ii) a rainy season from July to September and (iii) cold weather from October to March. The altitude of the State rises steeply from 305 metre to 6910 metres above sea level. There are the hot plains of the Jammu Province and the cold dry tableland of Ladakh. The area has different weather conditions at different places because of the lofty mountains like the Pir-panjal, the Zanaskar and the Karakoram that check the moisture-laden winds from entering the valleys.

In summers, the outer plains and the outer hills receive rainfall from monsoon winds while in winters, winds from the Mediterranean cause snowfall and rainfall in the Valley of Kashmir. The moisture-laden winds cause rainfall in the forests on the hills making the temperature to fall in summer; hence, the thickly wooded areas such as Pahalgam and Gulmarg have milder weather conditions than that of Srinagar. Similarly, the climate of the valley of Kashmir is comparatively milder than that of the Outer Plains as it is on higher altitude therefore making it one of the most liked tourist destinations during summer.
As stated above, the unique climatic conditions found in the zone of the Middle Mountains and its valleys, are determined by the altitude, which in turn determines the degree of coolness. Winters are cold and of long duration and with increasing altitude, it gets colder until there is snowfall in the higher mountains. Summers, however, are milder but are very short. Winters last

from November to March. Spring begins after 15th of March and there is heavy rainfall during the season. Landslides often take place during this season. Humidity in the monsoon season stretching over July and August is as high as 70% and with increasing temperature summers at times become uncomfortable.

In the Kashmir Province there is not much rise in the temperature up to end of May, but in June-July and August the temperature can rise up to 90º F in shade. After August there is a decrease in the temperature and by the end of October it becomes cold and by January cold becomes intense with the snowfall. The snowy period lasts for 2½ months beginning from Magh (December-January) to middle of Chaitra (March). During winter Dal Lake sometimes gets frozen, enabling people to skate over it. The distinctive features of Kashmir's climate are the absence of monsoon rain, because the monsoons cannot cross the mountains enclosing Kashmir on the south. Rainfall in the different regions of the state also varies to a great extent. The annual rainfall varies from 50 to 70 inches in the outer hills regions, from 30 to 40 inches in the Kashmir valley and is less than 10 inches in the frontier districts.

The soil of Kashmir is generally classed as clayey, loamy rich and light, peaty and low lying swamps and is of alluvial origin but quite fertile. In the semi-mountainous tracts the soil is indeed coarse. The underlying rocks in this area are loose boulders. The Kandi tracts have a stony soil and give a dry look even during the rainy season. The soil of Ladakh is bare and rocky with bare gravel slopes.

Kashmir is richly endowed by nature as far as forests are concerned, and could be divided into two zones, viz (i) Sub-Himalayan and (ii) Himalayan. The sub-Himalayan zone extended from the foot-hills to 5,000 ft. above the sea, and the Himalayan zone extended upto 11,000 ft. The sub-Himalayan forests consisted of bamboos, pines and the Himalayan ones had deodar and pine, the fir and spruce and sub-alpine.

2.2 Socio-demographic Contexts and Vulnerability

The total area (1,01, 387 sq. km) of the State is demarcated into 22 Districts having 217 Tehsils (out of which 11 are entirely rural). There are 320 Rural Development Blocks, which are further delimited into 4128 Panchayats, 86 towns and 6551 villages (Census 2011) (Table 2.1).

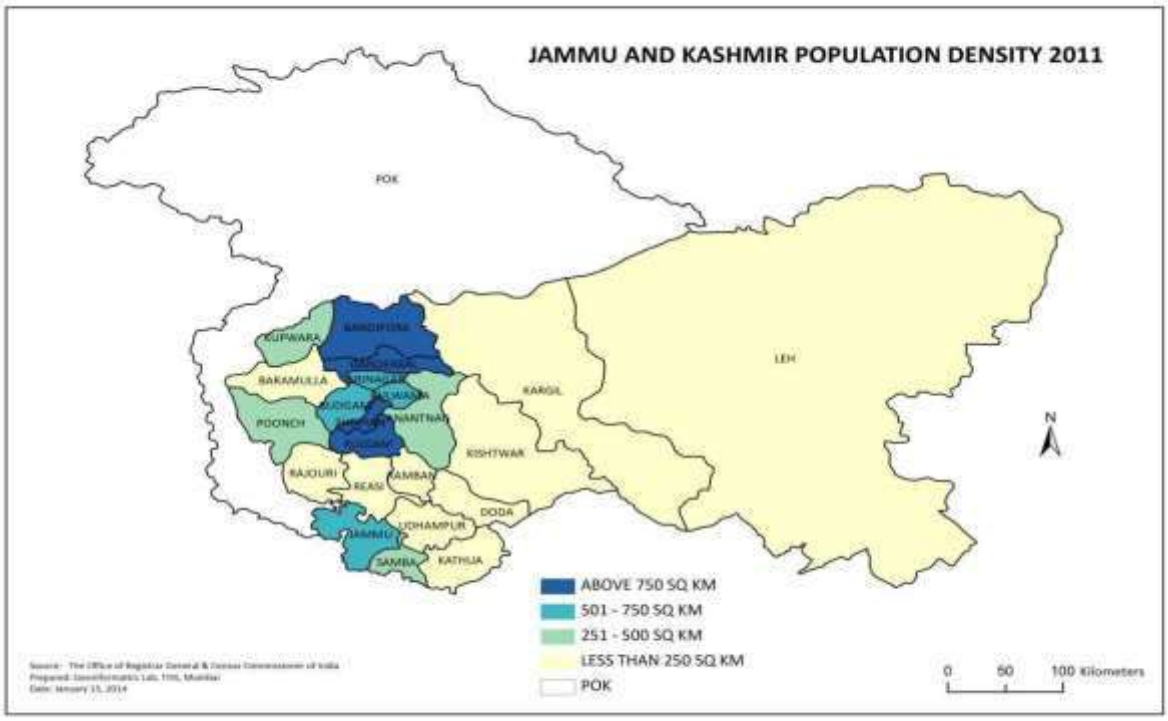
Table 2.1 Administrative Structure for Jammu and Kashmir

Administrative District	**2**
Total Number of District	22
Jammu Province	10
Kashmir Province including Ladakh	12
Total Tehsil	217
Total Nayabats	558
C.D Blocks	320
Panchayats	4128
Total Villages	6551

Source: Govt. of J&K. Office of the Financial Commissioner Revenue

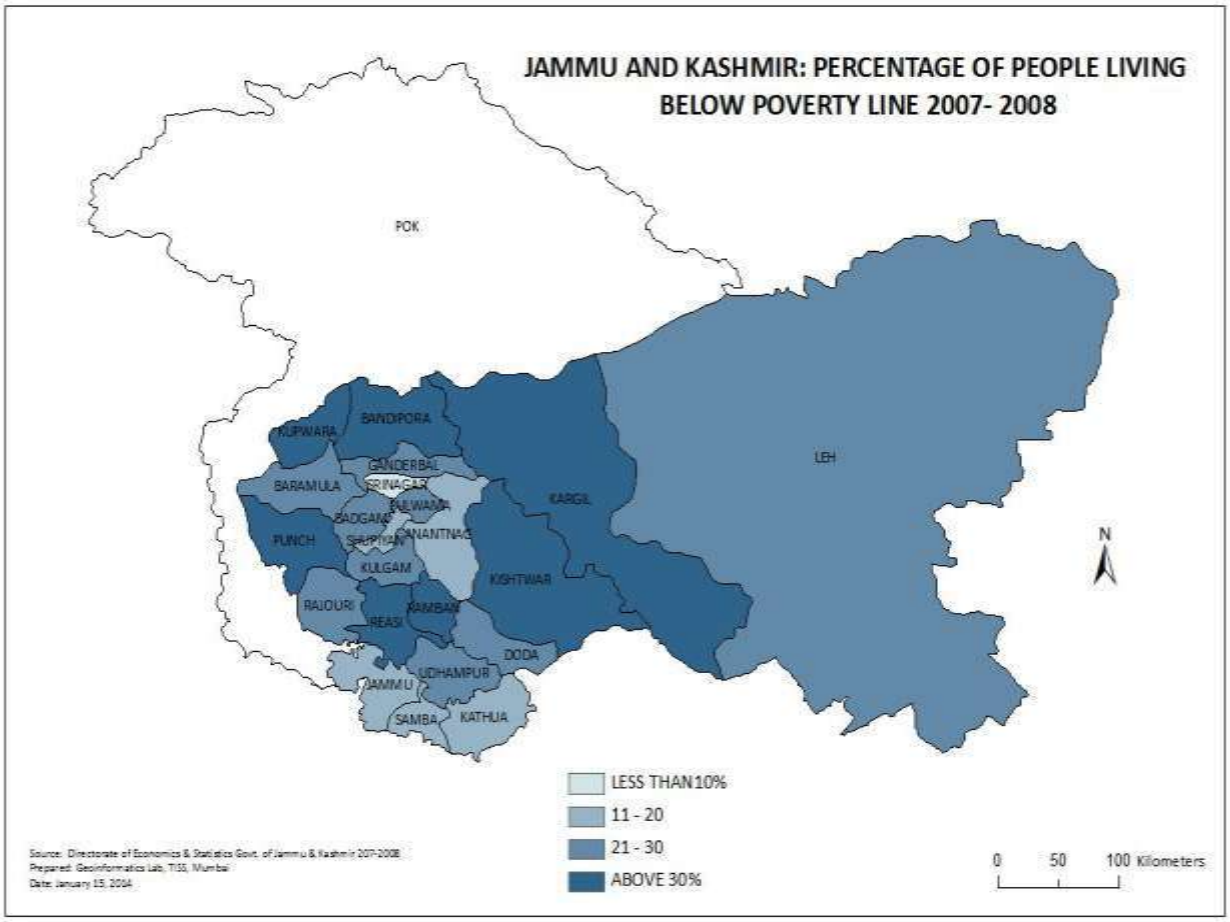
As per the Census 2011, the State has a total population of 1,25,41,302. The Census operation of 2011 has shown an increase of 24, 79, 009 population over the census conducted in 2001, indicating an average addition of around two lakh people every year. Thus in an area of 1,01, 387 sq. km, 1,25,48, 926 people inhabit, which forms a density of 124 persons per sq. km. The Population of Jammu and Kashmir stands at about 12 million, making it the 19th most populated state in India (Census 2011). The state of Jammu and Kashmir has experienced population growth during 2001 – 2011. Kulgam, Shopian, Budgam, Poonch, Anantnag and Pulwama are the districts that have undergone an increase in population density. Population of these high density districts are susceptible to hazard as they fall under the high risk zone (Figure 2.2).

Figure 2.2 Population Density of Jammu and Kashmir 2011



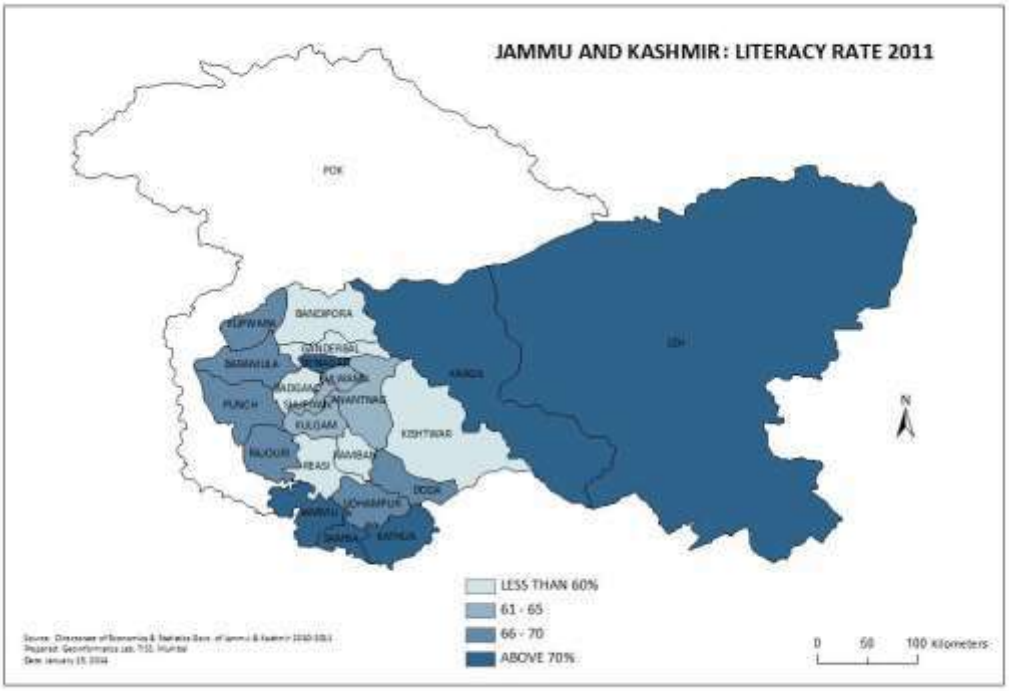
Apart from the social consequences of terrorism and militancy, the state is facing many issues which are preventing it from prospering as a state with sound human development indicators. For instance, the percentage of population below poverty line 2004 – 05 was 13.2 (while at national level, it was 37.2). According to Directorate of Economics and Statistics of Jammu and Kashmir for the year 2007 – 2008, 20 - 30 % of population was under BPL (Figure 2.3). Srinagar has the least percentage of population under BPL while Kargil, Bandipora, Kupwara, Poonch Reasi, Ramban and Kishtwar have the highest percentage of population living under BPL. The BPL distribution implies that there is a greater probability that population in these districts are socially vulnerable to disasters.

Figure 2.3 Percentages of People Living below the Poverty Line



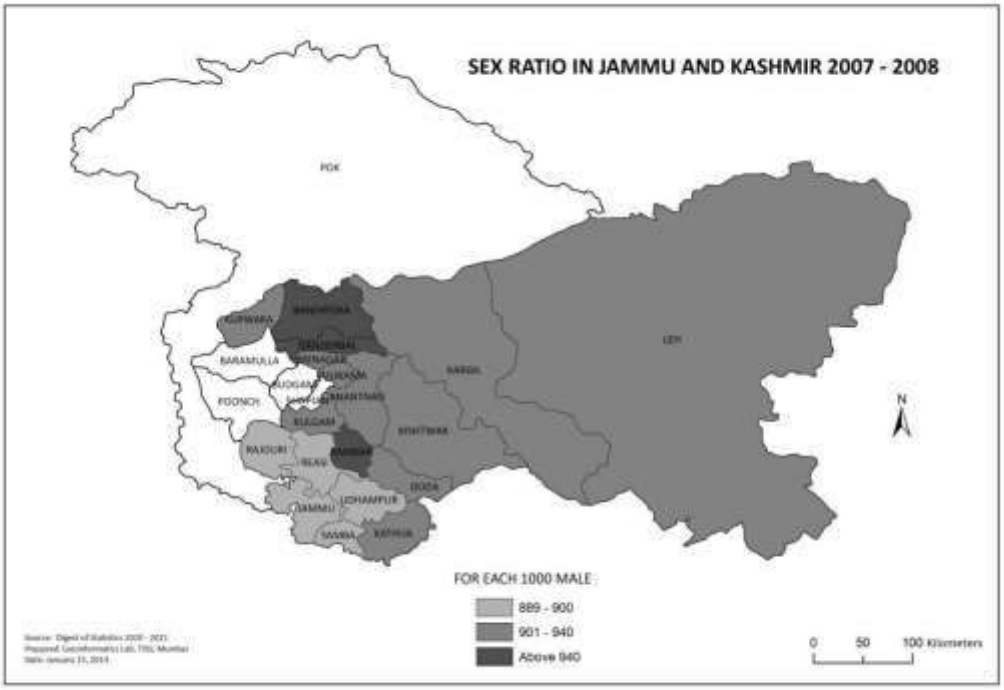
The literacy rate in the state is about 67.16 % (Census 2011). Literacy Rate in 1961 was only 12.95% which has increased over a period of 50 years to 67.16 % in 2011. However, the corresponding figure as per previous census held in 2001 was 55.52 %. The national literacy rate stands at 74.04% as per census 2011. The literacy rate is one of the lowest (67.16) in the country, with men having a literacy rate of 76.75 % , while female literacy is a meager 49.12 % . Between 2001 and 2008 there has been an improvement in the literacy rate in Kargil, Kupwara, Baramulla, Rajouri, Kathua, Kulgam and Doda districts (Figure 2.4). Though a few districts showed improvement in literacy rate, district of Shopian and Kishtwar has undergone decrease in literacy rate. Lack of qualified teachers and inadequate school facilities are possible factors explaining this decline.

Figure 2.4 Literacy Rate



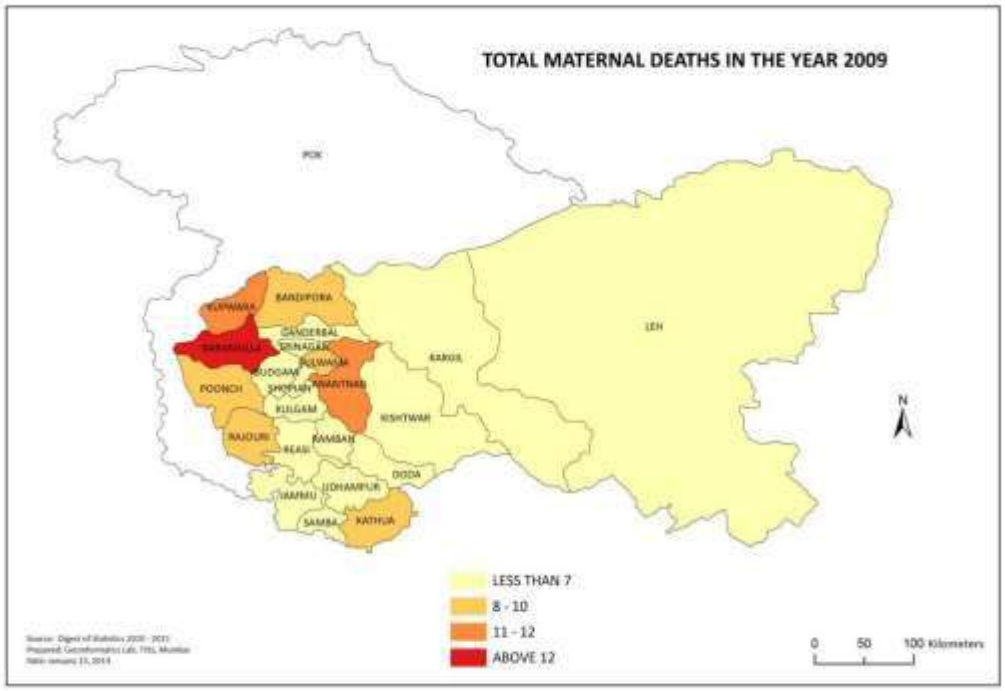
Some of the crucial statistics that hint at social vulnerabilities (though not exclusive) are described below. Sex Ratio in Jammu and Kashmir is 883 i.e. for each 1000 male, which is below national average of 940 as per the 2011 census (Figure 2.5). Children (aged 0-6) population is 18% of the total population. The child sex ratio was 941 in 2001 have decreased considerably to 859 in the 2011 census.

Figure 2.5 District wise Sex Ratio of Jammu and Kashmir



The maternal mortality rate is also quite high in the state when compared to the national average. The maternal mortality rate varies across districts every year and is quite consistently high in the district of Baramulla, Kupwara, and Anantnag which is also coincidently are districts with higher potential of natural hazards (Figure 2.6). In a similar vein, the infant mortality rate in the districts requires considerable attention, if we are aiming at developing strong disaster resilience (Figure 2.7).

Figure 2.6 Maternal Mortality at District Level



The Infant Mortality Rate for the year 2011 was 41, while at national level, it is 44. The Percentage of Children under weight for 2005-06 was 25.6 (while at national level, it is 42.8). The proportion of births attended by skilled health personnel during the year 2007-08 was 58.6, while at national level it was 52.3.

Figure 2.8 shows the Still Birth in the year 2009. It proves a point that institutional delivery of maternal and neonatal health care needs to be strengthened.

Figure 2.7 Infant Mortality at District Level

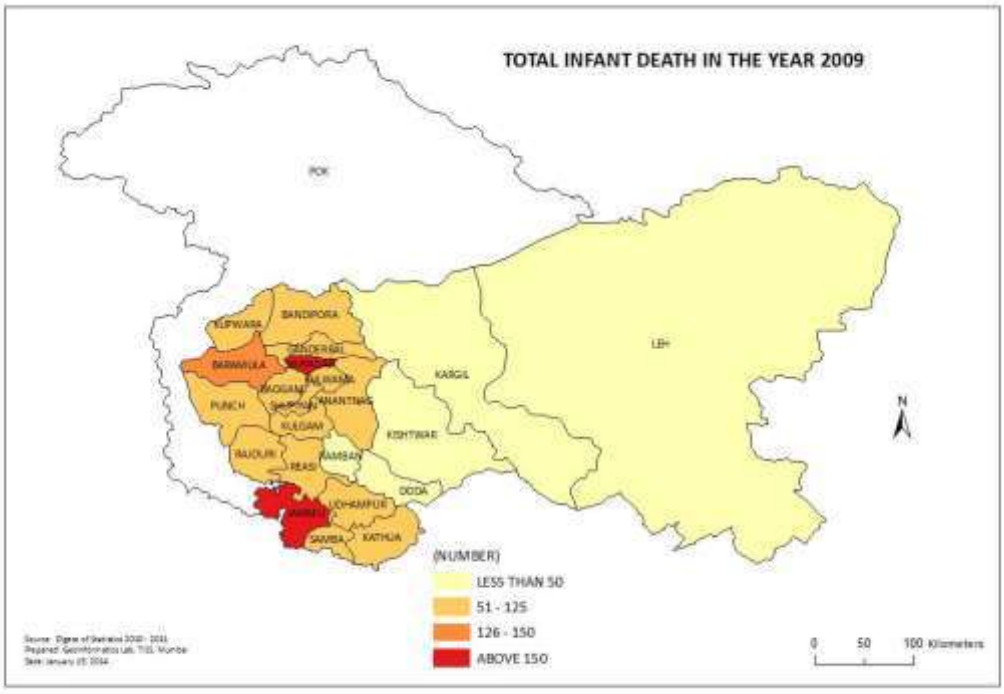
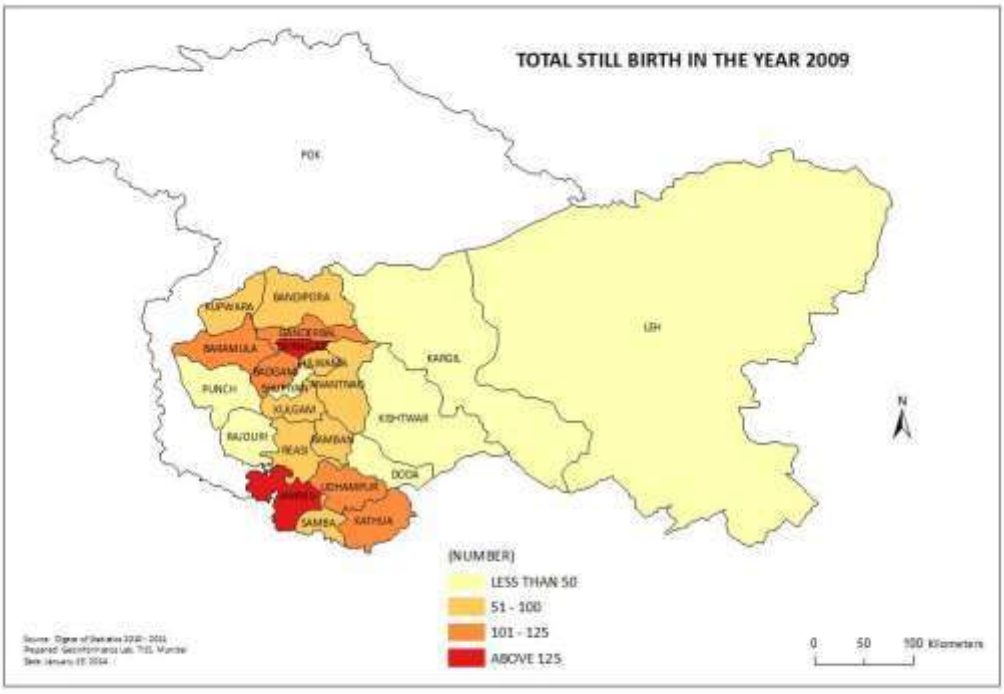


Figure 2.8 Still Births at District Level



Ethnic communities in Jammu and Kashmir are also vulnerable groups. The state represents a mixed culture with ethnic composition of Kashmiris, Dongras, Rajputs, Bakarwals and Gujjars. Bakarwals and Gujjars are the nomadic tribes who are predominant in the state (Figure 2.9). They migrate seasonally and lease out land on crop sharing basis to their neighbours. Majority of the communities in the remote regions of Jammu and Kashmir and project affected populations are socially and economically backward (Figure 2.10). The land use pattern and socio-economic standard of the above-mentioned ethnic communities in the remote villages are remarkably different. The villages close to the road side have better access to drinking water, telecommunication, roads, etc. On most occasions their source of income are trade, tea stalls, restaurants, government jobs and casual labour. On the other hand, the interior villages depend on agriculture for their livelihood. There is greater dependency on natural resources and irrigation sources are mostly spring irrigation and nallah irrigation supported by indigenous irrigation canals. These communities are also deprived of basic facilities and amenities such as communications, drinking water, electricity, primary health facilities etc. The quality of educational facilities is poor in these remote villages. Schools are mostly of the primary and middle standard levels, which are poorly equipped and inadequately staffed. Malnutrition, lack of sanitation facilities, poorly equipped health facilities are the most prevalent issues among these backward communities.

As per the 2011 Census, majority of the SC and ST population are settled in Jammu Division (Table 2.2).

Table 2.2 Scheduled Caste and Scheduled Tribe Population in Jammu and Kashmir (2011)

Administrative Division	Scheduled Castes Population Person (2011)	Scheduled Tribes Population Person (2011)
JAMMU	917,724	810,800
KASHMIR	6,761	464,306
LADAKH	506	218,193

Jammu and Kashmir State DM Plan Final Draft

Figure 2.9 Distribution of Scheduled Tribe Population in Jammu and Kashmir

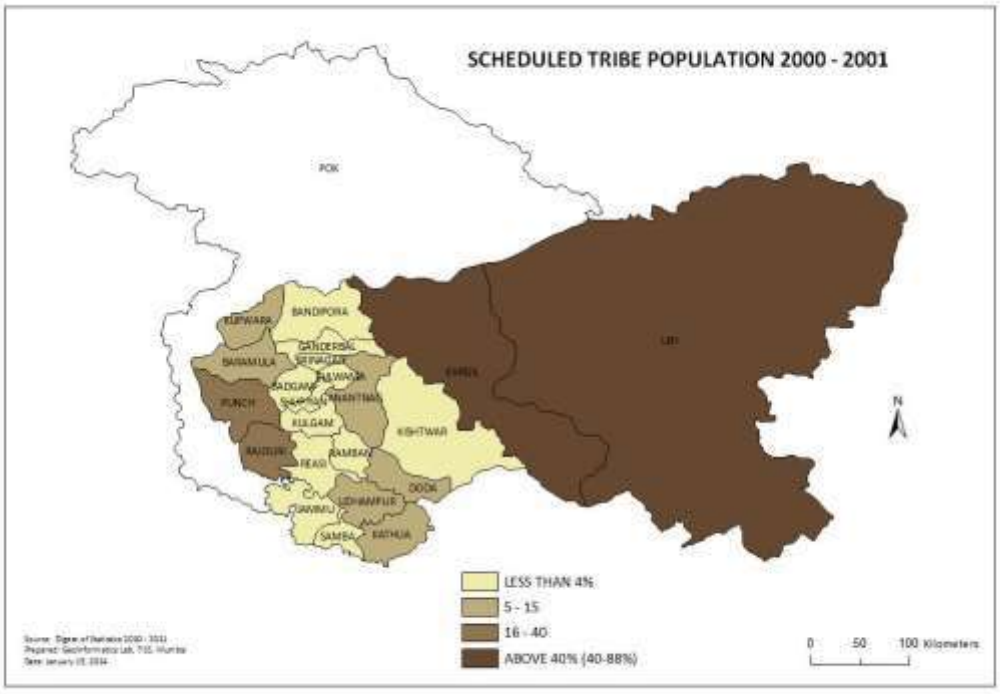
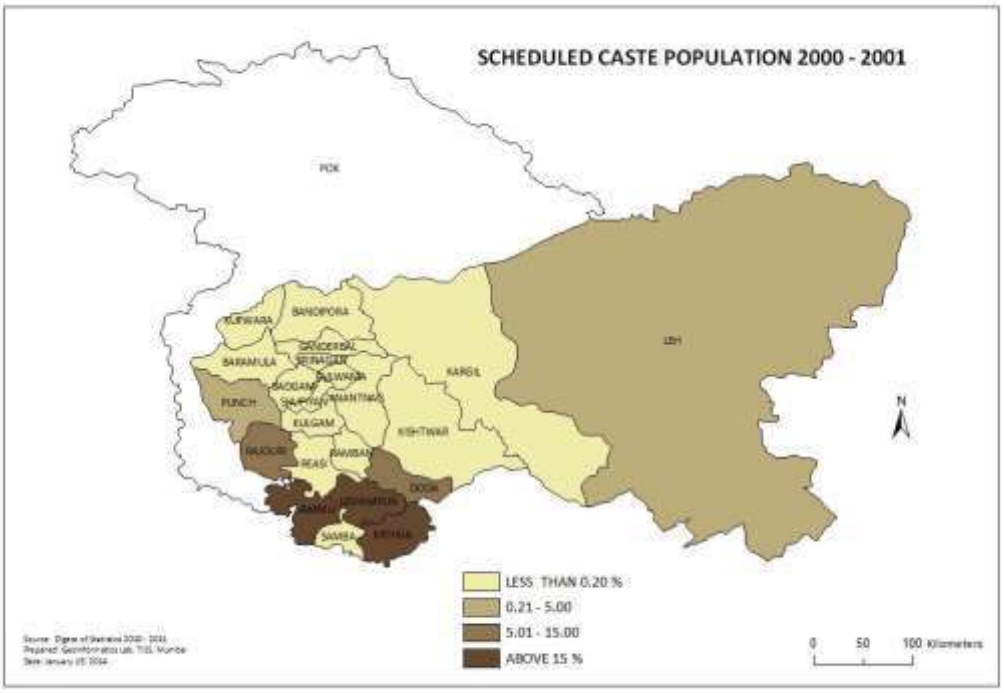


Figure 2.10 Distribution of Scheduled Caste Population in Jammu and Kashmir



The percentage of Rural and Urban population is given in Figure 2.11 and Figure 2.12 respectively. Most of the districts are characterized by a concentrated rural population and economy.

Figure 2.11 Percentage of Rural Population in Jammu and Kashmir

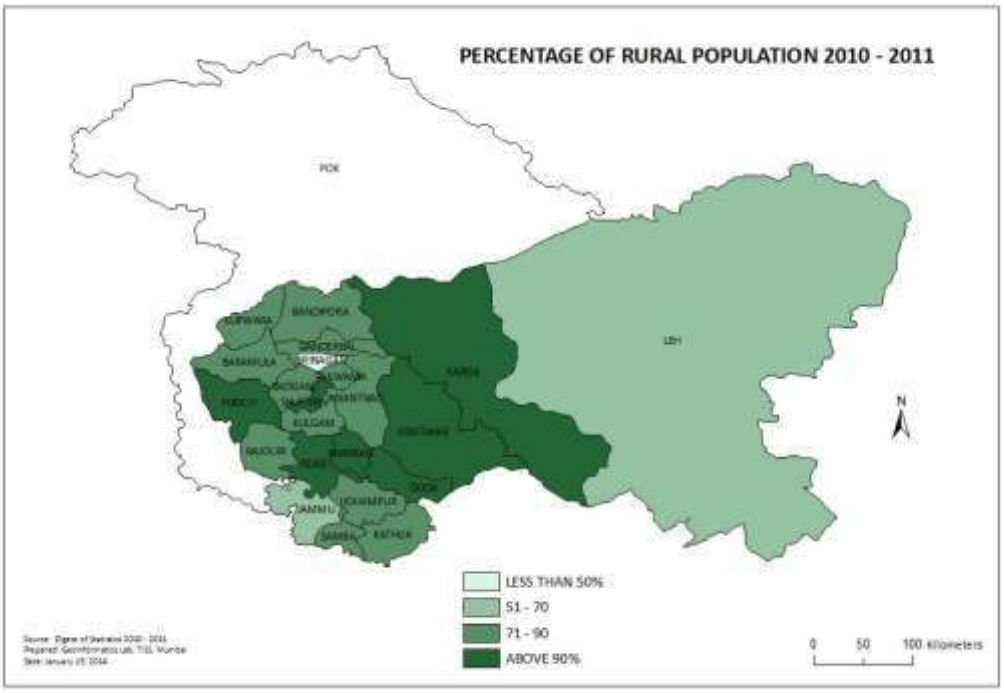
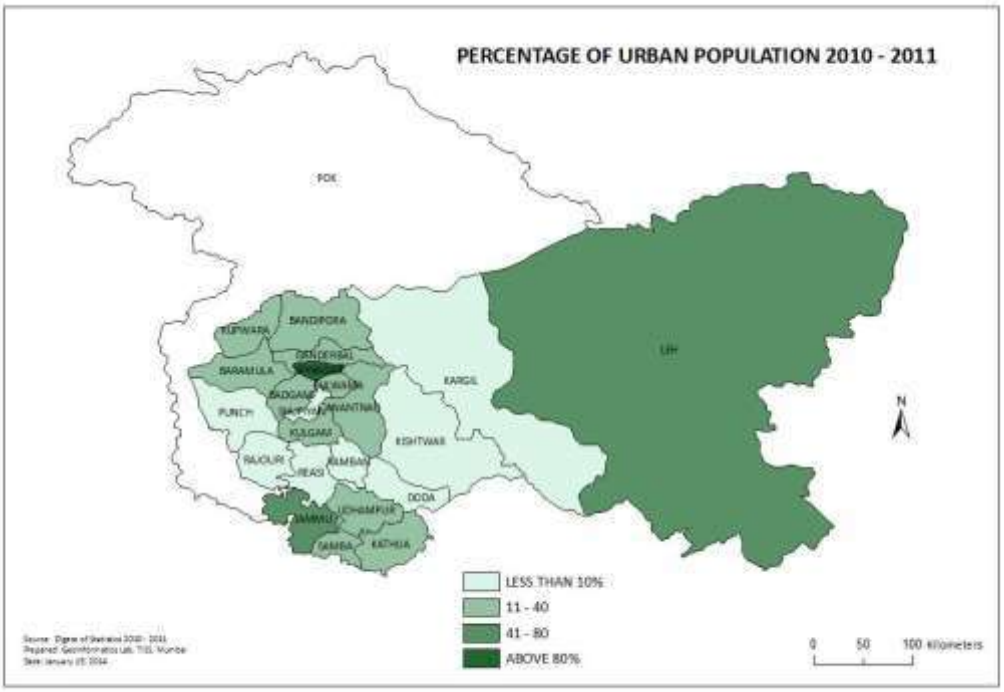


Figure 2.12 Percentage of Urban Population in Jammu and Kashmir



2.3 Hazards, Risk and Vulnerability

The state of Jammu and Kashmir is very distinct from the rest of the country with respect to topography, climate, economy, social setting and strategic location. The state is a multi hazard prone region with natural disasters like earthquakes, floods , landslides, avalanches, high velocity winds, snow storms, besides manmade disasters including road accidents and fires etc. occurring in various parts of the state.

Table 2.3 gives the statistical information related to the number of deaths due to natural hazards in the State. It also shows that in terms of loss of life due to natural hazards, the state contributes a significant share to the national average.

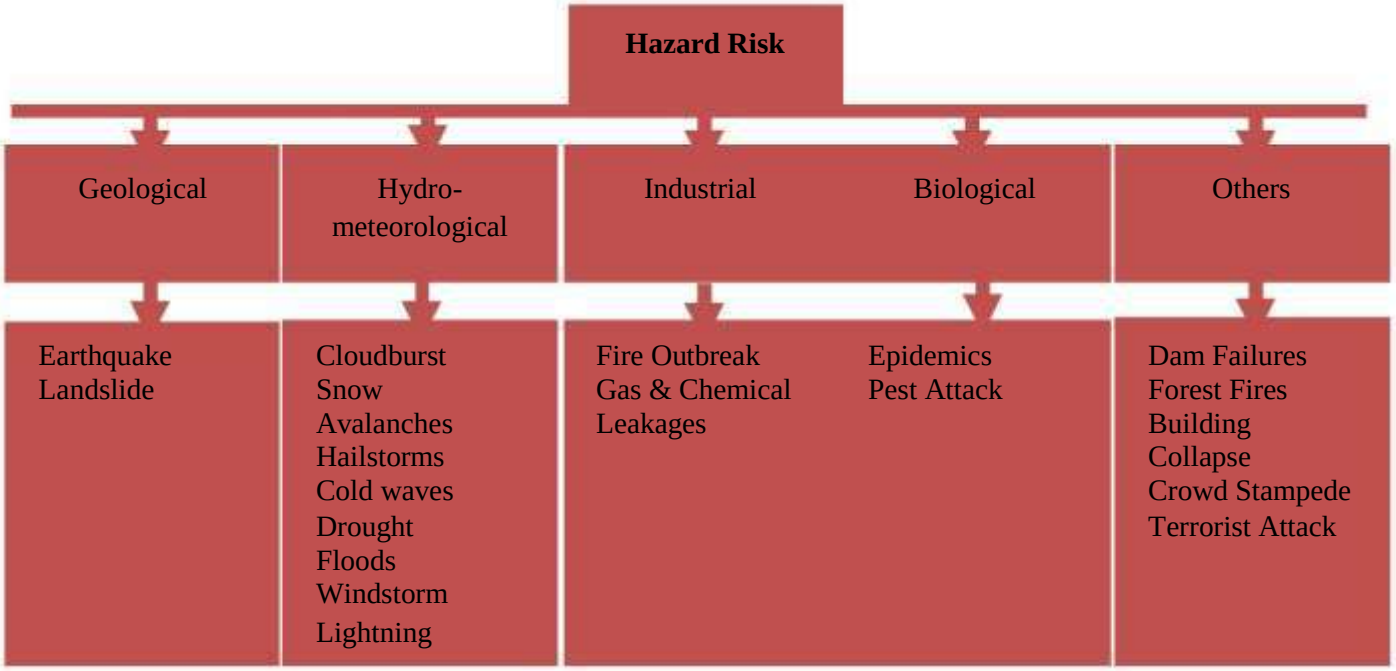
Table 2.3 Total Number of Deaths due to Natural Hazards in Jammu and Kashmir

Year	2011	2010	2009	2008	2007	2005	2004
Male	250	436	174	242	229	668	125
Female	64	139	52	65	49	489	26
Total	314	575	226	307	278	1157	151
% share w.r to All India	1.3	2.3	1.0	1.3	1.1	5.2	0.8

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

Some of the major hazards that happen or have the potential to occur can be classified as geological hazards, hydro-meteorological hazards, industrial hazards and biological hazards (Figure 2.13).

Figure 2.13 Major Hazards that affect the State of Jammu and Kashmir



2.3.1 Earthquakes

The state of Jammu and Kashmir is the western most extension of the Himalayan mountain range in India. It is classified in Seismic Zone IV and V, with intensity MSK of VIII to IX or more. Table 2.4 provides a rough sketch of the earthquakes that have struck the state.

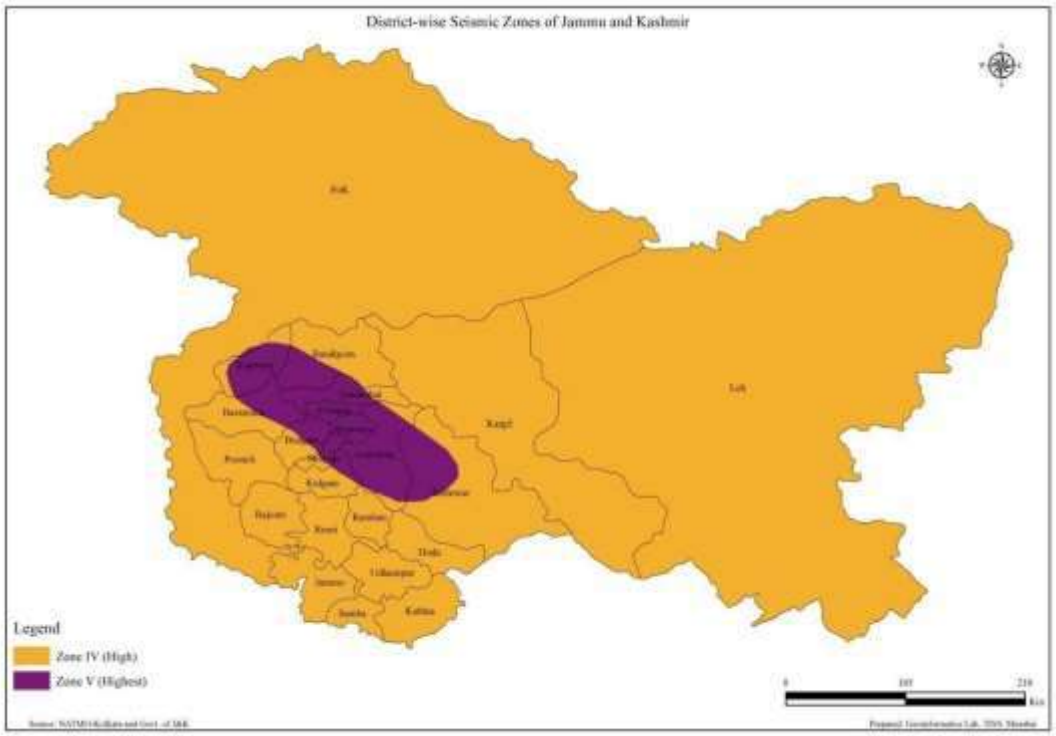
Table 2.4 History of Earthquakes in the State of Jammu and Kashmir

Year of Incidence	Impact
6th June 1828	Mw 6.0
1863	Mw 7.0
30th May 1884	Mw 7.3
30th May 1885	Mw 7.0
4th April 1905	Mw 8.0
22nd June 1945	Mw 6.5
2nd September 1963	Mw 5.3
20th February 1967	Mw 5.5
3rd September 1972	Mw 6.2
16th January 1973	Mw 6.5
23rd August 1980	Mw 5.4
8th October 2005	Mw 7.6

Source: Compiled from District Disaster Management Plans

Kashmir North and Kashmir South districts lie in Zone V. Poonch, Reasi, Udhampur, Jammu, Kathua, Leh, Ladakh and Tribal Territory districts lie in Zone IV. A major portion of districts in Jammu and Kashmir falls under seismic V zone. Regions in the following districts such as Anantnag, Budgam, Bandipora, Baramulla, Ganderbal, Kishtwar, Kulgam, Kupwara, Pulwama, Ramban, Shopian and Srinagar districts occupy seismic V area and the remaining under seismic IV zone (Figure 2.14). Since the earthquake database in India is still incomplete, especially with regards to earthquakes prior to the historical period (before 1800 A.D.), these zones offer a rough guide of the earthquake hazard in any particular region and need to be regularly updated.

Figure 2.14 Earthquake Hazard Map of Jammu and Kashmir



A major earthquake struck the India-Pakistan border on the morning of 8 October 2005. It had a magnitude of Mw 7.6 and was felt strongly in much of Pakistan, northern India and eastern Afghanistan. The earthquake resulted in more than 80,000 deaths in northern Pakistan and adjoining parts of Jammu & Kashmir, India and is by far one of the deadliest in the sub-continent. As per official records of the Ministry of Home Affairs, 385 male and 334 female populations died in the earthquake that struck the state, contributing to 62.1% share to total

deaths due to the natural hazards in the country in the year 2005. The tremors that struck the state in the following December recorded a magnitude of Mw 6.8 and had resulted in damage to lot of houses and buildings.

2.3.2 Landslides

Besides earthquakes, landslides are geological hazards that are common and peculiar to the region. In Jammu and Kashmir, the mass movement varies in magnitude from soil creep to landslides. Solifluction is another type of mass movement that is common on the higher snow covered ranges of the state. Flash floods particularly in narrow river gorges are the cause of some of the major landslides in Jammu and Kashmir. These flash floods trigger landslides in the region eventually jeopardizing the stability of the hill as a whole. The vulnerability of geologically young unstable and fragile rocks of the state has increased many times in the recent past due to various unscientific developmental activities. Deforestation, unscientific road construction and terracing, encroachment on steep hill slopes are anthropogenic activities which have increased the frequency and intensity of landslides. Table 2.5 describes the extent of life casualties due to landslides in the state for the last few years. The table shows that almost every year, parts of the state were affected by one or more major landslide resulting in floods, loss of life and damage to houses, roads, and means of communication, agricultural land.

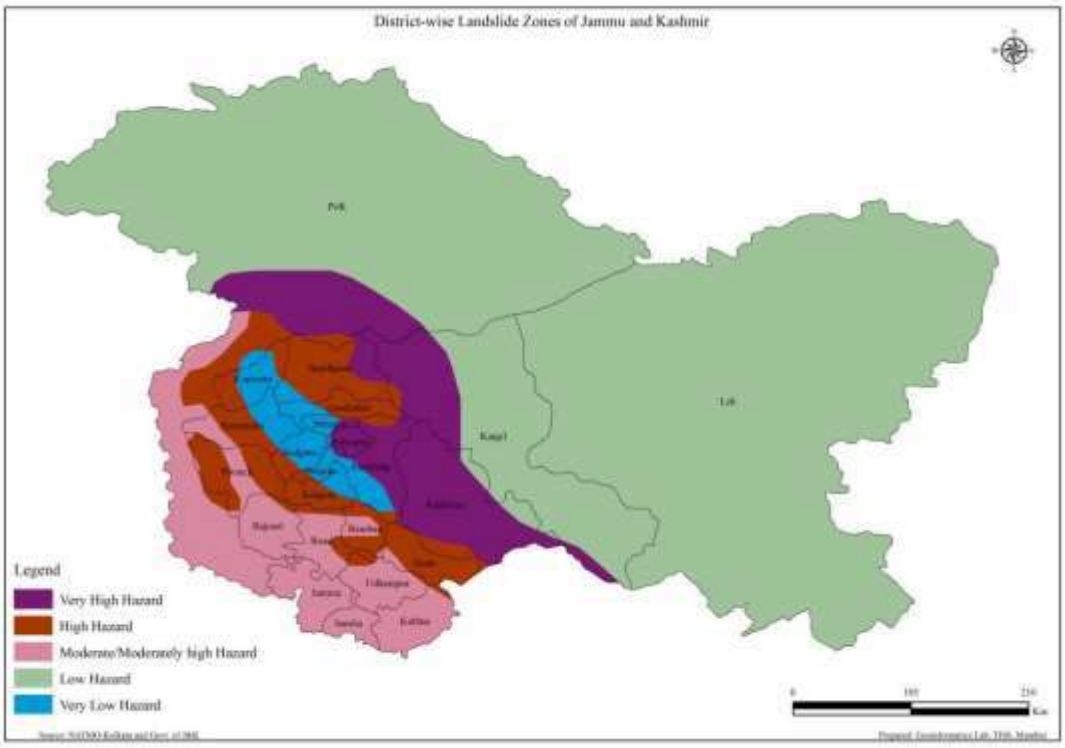
Table 2.5 Number of Deaths due to Landslides in Jammu and Kashmir

Year	2011	2010	2008	2007	2005	2004
Male	4	11	18	7	13	12
Female	3	1	1	0	3	1
Total	7	12	19	7	16	13
% share w.r to total deaths	2.2	2.1	6.2	2.5	1.4	8.6

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

Figure 2.15 shows the district wise landslide zonation of Jammu and Kashmir. Map depicts that parts of Bandipora, Kargil, Anantang, Kishtwar, Pulwama and Shopian districts are very high hazard risk areas. Whereas parts of Kupwara, Baramulla, Budgam, Shopian, Anantnag, Kulgam, Srinagar and Ganderbal are very low hazard areas.

Figure 2.15 Landslide Hazard Map of Jammu and Kashmir



2.3.3 Snow Avalanches, Snow Storm and Snow Fall

Avalanches, river like flow of snow or ice descending from mountain tops are common in the high ranges of Jammu and Kashmir specifically the higher reaches of Kashmir and Gurez valleys, Kargil and Ladakh. Some of the major roadways are highly vulnerable to avalanches in the state. It is very difficult to predict avalanches as they are rarely observed closely and normally occur during a short time period of one or two minutes. During winter, the valley of Kashmir receives the snow fall and rainfall from the winds arising from Mediterranean Sea. The degree of coolness is determined by the altitude of the zone. Table 2.6 describes the loss of life in numbers due to avalanches in the state for the last few years.

Table 2.6 Number of Deaths due to Avalanches in Jammu and Kashmir

Year	2011	2010	2009	2008	2007
Male	12	20	4	14	10
Female	0	0	0	0	1
Total	12	20	4	14	11
% share w.r to total deaths	3.8	3.5	1.9	4.6	4.0

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

Our preliminary analysis shows that Udhampur, Ramban, Doda, Kishtwar, Reasi, Leh, Bandipora, Kargil, Ganderbal, Srinagar, Budgam, Shopian, Kulgam are high impact avalanche prone districts in Jammu and Kashmir.

2.3.4 Windstorm

Windstorms are high velocity winds that sweep with a wind speed o f more than 55 km per hour. The windstorm occurrence in the state is mostly during spring and summer and often leads negative impact to lives and property. One of the major reasons for the catastrophe is due to the lack of early warning procedures and preparedness measures. Non availability of technical expert to aware the people to construct wind proof roof tops as well as the deficiency in building code standard also put the lives and property of people under risk.

2.3.5 Flash Floods

Flash floods, short lived extreme events, which usually occur under slowly moving or stationary thunderstorms, lasting less than 24 hours are common hazard events in the state. As a result of the high velocity of the current, which can wash away all obstacles in its way, this phenomenon has resulted in enormous loss of life and property in various parts of the region. Floods also occur in the summer when heavy rain is followed by a bright sun, which melts the snow. If an embankment is breached or topped, a district which is dry a few hours back could turn into a lake after a few hours.

Table 2.7 describes the loss of life in numbers due to floods in the state for the last few years. The table shows that over 250 people were killed and property worth crores was damaged in t

flash floods and cloudbursts that hit Jammu and Kashmir in 2010. As many as 234 people died in Leh and 424 were seriously injured, Rajouri district in Jammu division witnessed 20 deaths followed by Reasi (11), Anantnag (10), Kathua and Poonch (7 each), Doda and Baramulla (5 each), Jammu, Udhampur and Kargil (2 each) and Budgam and Shopian (one each). Baramulla suffered a loss of Rs 61 crore in agricultural sector and Rs 58.22 crore in the horticulture sector, the highest economic loss in the state. Shopian suffered a loss of Rs 10.35 crore in the horticulture sector. In the border district of Kupwara, damage caused due to floods is estimated by the government to be around Rs 75.40 crore. Table 2.9 provides a sketch of the flash floods in the recorded history of the state. Seventeen districts in the state such as Doda, Ganderbal, Samba, Pulwama, Kishtwar, Kathua, Ramban, Reasi, Bandipora, Leh, Srinagar, Shopian, Samba, Budgam, Udhampur, Kulgam and Rajouri are greatly affected by flash floods.

Table 2.7 Number of Deaths due to Flash Floods in Jammu and Kashmir

Year	2011	2010	2009	2008	2007	2005	2003
Male	8	167	0	2	2	8	6
Female	0	88	0	0	0	2	2
Total	8	255	0	2	2	10	8
% share w.r to total deaths	2.5	44.3	0	0.7	0.7	0.9	4.2

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

2.3.6 Floods

Specific consideration in the light of extra ordinary flood of September, 2014.

1. The exceptionally heavy rainfall during 4th-6th September, 2014 was the main cause of heavy flooding in Jhelum, Chenab and Tawi basins of J&K. From the detailed analysis of the rainfall, it has been found that the rainfall in Jhelum basin during 3rd to 7th September, 2014 was about 320% more than the monthly normal of August and about 600% more than the monthly normal of September. Similarly, in case of Chenab Basin the average rainfall of 3rd to 7th September, 2014 was about 300% more than the monthly normal of August and about 500% more than the monthly normal September in Tawi basin the rainfall of 3rd – 7th September, 2014was about 21% more than the monthly normal of August and 200% more than the monthly normal of September.

2. Srinagar Valley is a bowl shaped valley where the elevation varies from about 1600 metres to 5300 meters on three sides of the valley. However, there is a flat plain of Kashmir Valley at EL.1600m which does not allow rapid drainage of rain waters contributed by higher reaches. During the 4th -6th September, 2014 a lot of runoff was contributed from the higher catchment in to the valley. Due to lack of steep slopes the runoff caused severe drainage congestion and inundation in Srinagar and adjoining areas.

3. From the hydrological simulations it has been estimated that the flood peak in Jhelum river at Sangam located about 50Km upstream of Srinagar was of the order of 2500 cumec (88277 cusec). The flood peak at Srinagar was of the order of 3200 cumec (113000 cusec). From the historical records available with Govt. of J&K, it has been found that floods more than 2500 cumec (88277 cusec) has been observed during the years 1950,1957,1959,and 1966 with respective flood peaks as 2617, 2549, 3398, and 2872 cumec. These historical records show that entire Srinagar Valley has been subjected to severe floods during that time also.

4. The flood peak of about 2500 cumec (88000 cusec) at Sangam and 3200 cumec (113000 cusec) at Srinagar sustained for about 6 hours resulting in inundation of large low lying areas and heavy damage in the Jhelum basin especially in Srinagar area due to over overtopping and subsequent breaching of flood embankments. It has been found from the hydrodynamic study that the banks of river Jhelum in almost entire reach between Sangam and Srinagar were over topped due to the occurrence of above flood peaks

.

5. The safe carrying capacity of river Jhelum between Sangam and Srinagar is about 900 cumec (31700 cusec). The flood of September, 2014 was about 3 times more of the capacity of river Jhelum. This resulted in water spread beyond the Jhelum river banks and existing flood spill channels and consequent flooding in the entire adjoining areas.

6. Earlier, low lying areas along the course of river Jhelum were functioning as natural flood detention basins during floods and were absorbing flood water spilling over the banks of river Jhelum. Subsequently, the same flood water used to get released slowly. However, during the last three to four decades, maximum urbanisation has taken place in these low lying areas due to which there is no space for water to get stored during flood seasons. The situation in Jhelum Basin has got further aggravated due to the siltation and the encroachments/development of various water ways like rivers, lakes, marshy land etc, resulting in limited carrying capacity of Jhelum water bodies.

7. The flood peak in Chenab basin at Akhnoor was of the order of 23500 cumec (832700 cusec) which is about 76% more than the historical flood of 13300 cumec (469600 cusec) recorded on 10th September, 1992 and caused flooding in adjoining areas.

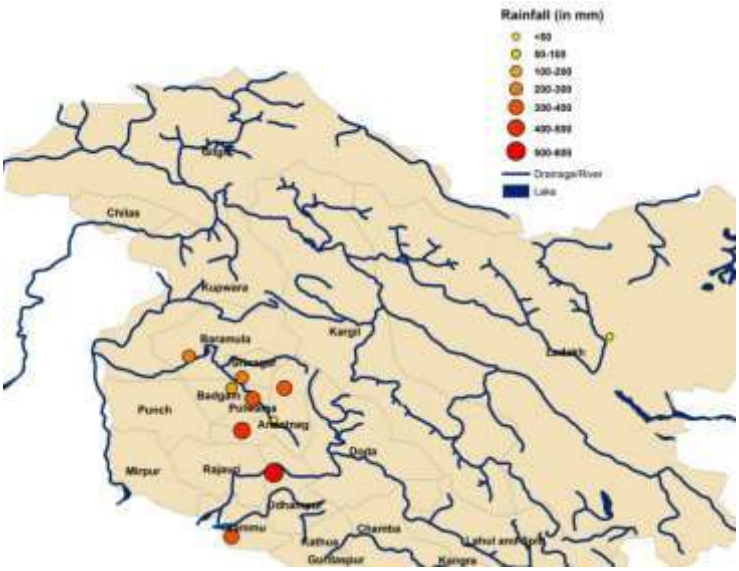
8. The flood peak in Tawi River at Sidari (Jammu) during September, 2014 was of the order of 11000 cumec (388400 cusec), which exceeded the highest recorded flood of 9124 cumec (322175 cusec) occurred on 7th July, 2005. This flood peak was resulted due to the very high density of rainfall of the order of more than 33mm/hour between 1 am and 3 am of 6th September, 2014 which caused flooding in adjoining areas

2.3.6.1 September 2014 episode of extreme flooding and climate change

Jammu and Kashmir state has a very peculiar geography and climate. Most of the valley regions of the state are fed by rivers like Jhelum, Indus and Chenab. Low-lying areas of the Kashmir Valley, especially Srinagar, along with parts of Jammu, are prone to floods that occur due to heavy rainfall in upper catchment areas. Recent heavy rains, in September 2014, caused devastating floods that claimed at least 280 lives, and stranded hundreds of thousands of residents.

This recent flood in the state is unprecedented in nature , where the most part of the Southern District has received very high rainfall. Weekly total rainfall for most of the stations for the period Sept 2 to Sept 8, 2014 was more than 200 mm. This is very high for a terrain like Jammu and Kashmir. Figure 1 gives spatial distribution of weekly rainfall for select India Meteorological Department stations.

Figure 2.16 Weekly sum of rainfall for the period Sept 2 to Sept 8, 2014 of IMD stations



(Data source: IMD Automatic Weather Stations data for Jammu and Kashmir)

Analysis of long term daily rainfall of the region, using 25 km IMD gridded data, for the period 1951 to 2013, suggests that heavy rainfall like that September 2014 has been unprecedented in the past record. Analysis of daily annual maximum rainfall suggests that most of the Southern District of Kashmir valley has around 5 year return period for annual maximum daily rainfall exceeding 64.5 mm (Figure 2). Climate model analysis, using MIROC 4h data (which has a spatial resolution of 50km by 50km), for the period 2006-2035 under RCP 4.5 scenario suggests that the return period of annual daily rainfall exceeding 64.5 mm threshold will further decrease for most regions of the state (Figure 3). This implies that, according to climate models, in future there is increased possibility that more frequent events of extreme daily rainfall will be witnessed.

Figure 2.17 Return period of annual maximum daily rainfall exceeding 64.5 mm (in years)

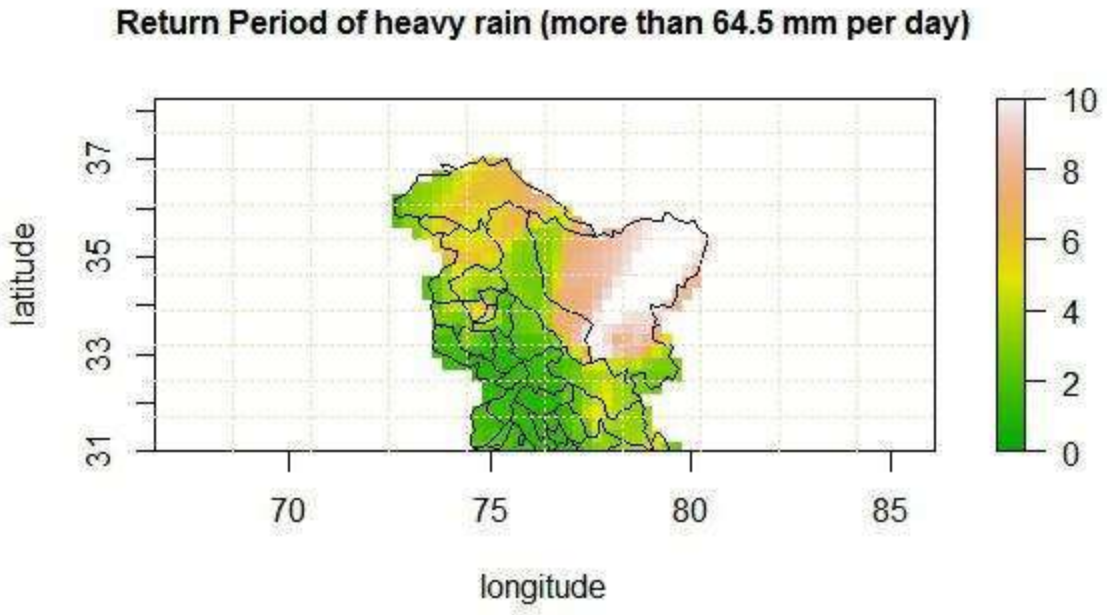
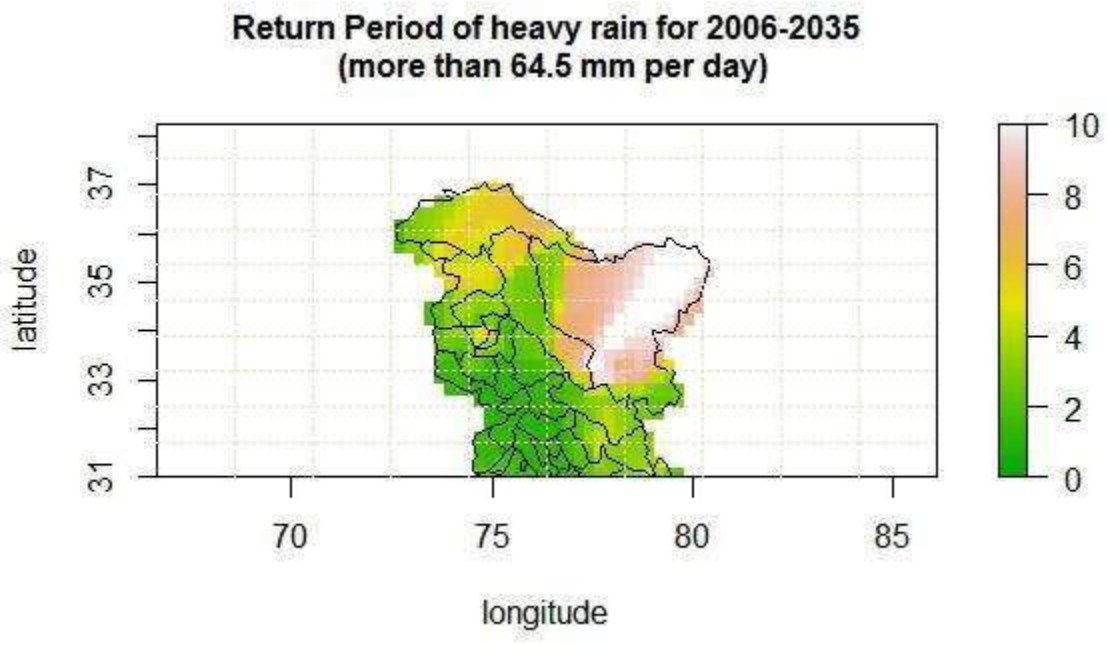


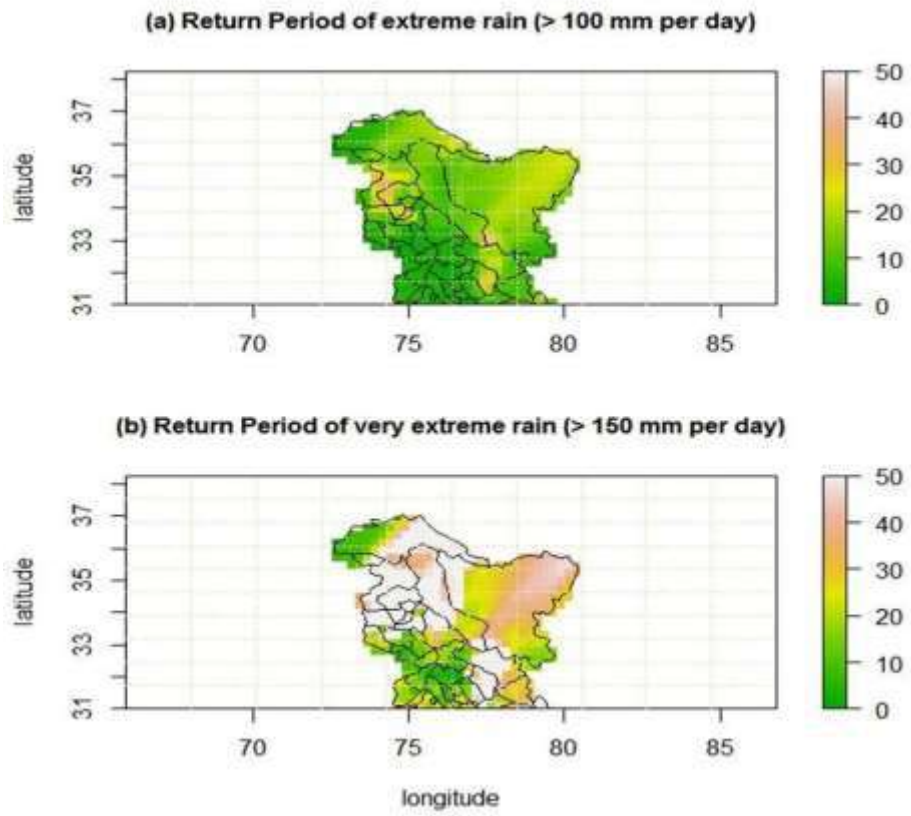
Figure 2.18 Future return period of rainfall exceeding 64.5 m for future of period 2006-2035,under RCP 4.5 scenario



Similar analysis for 100mm and 150 mm of rainfall suggests that the return period of daily extremes exceeding this threshold, particularly in Southern Districts, is very low compared to the other regions of the state (Figure 4 a and b). Comparison of long term data in the region (Figure 2 to 4) and recent rainfall event in the state (Figure 1) indicate that the recent event was the rarest of rare and even the long term rainfall record analysis does not show such high variability (Figure 4b).

Considering recent extreme rainfall episodes as an anomaly, return period analysis suggests that most of the Southern Districts of the valley may experience frequent extreme episodes. Although a detailed exercise is required to model the future more accurately together with scenario based uncertainties, this analysis provides an indication that the state authorities should plan for extreme rainfall of the region, particularly for the Southern Districts, which are the most populated and also close to the drainage network.

Figure2.19 Return period of daily rainfall for threshold 100 and 150 mm per day (white region within polygon indicates that there is much higher than 100 years of return period for value exceeding given threshold based on analysis of historical data for the period 1951-2013.



2.3.7 Urban Flood

Urban flood is not an unknown event in India. The uneven distribution of rainfall coupled with mindless urbanisation, encroaching upon and filling up of natural drainage channels and urban lakes to use the high value urban land for buildings are the cause of urban flood. the Kashmir valley is dotted with wet lands which plays a very important role in controlling flood in the region. Apart from natural ponds and lakes, the valley also houses other types of wet lands like rivers, streams, riverine wetlands, manmade ponds and tanks. Dal Lake, Anchar Lake, Manasbal and Wullar Lake are some of the larger wet lands in the area facing a major threat due to urbanisation.

Dal Lake, one of the largest natural lakes, covered an area of 75Sq.km in 1200 A.D. the lake area almost reduced to one –third in the eighties and has further reduced to one-sixth of its original size in the recent past. The lake has also lost almost 12 meter of depth. Just like Dal, encroachments have also happened on the banks of one of the most prominent rivers in the state,

the Jhelum that passes through Srinagar the Summer Capital of the State. The water bodies in Jammu are also under threat. The city was once famous for its traditional ponds and tanks which has been erased to houses, commercial complexes and parks in the city. These factors demonstrates how rapid urbanisation in and around the city make flood events inevitable in the urban areas.

2.3.8 Cloudburst

Cloudburst is a disastrous weather condition caused by the downpour, over a small geographical area for a relatively short period. A cloudburst is construed by the meteorologist when there is an intense rainfall at a rate of 100 mm per hour. At the event of cloudburst, 20 mm of rain may fall in a few minutes. The heavy down power often leads to landslides, flashflood and pose threat to life and property. Topography of the state plays a crucial role in the formation of cloudburst. The hilly terrain of the state favors the formation of cumulonimbus cloud. This leads to the shedding of larger droplets of water at a higher rate, resulting in higher impact on the ground.

Our preliminary analysis shows that the high impact areas in Jammu and Kashmir due to cloudburst are Budgam, Leh, Udhampur, Ramban, Doda, Reasi, Bandipora, Kulgam, Rajouri, and Srinagar districts.

2.3.9 Drought

The south-west monsoon plays a significant role in determining the sustenance of agriculture depended population in the state of Jammu & Kashmir. More than 75 % of the populations in Jammu & Kashmir are directly or indirectly depended on agriculture for livelihood. The deficiency in monsoon rain quite often results in drought, affecting the livelihood of the rural population. The state is prone to deficient rainfall once in three years, putting lives of the majority of population at stake. Table 2.11 provides the recorded history of drought in the state of Jammu and Kashmir. Shopian, Leh, Pulwama, Bandipora, Srinagar, Udhampur, Ramban, Kathua, Kishtwar, Ganderbal and Doda are highly affected where as Samba and Rajouri are relatively less affected.

2.3.10 Hailstorm

Hailstorm creates great devastation to the standing crops in the state. Every year thousand acres of crops are being affected due to the hailstorm resulting in the loss of crop yield. The government of Jammu and Kashmir has imparted crop insurance schemes to support the agrarian population who has been affected by natural disasters such as hailstorm, drought, lightning etc. The insurance schemes are meant to support Rabi crops such as wheat, mustard and potato. Udhampur, Ramban, Doda, Kishtwar, Bandipora, Srinagar, Baramulla, Kupwara, Anantnag, Pulwama, Budgam, Jammu, Kathua, Rajouri , Poonch districts in Jammu and Kashmir are the areas under risk due to hailstorm.

2.3.11 Other Heat and Cold Weather Events

The population of the state is also exposed to extreme hot and cold weather events. Table 2.8 and Table 2.9 describe the impact on life of people due to hot and cold weathers respectively.

Table 2.8 Number of Deaths due to Heat in Jammu and Kashmir

Year	2011	2010	2007	2005	2004
Male	1	6	1	2	1
Female	0	0	0	0	1
Total	1	6	1	2	2
% share w.r to total deaths	0.3	1.0	0.4	0.2	1.3

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

Table 2.9 Number of Deaths due to Cold in Jammu and Kashmir

Year	2011	2010	2009	2008	2007
Male	3	6	4	9	7
Female	0	2	1	0	0
Total	3	8	5	9	7
% share w.r to total deaths	1.0	1.4	2.2	2.9	2.5

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

2.3.12 Lightning

The population is also exposed and vulnerable to lightning and is indicated in Table 2.10 below.

Table 2.10 Number of Deaths due to Lightning in Jammu and Kashmir

Year	2011	2010	2009	2007	2003
Male	2	1	1	3	2
Female	0	0	0	0	0
Total	2	1	1	3	2
% share w.r to total deaths	0.6	0.2	0.4	1.1	1.1

Source: Compiled from the statistics released by Ministry of Home Affairs, Govt. of India

2.3.13 Biological Hazards

Biological hazards with respect to Jammu and Kashmir could be understood in terms of epidemics among humans, livestock and pest and disease with respect to agriculture. Within a time span of January 2012 to June 2013, the following cases were reported in Kashmir division alone: Acute diarrheal disease (18,2392), Malaria (176), Bacillary Dysentery (27,746), Enteric Feer (25,700), Viral Hepatitis (4177).

The prevalence of livestock disease has been recorded in the state of Jammu and Kashmir. Outbreaks normally occur during the post monsoon season. The prominent diseases reported are Black Quarter (BQ), Haemorrhagic Septicemia (HS), SG-POX and Foot and Mouth Disease (FMD). Severe outbreaks were observed in Udhampur, Doda and Kathua districts. Pest related problems are another biological hazard prevalent in the state. Pest attack not only decreases the productivity of the fruits but also the quality of the fruits which in turn affect the livelihood of the people who depend on agriculture. The need to provide effective and ecological sound insect and disease management is very essential.

2.3.14 Forest Fires

The state of Jammu and Kashmir is well endowed with forest resources that play a significant role in protecting the ecosystem of the region. Forest occupies about 20,230 sq km of area in the

state. They serves as a catchment for river basin which enhances the soil stability thus prevent soil erosion. Every year in Jammu and Kashmir, there is a high probability of forest fire in the months of May and June. Though forests are prone to fire during the dry season, human activities such as military action, timber smuggling etc holds a huge responsibility for the onset of the fire. Forest cover in the districts of Kishtwar, Ramban, Reasi, Udhampur, Kathua, Samba, Doda, Kupwara and Srinagar are areas that are prone to forest fire.

2.3.15 Industrial Hazards

There has not been any report of industrial hazards in the state. Industrial hazard principally consist of four hazards such as fire, explosion, toxic release and environmental damage. However, the state needs to be cautious of the industrial wastes that are disposed, which could have severe impact on the ecology and health of the citizens in the state. According to National Inventory of Hazardous Wastes Generating Industries and Hazardous Waste Management in India (2009), the following places have been identified as generating hazardous waste.

Table 2.11 Type and Quantity of hazardous waste being generated in Jammu and Kashmir

Location	Type & quantity of hazardous waste being generated MTA (million tons per annum)			
	Land Disposable Waste	Recyclable Waste	Incinerable Waste	Total Waste
Jammu Province				
Ind. Complex Bari Brahmana	7546	3522	18	11086
Ind. Estate Gangyal & Digiana	303	1079	22	1404
Other areas of Jammu	119	52	0	171
Ind. Growth centre Samba	28	440	68	536
Birpur/other areas Of Samba	3	0	2	5
Ind. Estate Kathua	1839	1759	6	3604
Iid centre Udhampur	0	0	25	25
Kashmir Province				
Kashmir	108	15	0	123

Source: National Inventory of Hazardous Wastes Generating Industries & Hazardous Waste Management in India February 2009

2.3.16 Fire

The state of Jammu and Kashmir is also prone to building Fires. As per a survey following are some major fire incidents in the last decade:

- January, 2007 (39 shops and 09 commercial buildings in the Maiden-e- Keran, Kupwara)
- November,2007 (43 residential houses and 03 shops in Pattan, Baramulla)
- May, 2008(260 Juggies, 08 shops and 1 school in Gandhi Nagar, Jammu)
- August, 2008 (37 shops, 1 residential house and 1 vehicle in Poonch)
- May, 2009 (57 shops and 01 residential houses in Katra)
- November, 2009 (45 shops in M.R Gunj, Srinagar)
- Feburary,2010 (31 residential houses, 11 kitchens, 59 shops in Pattan,Baramulla)
- July, 2010 (20 residential houses, and 46 shops in Chokibal, Kupwara)
- December,2010 (43 residential houses and 01 mosque in Keterpora, tulail)
- March, 2011 (26 residential houses in BadeeAjab, Tulail)
- October, 2011 (43 residential houses in Khatrota Bandipora)
- June,2012 (Ziyaratee- Pir Dastegeer Sahib Khanyar)
- November, 2012 (37 residential houses in Frislan, Pahalgam)
- January, 2013 (19 shops, 01 hotel,01 commercial building, TRC building, SRTC Office, 5 tes stalls, 01ATM.)
- Jully,2013 (Civil Secretariat Srinagar)
- August,2013 (35 shops, 01 commercial buildings, 36 vehicles in Kashtwar)
- May, 2014 (Neelum Hotel Bus Stand jammu, 04 killed)
- November, 2014 (Uri Hydroelectric power Project).

2.3.17 Mines

The state has a total of 72 mines. These mines are diverse, rich in minerals such as limestone, gypsum, quartzite, marble, lignite, granite and borax. Some of the mining locations within Srinagar province as recorded by the Geology and Mining are Anantnag, Pulwama, Bandipora, Ganderbal, Kupwara, Leh and Kargil and Uri. Most of the mining sites are also confined to remote hilly regions and their proximity to seismic activities and landslides are also very high. Safety of the labors in the mines and communities living in the different fault zones of the mining sites should be the top priority. Also, the practice of sand mining and Quarrying should be checked and must be regulated.

2.3.18 Tourism / Crowd Management / Stampede

The state of Jammu and Kashmir is vulnerable to crowd related disasters. Pilgrimage tourism that is promoted widely to the Amarnath Cave, Vaishno Devi temple, Hazratbal shrine and monasteries in Ladakh all need to take appropriate crowd management measures. Most often, the situation becomes chaotic due to large movement of people that could result in stampede, damage to limbs, injury and loss of life.

2.3. 19 Drowning

The state of Jammu and Kashmir is very much prone to disaster resulting from drowning related incidents. For instance, it was reported in 2012, that in the roads of Doda and Kishtwar, by the River Chenab, more than 500 people navigating the route lost their lives. It was also reported in April 2014, that in the last four years at least 51 persons died due to drowning in different districts of Kashmir region alone. This necessitates that the state have immense capacities to provide warning as well as human resources in terms of divers, rescue teams and related equipments.

2.3. 20 Railway Safety

The Kashmir Railway, officially termed the Jammu Udhampur Srinagar Baramulla Railway link, routes crosses major earthquake zones and is subjected to extreme temperatures of cold and heat. Due to the in hospitable terrain, the railway links is also susceptible to landslide. As the State plans to expand its railway network within the state as well as to rest of the country, one needs to judiciously plan appropriate disaster mitigation and response plans pertaining to rail accidents including technical failure, fire and sabotage.

2.3.21 Road Accident

The state due to its terrain is prone to road accidents. According to the report release by the Chief Minister in 2012, during the years 2009, 2010 and 2011, 18, 786 accidents took place as a result of which 3,288 persons were killed and 27,165 received injuries. Of these, 1,126 persons were killed and 8,348 injured in 6,006 accidents in 2009, 1,042 were killed, 8,709 were injured in 6,136 accidents in 2010 and 1,120 were killed, 10,108 injured in 6,644 accidents in 2011. Appropriate incident command system to deal with road accidents has to be developed taking into account the nature of the roads, terrain and frequency of accidents happening in the roads of the state.

Preliminary interactions with the officials with the state agencies also revealed the following challenges. To achieve the vision of a safe and secure Jammu and Kashmir, the following current realities need to be understood, recognized and necessary corrective measures has to be taken.

- A **detailed Hazard Risk Vulnerability Atlas** for the state of Jammu and Kashmir is essential.
- **Incorporation of building code** while constructing new structures or **retrofitting** old ones.
- Establishing **reliable mechanism and expertise for assessing damage** caused due to natural hazards.
- Setting up **efficient, operational EOCs** at Jammu and Srinagar respectively, ensuring a very strong network of **coordinating authorities** at all levels (State, District, Tehsil, Block level)
- **Integrating Disaster Risk Reduction in Development Planning**
- Strengthening **professional expertise** in dealing with disaster risk reduction specifically **with respect to planning, logistic management, evacuation and shelter.**
- O**perationalizing DM plan at the Tehsil and District level.**
- **Strengthening Community based Disaster Risk Reduction** initiatives.

3. Preventive Measures

3.1 Strategy

The strategy envisages the development and implementation of a **policy framework** on disaster risk reduction from a holistic perspective, which emphasises on prevention, mitigation and preparedness in pre-disaster phase. This requires the (i) establishment of the **mitigation fund** for the State; (ii) raising **awareness for disaster risk reduction** at all levels and (iii) **improving preparedness** amongst all stakeholders using optimised and accessible **Information and Communication Technology** Systems. To achieve the same, there needs to be appropriate **legislative and regulatory instruments** that would support and strengthen the enforcement mechanisms at different levels of the State government. At the local and regional levels, there needs to be relevant **capacity building** for vulnerability and risk assessment and in investigating the nature and extent of damage in post disaster situations. The strategy will also be to promote the use of disaster resistant construction techniques. The government will ensure that a culture **of safe building codes and practices** are followed across all sectors and will be enforced by law. By promoting and encouraging scientific research on risks and disasters, database on disasters and vulnerability, and a sound understanding on their impacts and preventive measures to be taken will be developed for the state.

3.2 Guiding Principles and Framework for Mitigation

This plan recommends certain guiding principles that would facilitate effective mitigation in tune with an ecosystem based approach to disaster risk reduction. Some of the guiding principles that would facilitate effective mitigation are given in Table.3.1.

Table 3.1 Guiding Principles for Mitigation

1. Ensuring commitment from all stakeholders. 2. Build knowledge and awareness.

3. Identify and cooperate with relevant stakeholders.
4. Explore and prioritise potential hazard impacts.
5. Explore a wide spectrum of mitigation and adaptation processes
6. Prioritise mitigation options.
7. Modify existing policies, structures and processes.
8..Monitor and evaluate systematically

3.3 Prevention and Mitigation Measures

The prevention and mitigation strategies need to be both structural and non-structural strategies. While the former generally indicates investment made on physical constructions or other development works (such as engineering measures and construction of hazard resistant / protective structures), the latter refer to soft measures such as awareness creation and education, policies strengthening techno-legal systems and practices, training, capacity development etc.

3.3.1 Structural Mitigation Strategies

The general plan outline for any kind of structural mitigation for the state of Jammu and Kashmir is given below.

3.3.1.1 Land Use Planning

- Land use planning should take to account the hazard risk and vulnerability context of the state.
- Ensure that development schemes of the State are undertaken in view of hazard, risk, vulnerability and microzonation.
- Provide sufficient evacuation and transportation space in roads and streets that are highly risk prone to hazards (includes widening of existing roads and building of new evacuation routes).
- Preparation of risk vulnerability maps; and notification of risk prone areas by micro-zonation.

3.3.1.2 Infrastructures for Disaster Management

- Establishing / construction of EOC (Emergency Operations Centre) and Emergency Response Centres (ERC) at state and district level.
- Operationalizing EOC at all levels.
- Construction and strengthening of disaster management cells not only at the district levels, but also at local jurisdictions of governance in tune with the ecological and social vulnerability of the populations at risk.
- Construction/strengthening of disaster shelters, disaster management stores and essential life-line infrastructures that is accessible by diverse vulnerable groups.

3.3.1.3 Adaptation of New/Appropriate Technology

- Application of Science and Technology based innovations in improvising infrastructures such as dams and reservoirs, building designs, construction etc.
- Identifying appropriate vernacular architecture and related technology that strengthens the resilience of structures

3.3.2 Non-structural Mitigation Strategies

Non-structural mitigation measure ranges from planning, logistics, techno legal regime, capacity building, and community-based disaster mitigation to ecosystem conservation and management. Activities carried out under each task should be executed by responsible line departments. Accordingly, activities of planning involves strict regulation of land use; regular monitoring of life line structures; ensuring multi hazard preparedness, response and mitigation plan at all levels and strategies for implementation; evolving or strengthening administrative capabilities to plan and implement post disaster management; introducing necessary amendments in various laws concerned with planning and developments of cities and towns by Development Authority, Revenue department, PWD (R&B) and the civil society. The general plan outline for any kind of non-structural mitigation for the state of Jammu and Kashmir is given below.

3.3.2.1 Mainstreaming Disaster Management in Development Programmes

- Incorporate DRR concept into developmental schemes
- Ensure that each development programme / scheme in the state should be sanctioned / undertaken only if it meets the requirement of disaster risk reduction.

3.3.2.2 Techno-legal Regime

- Restructuring of zoning regulations.
- Strict regulation of land use.
- Regular monitoring of life line structures.
- Introduce necessary amendments in various laws concerned with planning and developments of cities and towns in the state.
- Enforcement and Strict adherence to building codes and rules in design and implementation.
- Review and revision of building laws taking into account the objectives of disaster resilience.
- Review and revision of Town planning acts and rules/Master Plans taking into account the objectives of disaster resilience.
- Continuous monitoring and prevention of unplanned, ad-hoc development of buildings and other infrastructure.
- Ensure that expert comments are taken / made on permitting the construction of new buildings.

3.3.2.3 Planning

- Develop vulnerability atlas map
- Prepare multi hazard preparedness and mitigation plan at all levels.
- Prepare Departmental Contingency plans for managing emergency situations
- Ensure that each department should nominate a nodal officer for point of contact
- Develop strategies for implementation of risk mitigation.

- Prepare generic categorization of disaster response for multiple hazards (articulation of Quick Response Team, Quick Assessment Teams).
- Prepare hazard wise departmental action plan and SOPs.
- Update the plan as per the requirement.
- Monitor similar activities at district and Tehsil level

3.3.2.4 Capacity Building

- Capacity building through Simulation and Mock Drills needs to be carried out both horizontally (across line departments) and vertically (at all levels)
- Develop a cadre of specialized task force in disaster mitigation.
- Strengthen the skills and knowledge of task forces involved in the mitigation of disasters.
- Conduct workshops/training for sensitization of the stakeholders.
- Carry out specific research for instance EIA and SIA
- Regular updation and documentation of disaster data base.
- Launch awareness campaigns regarding safety measures against potential hazards.
- Develop multi- hazard IEC material for Publication and Distribution.
- Organize exhibitions for public awareness through local institutions.
- Promote communication activities such as awareness, emergency contact numbers, do's and don'ts through posters, volunteers training, and village task force.
- Formulate literature of do's and don'ts for building in local/ vernacular languages.
- Conduct regular drills at all institutions at state, district, village and Tehsil levels.
- Networking to share knowledge and best practices on effective approach.
- Encourage disaster insurance for crop, building, and health.
- Include disaster related topics in schools and colleges curriculum.
- Strengthening of co-ordination between stakeholders at all level
- Encouraging Co-ordination and Information sharing between stakeholders - Knowledge based management and sharing the existing information / data amongst relevant stakeholders. Encourage Academic Collaboration with other Universities offering Disaster Management specialization for exchanging and enhancing knowledge and information
- Training medical and non- medical staffs for handling Mass Casualty and providing basic First Aid
- Ensure that each village has 100 trained individuals in basic first aid for emergency response
- Ensure that each district has at least 2 divers to deal with drowning related incidents. Similar expertise to deal with specific hazards needs to be identified and capacity building for the same needs to be ensured.

3.3.2.5 Safety Audit

- Ensure that all departments undertake safety audits in their prescribed domains
- Ensure fire audit of both government and private hospitals and other life line infrastructures, including the proposed EOCs.
- Ensure that BIS seismic code are incorporated in the construction of new buildings.
- Carrying out structural safety audit of all critical life line structures at regular intervals.
- Proper maintenance of existing helipads for emergency purposes
- Proper maintenance of Roads infrastructure including bridges and alternate routes to deal with emergencies

The hazard wise mitigation measures are as follows:

3.4 Geological Hazards

3.4.1 Earthquake

1. The following principles could guide effective earthquake risk mitigation strategies for policy makers and practitioners in the State. As a commitment towards a safer Jammu and Kashmir State, each stakeholder involved in disaster risk reduction need to ensure that earthquake resistant designs are incorporated in the construction of any new structures.
2. Administrative authorities need to facilitate and promote the selective strengthening and seismic retrofitting of existing lifeline structures on a priority basis.
3. The compliance regime needs to be enhanced and improved through appropriate regulation, enforcement and monitoring mechanisms.
4. There needs to be consistent, innovative and improvised efforts to raise the awareness and alertness of all stakeholders towards earthquake risk mitigation.
5. Well-crafted and planned capacity development interventions for effective earthquake mitigation need to be introduced at all layers of governance.
6. Institutions, infrastructures and resources for emergency response in earthquake prone areas need to be strengthened

3.4.1.1 Structural Mitigation Strategies for Earthquake

3.4.1.1.1 Land Use Planning

- Delineation of fault zones.
- Slope stability.
- Undertake microzonation consultancy on a priority basis.
- Provide good quality seismic microzonation maps to all stakeholders.
- Develop and provide regularly updated vulnerability and risk assessment map.

3.4.1.1.2 Enhancing Structural Capacities

- Retrofitting and earthquake proofing of all life line structures.
- Monitoring of seismic activity.
- Retrofitting of existing weak buildings in the seismic zone.
- Construction and operationalization of District Hazard Safety Cell.
- Construction of earthquake resistant model houses, tested through simulated environments.
- Equip buildings with basic first aid facilities.
- Develop earthquake resistant design features for the construction of public utility / residential structures.
- Establish seismological network and round the clock monitoring.

3.4.1.1.3 Adaptation of New / Appropriate Technology

- Establish Ham-radio sets in remote settlements.
- Automated seismic emergency annunciation / shutdown system.

3.4.1.2 Non-Structural Mitigation Strategies for Earthquake

3.4.1.2.1 Techno-legal Regimes

- Review and implementation of building codes/land use code. Revision of codes, if necessary. Incorporating the BIS seismic codes for construction.
- Constitution of Hazard Safety Cells (HSC).The function of Hazard Safety Cells towards Earthquake Risk Mitigation include (i) Establishing proper mechanisms for implementation of all the building codes in all future constructions; (ii) To ensure the safety of buildings and structures from various hazards; and (iii) To carry out appropriate design review of all government buildings to be constructed in the state.
- Amendments to the Town and Country Planning Act, Land use zoning Regulation, Development Control Regulations & building by- laws to bring in earthquake risk mitigation as a key strategy.
- Developing a ‘model building by-law’ that is unique to the state of Jammu and Kashmir.
- Enactment and enforcement of laws regulating developmental activities /human activities in earthquake prone area.
- Strict enforcement of building by law residential structure.

3.4.1.2.2 Planning

- Prepare catalogues, epicenter and geological maps towards earthquake risk mitigation.
- Department wise earthquake contingency plans to be developed.
- Department wise action plan and SOPs need to be developed and regularly updated.

3.4.1.2.3 Capacity Building

- Capacity building of engineers & architects in earthquake risk mitigation (to design seismically safe buildings and related techno-legal requirements).
- Enhance capacities of state engineering colleges and architecture colleges to provide advisory services to the government (as State Resource Institutions).
- Provide training of for multi-hazard resistant construction.
- Conduct seismological research.
- Organize awareness camps at all levels of governance.
- Train all stakeholders in providing and understanding warning.
- Educate public in basic response measures.
- Dissemination of upgraded seismic resistant measures.
- Upgrading educational curriculum in architecture and engineering institutes.
- Include disaster related topic in technical trainings in polytechnics.
- Provision of loans by banks for retrofitting buildings and structures on easy terms.
- Strengthening urban earthquake vulnerability reduction programmes.
- Campaign for earthquake safety tips.

3.4.1.2.4 Safety Audit

- Establish a committee for safety audit and suggest seismic retrofitting of buildings.

3.4.1.2.5 Integrating DRR in Development Planning

- Integrating earthquake mitigation in rural Development Schemes such as Indira Awas Yojana (IAY) and Sampoorn Grameen Rojgar Yojana (SGRY).
- Modify construction guidelines under these schemes so that the houses/schools or community buildings constructed are earthquake resistant.
- To promote seismically safe construction at villages/block level.

3.4.2 Landslides

It is hereby envisioned that each stakeholders involved with disaster risk reduction in the state of Jammu and Kashmir is fully aware of landslide hazards and routinely takes action to reduce both the risks and costs associated with these hazards. The landslide mitigation strategy envisioned below not only aims at converging the different line departments, but also in bringing together relevant scientific, engineering, construction, planning and policy making actors of the state. As a prior requisite, hazard identification is a cornerstone of landslide hazard mitigation. Nevertheless, as part of the mitigation strategy, we need to gather a comprehensive understanding of landslide processes and mechanisms to predict the behavior of differing types of landslides affecting the region.

3.4.2.1 Structural Mitigation Measures

3.4.2.1.1 Enhancing Structural Capacities

- Construction of deep drains, cut-off walls.
- Setting up of indigenous, alternative and innovative contour bunds and similar structures for diverse terrains.
- Construction of check dams, gully plugs, vegetative barriers, etc.
- Carryout drainage correction.

3.4.2.1.2 Land Use Planning

- Develop landslide inventory and landslide susceptibility maps.

- Developing an inventory of the existing built environment in areas around existing landslides and in high hazard zones as per the LHZ maps and along strategic roads
- Assessing the status of risk and vulnerability of the existing built environment
- Identify safe zones.
- Evaluate engineering and construction approaches to mitigate landslide hazards
- Wide dissemination of model land use practices in hilly areas
- Complete control of deforestation.
- Promoting afforestation of large scale plantation / afforestation of indigenous trees in the land slide prone areas.
- Creating vegetative barriers.
- Preparing an inventory of existing landslides, active or inactive, in the State.
- Develop and implement a plan for mapping and assessing landsides.

3.4.2.2 Non-Structural Mitigation Measures

3.4.2.2.1 Techno-legal Regimes

- Strict implementation of land use measures.
- Revision of town planning bylaws and adoption of model land use bylaws in the State.
- Restrict construction of structures at high contours (sloppy high level grounds).
- Restrict construction of residential building in landslide prone areas.
- Develop and encourage the use of standards and guidelines for landslide hazard maps and assessments.
- Establish and implement a state-level strategy for compilation, maintenance and evaluation of data on the socio-economic and environmental impacts of landslides.
- Establishing appropriate mechanisms for compliance review of all land use bye-laws.
- Total ban on grazing, cutting of trees in affected areas.
- Promotion of eco-system based land used practices.
- Develop improved, realistic scientific models of ground deformation and slope failure processes and implement their use in predicting landslide hazards.

3.4.2.2.2 Capacity Building

- Develop and implement a state-level landslide hazard monitoring and prediction capability.
- Develop real-time monitoring and prediction capabilities on both site specific and regional scales.
- Apply remote-sensing technologies such as Synthetic Aperture radar and laser altimetry and wireless sensor techniques (WINSOC) for monitoring landslide movement.
- Training of professionals like engineers and geologists for landslide mapping, investigation techniques, analysis, and observational practices.
- Develop and implement guidelines and training for scientists and geotechnical engineers in the use of landslide hazard and other technical information for mapping and assessing landslide hazards.
- Training of trainers in professional and technical institutions.
- Preparation of DM plans by educational and health institutes/organizations, government offices, etc., and carrying out mock drills for enhancing preparedness in vulnerable areas. (General not landslide specific)
- Strengthening the EOC and communication network. (General not landslide specific)
- Develop and implement guidelines and training for scientists and geotechnical engineers to respond to landslide hazards.
- Streamlining the mobilization of communities, government agencies, the corporate sector, and other stakeholders.
- Preparing community and village level DM plans, with specific reference to the management of landslides
- Generate public awareness regarding landslide at various levels through training and education programmes, design, landslide hazard curriculums, safety programmes and community risk reduction.
- Evolve early warning system for landslide.
- 24x7 operational control room for effective response (ERCs) (General not landslide specific)

3.4.2.2.3 Integrating DRR in Development Planning

- Engage MGNREGA and PMRDF work towards reducing landslide risks and enhancing the capacities of vulnerable population.

3.4.3 Avalanches

3.4.3.1 Structural Mitigation Measures

3.4.3.1.1 Enhancing Structural Capacities

- Modification of path of avalanche
    - Construction of snow avalanche control structures such as: Prevention Structures, Stepped Terraces, Avalanche Control Piles, Snow Cornice Control Structures, Retaining Walls, deflecting structures such as deflection berms and avalanche track mounds.
    - Carry out drainage correction
    - Construction of breaker
    - Construction of snow sheds and tunnels in avalanche prone travel routes
- Exploration of wind sails as a mitigation strategy.
- Exploring alternative road management options.
- Re-routing roads in avalanche prone areas.
- Large scale plantation of indigenous varieties in risk prone the areas
- Disposing the avalanche potential snow packs by artificial triggering.

3.4.3.1.2 Land Use Planning

- Documenting avalanche incidents and developing avalanche hazard maps.
- Maintain and update the Map of snow avalanche prone areas
- Developing designs and plans for evacuations and closure of traffic routes.
- Issuing land use regulations and guidelines taking into account of avalanche risk.

3.4.3.2 Non-structural Mitigation Measures

3.4.3.2.1 Techno-legal Regime

- Micro-hazard zonation
- Strict implementation of avalanche control measures.

3.4.3.2.2 Capacity Building

- Ensure snow avalanche forecasting and warning; not only testing snow stability with explosives.
- Use infrasonic sensors to monitor avalanche activities.
- Generate public awareness regarding snow avalanche at various levels through media, campaign, development and distribution of leaflet posters, meetings, workshop on priority basis.
- Avalanche awareness should also deal with safe-travel techniques.

3.5 Hydro-meteorological Hazards

3.5.1 Windstorm

Windstorms can create significant structural damages to land and property in the state of Jammu and Kashmir. Structures need to be thus designed and built to withstand the projected wind speeds. Wind-resistant construction techniques include proper anchoring of walls to foundations, use of straps and clips to hold the roof of a structure to its walls. Other techniques include lateral roofing and wall bracing. Structural retrofitting of existing structures such as the anchoring of roof, windows and doors need to be given high priority. Windstorm shelters need to be constructed with hardened safe roofs. Retrofitting and anchoring of loose objects, water heaters, removing trees from immediate vicinity of buildings could be other mitigation strategies. Nevertheless, enhancing natural vegetation and setting up windbreaks across the wind paths could reduce the impacts as well.

3.5.1.1 Structural Mitigation Measures

3.5.1.1.2 Enhancing Structural Capacities

- Construction of shelters in windstorm prone areas.
- Construction/strengthening and repair of roads and bridges in windstorm prone areas.
- Enhancing natural vegetation and setting up windbreaks across the wind paths.
- Develop terrain specific warning dissemination systems.

3.5.1.2 Non-Structural Mitigation Measures

3.5.1.2.1 Capacity Building

- Strengthening and up-gradation of existing windstorm forecasting system at the state and district level.
- Preparation of contingency plans at district, Tehsil and community level.
- Preparation of specific disaster related departmental action plan and SOPs.
- Imparting training to the stakeholders involved in disaster mitigation and management.
- Awareness creation and campaign for wind mitigation.
- Procure sufficient food grains in the areas likely to be affected.
- Mobilization of resources such as vehicles for evacuation.
- Setting up mobile health units in the vulnerable pockets.

3.5.2 Floods

3.5.2.1 Flood hazard mitigation

The Flood Probability Reduction Measures (FPRM) should aim at restoring the retention potential of the natural hydrological systems in the different regions of the state and at the same time enhance the detention of rain water through small retention basins distributed in minor catchments. Some of the FPRM measures that could be strengthened in the state are given below (Table 3.2).

Table 3.2 FPRM framework

FPRM	Type of Measure	Illustration
Sustainable Drainage Systems	Source Control	Green roofs, rainwater re-use, permeable pavements.
	Infiltration Techniques	Filter trenches, filter drains, filter strips, soakaways.
	Detention Structures	Swales, bio-retention area, detention basin, ponds and wetlands.
Controlled Surface Conveyance	Detention Structures	Diversion structures, multi-functional space, conveyance structures.
Fluvial Flood Detention Measures	Give Rivers more Space	Day-lighting of watercourses, flood plain restoration,
	Holding Back Water	Flood polders, small detention reservoirs,

The flood mitigation strategy should also focus on Flood Resilience Measures (FReM). These are regarded as potentially very effective as they are capable of reducing the exposure of vulnerable population to floods without causing much negative impact on the hydrological system. FReMs support the recovery of society after an extreme flood and thus stand for the improvement of resiliency of the whole system. The maximum possible social and economic resilience against flooding can be afforded by a sustainable flood management strategy. FReM is categorised in the 4 A's of the safety chain of flood resiliency namely Alleviation, Avoidance, Awareness and Assistance. Some of the important FReM are mentioned below in the Table 3.3.

Table 3.3 Flood Resilience Measures

FReM	Type of Measure	Illustration
Capacity Building	Information	Flood maps, Information materials.
	Education-Communication	Face-to-face learning, web-based learning, training, collaborative platforms.
Land use control	Spatial Planning	Flood risk adapted land use.
	Building Regulations	Building codes, zoning ordinances.

As mentioned above, the strategies, both structural and non-structural, required for flood mitigation consists of techno legal regime, capacity building, safety audit, planning, adaptation to new technology, and others. Structural measures are in the nature of physical measures and help in dealing with the physical event of the floods and altering its nature. These are measures, which

are taken to protect people and property, which counteracts the flood event in order to reduce the hazard or to influence the course or probability of occurrence of the event. These measures can be aimed at (i) reducing discharge (reservoir, diversion, watershed management), (ii) reducing stage (channel improvement), (iii) reducing existing damage susceptibility (levee or floodwall, flood proofing, relocation, flood warning and preparedness planning) and (iv) in reducing future damage susceptibility (land-use and construction regulation, acquisition). These are explained as below.

3.5.2.2 Structural Mitigation Measures

3.5.2.2.1 Enhancing Structural Capacities

- Ensure fortification of weak embankments and vulnerable points in canals / rivers during free flood monsoon.
- Ensure emergency flood ways and river diversions.
- Improvement of design for irrigation and flood protective structures.
- Construction of dams, flood protection wall, flood diverting channels etc.
- Construction of barrages on the banks of rivers.
- Construction of rising and/or construction of community cum shelter buildings above HFL.
- Construction of rain gauge at Tehsil headquarters.
- Ensure Channel improvement.
- Ensure flood proofing.
- Take up holistic watershed management.
- Regular clearance of drains from slit and weeds.
- Strengthening/ repair of existing roads and bridges and other critical infrastructure in flood plains.
- Restore natural drainage blocked by roads and canals.
- Development of catchment area of the flood plain (i) Forestation, (ii) Land sloping and (iii) Small reservoirs/Check dams/ponds etc.
- Repair / restore vulnerable points on roads and bridges before onset of monsoon.

3. 5.2.2.2 Alert Mechanisms / Early Warning

- Establish infrastructure for flood warning and dissemination.
- Strengthening and Upgradation of existing flood forecasting system.

3.5.2.3 Non-Structural Mitigation Measures

The non-structural mitigation measures include (i) preparation and dissemination of information, education and communication tools (flood maps, public presentations, collaborative platforms etc.); (ii) spatial planning (flood risk adapted land use); building regulation and improvement of building flood resistance (wet-proofing and dry-proofing); flood action plans at a local scale (infrastructure maintenance); financial preparedness (insurance of residual risk and reserve funds). Flood plain zoning is an important non-structural flood mitigation strategy. It places restrictions on the use of land on flood plains and can reduce the cost of flood damage. PRIs may prevent uncontrolled building or development on flood plains to limit flood risks and to protect nearby property.

3.5.2.3.1 Techno-legal Regimes

- Enactment and enforcement of laws regulating developmental activities in flood plain
- Restriction of construction near / along water way.
- Ensure Flood plain zoning.
- Ensure emergency flood ways and river diversions.
- Enforce building by laws for flood plains.
- Adopt appropriate measures to assess damage/loss.
- Regulate development and redevelopment policies in flood prone areas.

3.5.2.3.2 Planning

- Prepare contingency plan for any eventuality.
- Ensure that safe citing in flood prone areas is being done.
- Update resource inventory.
- Prepare maps or alternate routes, resources available.

- Prepare flood management plan at all levels of governance.
- Procure ration in advance at various micro-zones in sufficient quantity before the onset of monsoon.

3.5.3 Cloudburst

3.5.3.1 Structural Mitigation Strategies

- Construction/ Maintenance of check dams and barrages.
- Promote large scale plantation in barren lands.

3.5.3.2 Non-structural Mitigation Strategies

- Ensure forecasting and early warning systems for predicting cloudburst.
- Enactment and enforcement of land use code.
- Organize *nallah* training.
- Evacuate people residing in low lying area.

3.5.4 Snowfall

3.5.4.1 Structural Mitigation Strategies

- Construction of snow gauges at necessary points
- Provide snow cutters at risk prone areas

3.5.4.2 Non-structural Mitigation Strategies

- Strict Implementation of existing Snow clearance plan in the newly emerging tourist and other villages
- Procure ration in advance at various micro-zones in sufficient quantity before winter.
- Store relief material at Tehsil headquarters.

- Strengthen co-ordination between dierse stakeholders such as Roads & Building, Municipal Corporation, Public Works Department, Border Road Organization and National Highway Authority of India for snow clearance.

3.5.5 Drought

Drought mitigation measures are aimed at reducing the incidence or minimize impacts of drought. These measures not only help in drought proofing, but also in ecological restoration and social development. Drought mitigation measures are not stand alone strategies but integrate well within the domain of soil conservation, watershed development, climate change mitigation and forestry. For the same reason, these strategies are inevitable part of the Central and State sponsored development programmes.

3.5.5.1 Structural Mitigation Strategies

3.5.5.1.1 Enhancing Structural Capacities

- Strengthen water conservation techniques.
- Strengthen and stabilize irrigation system.
- Construct/ Repair dams, reservoirs, lift irrigation, tube wells, tanks, farm ponds and canals for surface irrigation.
- Construct warehouse and cold storages for preservation /storage of food grains.
- Strengthen and upgrade existing drought forecasting system.
- Establish infrastructure for drought warning and dissemination.

3.5.5.1.2 Adaptation of New / Innovative Technology

- Application of advanced agro-Science technology and agro-engineering inputs to improve agriculture production.

3.5.5.2 Non-structural Mitigation Strategies

3.5.5.2.1 Techno-legal Regimes

- Enforcement of soil/ forest conservation measures and afforestation.
- Enactment and enforcement of laws regulating ground water level and exploitation of natural resources.
- Develop mechanisms for water audits.

3.5.5.2.2 Capacity Building

- Develop drought related departmental action plan and SOP.
- Impart training to the stakeholders involved in drought mitigation and management.
- Encourage people to use advance technology of drip and sprinkler irrigation.
- Encourage indigenous rain water harvesting and conservation.
- Encourage farmers to understand crop pattern to be adopted in their area.
- Encourage the adaptation of technique for preservation of green fodder.
- Implementation of nutrition programme for the vulnerable groups.
- Promote self schemes for employment generations.
- Ensure drought forecasting and early warning.
- Introduce and implement crop and seed insurance.
- Introduce dry land farming/ drought resistant crops.
- Conduct regular surveillance of public health measures.
- Disseminate drought risk to general public residing in drought prone zones.
- Campaign for drought tips for agriculture, general public and industries.

3.5.5.2.2 Integrating DRR in Development Planning

- Integrating drought proofing with governmental programmes such as MGNREGS, Integrated Watershed Management Programme (IWMP), National Rural Drinking Water Programme (NRDWP), Swarnajayanti Grameen Swarozgar Yojana (SGSY), Rasthriya Krishi Vikas Yojana (RKVY), Fodder and Feed Development Schemes and Rural Infrastructure Development Fund.

3.6 Biological Hazards

3.6.1 Pest and Disease

3.6.1.1 Structural Mitigation Strategies

- Encourage crop rotation
- Plantation of trap crops
- Destruction of crop refuse or insect infested plant
- Promote use of resistant varieties of domestic plants
- Ensure pest forecasting

3.6.1.2 Non-structural Mitigation Strategies

- Ensure integrated pest management
- Generate programmes for eradication and suppression of pests
- Ensure effective monitoring and surveillance of post-harvest damage in crops

3.6.2 Epidemics

There are some basic principles which will help in structuring the plan for prevention of biological disasters and epidemics. As these events cannot be predicted and very much heterogeneous in nature and finer details will have to be planed after the emergence of the problem but there can be some basic components of preparations which can be improvised and it will reflect in lesser morbidity and mortality.

3.6.2.1 Structural Mitigation Strategies

- Provision of functional isolation wards in all tertiary hospitals.
- Provision of labs which could diagnose all the rare pathogens and their characteristics including bio-terrorism agents.
- Improvement of drinking water supply system and sanitation structures.
- Strengthening the public health institutes, surveillance system and epidemiology department.

- Making provision of quarantine facilities; border and airport safety protocols for pandemics or transportation of Bio-terrorism agent.
- Establishing biological vector control system through environmental engineering.
- Provision of store house for essential drugs with inventory management.

3.6.2.2 Non-Structural Mitigation Measures

- Prepare district wise risk-profile of epidemic prone diseases.
- Map the areas with emergence of multi-drug resistant bacteria.
- Capacity building through training of all government health staff to deal with epidemic situations and heavy patient load.
- Specific programs of community health education for epidemics or other biological disasters.
- All tertiary level hospitals should have plan/protocols for epidemics and heavy patient surge.
- Legislative framework for involvement of privet health-care sector and pharrma sector in crisis situation.
- Improvising CHCs for responding to epidemics and uncommon infectious diseases.
- Creation of communication linkages and protocols with state, national and international expert bodies in biological disasters.
- Identify the bio-hazard places and create biosafety and biosecurity measures to reduce the risk of spread of the disease.
- Establishment of procurement plans for essential drugs, vaccine and other medical supplies in disaster situations at district as well as state levels.

3.7 Human Induced Disasters

3.7.1 Industrial Hazards

3.7.1.1 Structural Mitigation Strategies

3.7.1.1.1 Land Use Planning

- Planning permission of any factory/industry should consider the land use planning in view of hazard, risk and vulnerability of the State.
- Carry out structural safety inspection/audit.

3.7.1.1.1 Adaptation of New / Appropriate Technology

- Application of Science and technology and engineering inputs to improve industrial infrastructures.
- Installation of eco-friendly technology in industrial areas.
- Installation of fire alarms and fire fighting equipments in all public buildings and government offices.
- Establish infrastructure for onsite and offsite warning dissemination.
- Construction/Strengthening of EOC/ERC at all levels.
- Procurement of all necessary equipments.

3.7.1.2 Non-structural Mitigation Strategies

3.7.1.2.1 Techno-legal Regimes

- Amendment of Acts and Rules.
- Strict implementation of Acts and Rules.
- Strict implementation on factory / industry safety rules.
- Strict implementation of guidelines issued by Central Pollution control board.

- Ensure all essential installations met the carrying capacity and capable of withstanding working conditions.

3.7.2 Building Fire

3.7.2.1 Structural and Non-structural Mitigation Strategies

- Strict implementation of work regulations.
- Strict adherence to fire safety standards in all buildings.
- Equipping Block, sub Tehsil and Municipal Corporation Head Quarter with fire hydrant.
- Install fire fighting equipments and fire alarms in all the public building and government offices.
- Install smoke detectors in each floor of the building.
- Organize awareness campaign regarding safety measures for incidents.
- Conduct regular drills.
- Enhance fire fighting capabilities.
- Store cylinders of flammable gases in well ventilated places.
- Release fire fighting resources to rural areas outside local municipal limits.

3.7.3 Forest Fire

3.7.3.1 Structural and Non-structural Mitigation Strategies

- Review & update the existing regulatory codes and standards for wild land fire protection
- Forest use restriction. Only authorized officials or permitted local people should be allowed to enter the forest.
- Allocation of funds for developing forest fire lines.
- Maintenance of fire lines.
- Develop a community based disaster management strategy by involving community in fire detection and prevention.

- Routine assessment of forest fire risk.
- Train and equip the fire fighting team.
- Ensure that the dead and dying trees are removed from the forest.

3.7.4 Dam Safety

3.7.4.1 Structural Mitigation Strategies

- Enforcement of land use code around the dam area.
- Maintenance of flow level.
- Regular check on the water quality.
- Installation of appropriate facilities for portable water supply.
- Promote anti-erosive plantation along reservoir slopes.
- Ensure proper reservoir and catchment protection.
- Delineate the shallow areas around the dam and keep as protected areas.

3.7.4.2 Non-structural Mitigation Strategies

- Establish a dam safety committee.
- Prepare dam safety emergency plan.
- Position sign boards and hoardings on the track/in town.
- Maintain a flood forecasting and warning system.
- Monitoring environmental impacts as mentioned in Environment Impact Mitigation Management Plans.

3.7.5 Crowd Management

3.7.5.1 Structural and Non-structural Mitigation Strategies

- Develop a crowd management plan that takes into account all aspects such as the venue, movement patterns identify possible problem areas, and describe how the plan will accommodate normal and emergency crowd movement.
- Setting up of a centralized crowd management and communications centre to provide real time information. The ideal centre should provide a maximum view of the venue, supplemented by video camera access to blind spaces, pressure points and major movement pathways.
- Developing an Incident Response System for mitigating any eventualities.
- Issues updated, and clear guidelines to specific authorities for crowd management.
- Training for crowd management personnel on the basics of normal and emergency crowd movement and assembly, initial handling of accident victims, communications procedures and use of communications equipment, avoidance of actions that would incite or trigger dangerous crowd behaviours, and conduct and demeanor during an emergency should be provided.
- Full communications coordination should be established between all venue staff, local police, fire and emergency medical services and any on-site radio or television media.
- Crowd participants need to be legally warned of crowding hazards and be instructed in aid procedures.
- Prior distribution of all radio frequencies, telephone numbers and relevant information and related procedures in printed form to all staff.
- Building codes should be correlated with the movement capabilities of all corridors, stairs, ramps, bridges, escalators etc.
- Establish traffic capacities of corridors, stairs, passenger conveyors and walking spaces.
- Pressure points or locations where a change in pathway processing capacity, normal directions of movement, or a confluence of traffic streams results in conflicts or accident exposures need to be identified and mapped.

- Alternative power sources (back-up standby power) for lighting and communications need to be designed and operationalised.

- Emergency room space and equipment sufficient to handle larger crowd accidents needs to designed built and operationalised.
- Training of crowd management staff is vital. Responsibility should not be vested to volunteers/casual labourers alone.
- Organize public meetings and local speaker announcement.
- Distribute reading materials to the general public.

3.8 Responsibilities of Stakeholders

3.8.1 District Administration

The responsibilities of the district administration towards disaster mitigation are given below.

- Regular collection of situation report of the risk and vulnerable areas from the officers assigned for the purpose.
- Setting up of the District Disaster Management Cell, which will be headed by the Deputy Commissioner.
- Introduce protective steps that could be taken to minimise the impact of disasters.
- Make arrangements for emergency response.

The responsibilities of other stakeholders and the line departments are given in Table 3.4

Table 3.4 Responsibilities of Key Stakeholders

Authority	Roles and Responsibilities
Agriculture / Horticulture Department	• Review and update precautionary measures and procedures. • Strengthen and upgrade existing drought forecasting system. • Establish infrastructure for drought warning and dissemination of the same. • Encourage people to use advance technology of drip and sprinkler irrigation.

	• Encourage the adaptation of technique for preservation of green fodder. • Introduce and implement crop and seed insurance. • Introduce dry land farming/ drought resistant crops. • Encourage crop rotation. • Destruction of crop refuse or insect infested plant. • Ensure pest forecasting. • Ensure integrated pest management. • Generate eradication and suppression progression of pests. • Ensure effective monitoring and surveillance of post-harvest damage in crops. • Ascertain that adequate stock of seeds and other agro inputs are available in areas prone to natural hazards. • Awareness generation regarding various plant diseases, alternate cropping practices in hazard-prone areas. • Designing and strengthening the provisions of crop insurance. • Hazard area mapping (identification of areas endemic to pest infections, drought, flood, and other hazards). • Develop database village-wise, crop wise, irrigation source wise, insurance details, credit facilities, etc. • Promotion of alternative crop species and cropping patterns keeping in mind the vulnerability of areas to specific hazards. • Training in alternative cropping techniques, mixed cropping and other agricultural practices which will minimize crop losses during future hazards. • Promote organic farming through awareness with a target of 100 % organic state • Undertake soil testing for developing resilient agricultural systems in the state
Agricultural University (Jammu / Srinagar)	• Encourage advanced agro-Science technology and agro-engineering inputs to improve agriculture production.
Banks / Insurer	• Provide loans for retrofitting buildings and structures on easy terms. • Provide agricultural and seed loans.
Civil Defence (SDRF)	• Organize training programmes on first-aid, search, rescue and evacuation. • Conduct regular drills and exercises for diverse stakeholders on a continuous basis. • Prepare a generic task force in disaster mitigation. • Prepare generic categorization of disaster response for multiple hazards (articulation of Quick Response Team, Quick Assessment Team).

Civil Society (NGOs and CBOs)	• Organize exhibitions for public awareness through local institutions. • Strengthen community-based disaster risk reduction processes. • Promotion of Kashmiri folk theatre such as Bhand-Pather, integrating the art with the theme of disaster risk reduction.
Consumer Affairs & Public Distribution	• Identification of location (low impacted) for warehouse at all levels: State, District, Block and village. • Construction and maintenance of storage go-downs at strategic (identified) locations. • Procurement of Resources / Equipments / Essential Commodities in warehouse in advance at various micro-zones in sufficient quantity. • Regular replenishment of the procured resources. • Prepare a list of private vendors as they can come handy in case of emergency. • Mapping / Prepare a list of all existing stores. • Strengthening Public Distribution System and ensuring that the poorest of the poor households across all vulnerable groups are included. • Strengthening the empirical provisions of the National Food Security Act, 2013 specific to the needs of the state.
Development Authority	• Ensure strict regulation of Land use. • Notify risk prone areas by micro-zonation. • Stoppage of unplanned and ad-hoc development activities in the state. • Review and amend planning and development laws as and when required. • Regulate development and redevelopment policies in flood prone areas.
District Administration	• Assessing the status of risk and vulnerability of the existing built environment. • Timely collection of situation report of the risk and vulnerable areas from the officers assigned for the purpose. • Establish committee for safety audit and suggest seismic retrofitting of buildings. • Develop an inventory of the existing built environment in areas around existing landslides and in high hazard zones as per the LHZ maps. • Identify safe zones. • Evacuate people living in low lying areas.

	• Ensure that EIA and SIA are carried out for any development projects in the district. • Maintain NGO resource inventory and identify their expertise
Economic and Statistics	• Reconstruction of past disaster related statistics for the different districts of the state. • Develop / Prepare formats for generating disaster related statistics / data or developing appropriate MIS. • Proper data maintenance on disaster related statistics.
Environment and Remote Sensing Department	• Prepare risk vulnerability maps of the state with accurate scaling. • Ensure accessibility of available microzonation data to all line departments and other stakeholders.
Fire and Emergency Services	• Encourage and ensure that smoke detector, fire alarms and fire fighting equipments are installed in all public buildings and government offices. • Strict adherence to fire safety standards in all buildings. • Carry out Safety (Fire) audit in every hospitals and government buildings • Equip block, sub Tehsil and MC HQ with fire hydrant. • Enhance fire fighting capacity by conducting regular mock drills. • Train and equip the fire fighting team. • Identification of pockets, industry etc. which are highly susceptible to fire accidents or areas/events which might lead to fires, building collapse etc. • Organize awareness campaign on fire related safety measures. • Educating population in risk prone areas to adopt safety measures. • Conduct training and drills periodically to ensure higher level of prevention and preparedness. • Training the communities to handle fire emergencies more effectively.
Forest Department	• Routine assessment of forest fire risk. • Promote large scale plantation / afforestation (of indigenous tree) in barren lands and areas prone to landslide, soil erosion. • Review and update the existing regulatory codes and standards for wild life, land and fire protection. • Enforcement of soil/forest conservation measures. • Promoting nurseries for providing seedlings in case of destruction of trees during natural disasters. • Maintain forest fire lines. • Limiting forest access to authorize officials or permitted local

	people during forest fire prone season.

	• Promotion of shelter belt plantation. • Involve the community in developing fire detection and prevention management plan. • Seek funding to remove the dead and dying trees from the forest and ensure its replenishment.
Geological Survey of India	• Develop a strategy for compilation, maintenance and evaluation of data on the socio-economic and environmental impacts of landslides. • Establish and implement a state level strategy for landslide hazard monitoring and prediction. • Develop landslide inventory and landslide susceptibility maps.
Geology and Mining Department	• Enforcement of existing Central Act on Mining: Mines and Minerals Concession Rules 1960 & Mines and Minerals Regulation Development 1957. • Strict implementation of existing Mining plans in all the 72 mines in the State regarding safety and accordingly reissuing licenses. • Identify location / land zoning of all the mining lease areas of the state. • Delineation of earthquake and landslide zones. • Ensure slope stability. • Develop a plan for mapping and assessing landslide and regular updation. • Establish seismological network with stakeholders. • Apply Remote Sensing technologies for monitoring landslide movements. • Evolve early warning system for landslide. • Document avalanche incidents.
Geology department, University of Srinagar / Jammu	• Conduct seismological and other hazard related research. • Prepare catalogues, epicenter and geological maps of earthquake. • Develop mechanisms to transfer scientific information to the local communities in understanding and forecasting natural hazards. • Integrating local knowledge systems with formal knowledge systems in hazard forecasting and mitigation. • Knowledge management in Hazard Research.
Department of Health	• Identify specific risk factors for epidemic prone diseases in the population. • Awareness generation about epidemic prone infections and their

	prevention.

	• Training of field personnel, traditional birth attendants, ASHA workers, PRI members, community leaders, volunteers, NGOs and CBOs in first aid. • Measures to be taken to control outbreak of epidemics during and after a hazard. • Promoting and strengthening Primary Health Centres with network of para-professionals to improve the capacity of surveillance and control of epidemics. • Identification of labs on bio-safety levels and improving their capacity. Establishment of one BSL-3 in the state. • Provision of specific essential drugs storage inventory for disasters and MoU with drug production units (govt/ pvt) for urgent supplies in case of humanitarian crises.
IMPA	• Organize awareness camps at all levels of governance. • Conduct workshops / training for all stakeholders by carrying out regular mock drills and relevant training sessions. • Carrying out specific research and updating disaster data base and documentation of the same. • Develop strategies for implementation of risk mitigation. • Training of trainers in professional and technical institutions.
Indian Meteorology Department (IMD)	• Hazard forecasting, warning and monitoring. • Communicate early warning to stakeholders.
Industry and Commerce Department	• Planning permission of any factory/industry should consider the land use planning in view of hazard, risk and vulnerability of the State • Prepare list of factories which have a potential hazards • Spread awareness about the factory hazards to the community
Information and Public Relation	• Launch awareness campaign regarding safety measures against potential hazards using media, campaigns, development and distribution of leaflet, posters, meetings, workshop on priority basis. • Develop multi-hazard IEC material for publications and distribution. • Formulate literature of do's and don'ts for building in local / vernacular languages. • Dissemination of upgraded seismic resistant. • Educate public in basic response measures.
Irrigation and Flood Control Department	• Prepare flood management plan at all levels of governance. • Delineation of flood prone areas. • Ensure that safe citing in flood prone area is being done.

	• Improvement of design for irrigation and flood protective structures. • Ensure fortification of weak embankments. • Construction of check dams, flood protective walls, flood diverting channels. • Provide water level gauge at critical points along the rivers, dams and tanks. • Construction of rain gauge at Tehsil level. • Install flood gauge at the head works of canal/river. • Periodic assessment of danger levels and wide publicity of those levels. • Prepare maps or alternate routes. • Identify and maintain of materials/tool kits required for emergency response. • Create public awareness regarding various types of primary and secondary hazards through media campaigns. • Strengthening and upgradation of existing flood forecasting system. • Establish infrastructure for flood warning and dissemination. • Strengthen and stabilize traditional irrigation systems. • Encourage local community participation in designing and constructing relevant structures.
IT Department	• Public awareness programme through street plays, seminars, by publishing DRR messages and clippings in news channels and other media. • Exploring new media to create a culture of resilience. • Exploring options of community radios.
J&K Project Construction Corporation (JKPCC)	• Develop a model building bylaw that is unique to the state of Jammu and Kashmir.
Labor and Employment Department	• Review and revise the Factory Acts and Rules for the safety of worker. • Strict implementation of the Act. • Strict implementation of work regulations.
Lakes and Waterways Development Authority	• Carry out drainage correction. • Ensure emergency flood ways and river diversions. • Restore natural drainage blocked by roads and canals. • Regular clearance of drains from silts and weeds. • Implement holistic watershed management. • Ensure proper reservoir and catchment protection. • Relocation of infrastructure which are located in the river banks.

	• Educate the masses against potential hazards and its preventive

Media	measures through awareness generation. • Networking with community and the concerned authority to share knowledge and best practices on effective approach. • Sharing information on the anticipation hazard with accuracy.
Municipal Corporation	• Strict regulation of building bye-laws. • Enforcement of Existing Building By-Laws. • Separate funds to be allocated for building audits. • Ecosystem and environment clearance needs to be incorporated for permit of building construction. • Soil testing should be done for clearance of buidling construction (both private and government). • Structural engineering and safety audit procedures needs to be in place. • Ensuring the continuous availability of Rapid Visual Screening experts. • Prepare a set of Guidelines / Norms / Checklist to declare a building unsafe for habitation. • Regular Monitoring and Auditing of life line infrastructures: Schools, Hospitals, Government Offices, Aganwadi Centres, Shelters, Bridges, Post offices, and Roads. • Government buildings should be screened under BOCA guidelines. • Ensure that all government buildings, hospitals have ramps. • Prepare list of building codes violators and take stringent actions against them on a periodic basis. • Retrofitting of old and weak buildings. • Review and Regular Updation of Building byelaws as and when required. • Establish committee for safety audit and suffest seismic retrofitting of buildings. • Equip department with the necessary resources for snow clearance.
National Highway Authority	• Construction of snow avalanche control structures such as: prevention structures, stepped terraces, avalanche control piles, snow cornice control structures, retaining walls, deflecting berms and avalanche track mounds.
Panchayati Raj Institutions	• Promote seismically safe construction at village/block level. • Prepare community and village level disaster management plans.
Public Health Engineering Department	• Develop checklist and contingency plans to deal with secondary hazards. • Detection of leakage of drinking water in the pipeline should be done on a regular basis using digital detectors. • Periodic upgradation of equipments. • Regular monitoring and Disinfections of water bodies /

	catchment area through prior awareness activities and supply of inputs. • Strengthening the sanitation structure and water distribution system in coordination with central water board.
Public Works Department (R&B)	• Develop building by-laws in account of potential hazards (flood, earthquake, windstorm, landslide, fire). • Strict adherence to building codes / by laws. • Regular monitoring of life line structures. • Carry out safety audit of all critical life line infrastructures. • Retrofitting of weak and aged infrastructures. • Ensure that the retrofitted infrastructures are earthquake/flood proof. • Repair roads and bridges in anticipation of hazard. • Construction of snow gauge at necessary points. • Equip department with the necessary resources for snow clearance and allocate sufficient funds for the same.
Red Cross	• Strengthening capacity of the community by generating awareness on do's and don'ts of potential hazards. • Train community and volunteers in the field of medical first aid.
Revenue Department	• Co-ordinate in Issuing land use regulations and guidelines taking into account the potential hazard. • Assist the concern authority in enforcement and enactment of land use practices. • Ensure that department wise contingency plans are developed at all levels. • Review, update and amend the plan as per the requirement. • Ensure that DRR component is mainstreamed in the state development schemes and projects. • Setting up of EOC/ERC and equipping it with the essential life line infrastructure and communication network. • Initiate in developing terrain specific warning dissemination system. • Ensure that the control room is 24x7 operational. • Construction of disaster shelter, disaster management stores which should be accessible by diverse vulnerable groups. • Facilitate training of professionals like engineers, geologists, scientists in the field of disaster management.

	• Identify specific authorities for crowd management and help formulate guidelines for the same.
Rural Development	• Integrate DRR in rural development scheme like IAY, SGRY, MNREGA, IWMP, NRDWP, SAGSY, RKVY, Fodder and Food development scheme, Rural infrastructure development fund and enhance the capacities of vulnerable population. • Revise construction guidelines under Rural Development schemes. • Encourage water harvesting and conservation. • Provide self-employment schemes for employment generation. • Popularize indigenous rain water harvesting techniques.
SASE	• Encourage water harvesting and Conservation. • Provide self employment schemes for employment generation. • Popularise indegenious rain water harvesting techniques. • Ensure snow avalanche forecasting and warning. • Use infrasonic sensors to monitor snow avalanche activities. • Technological Innovation in dealing with snowfall and avalanche •
Science and Technology department	• Identify indigenous/local practices that strengthen the resilience of structures and adapting it with the new technology for its sustainability. • Installation of advanced technology based innovations in life line infrastructures. • Design earthquake resistant model houses, tested through simulated environments. • Develop improved, realistic scientific models of ground deformation and slope failure processes and implement their use in predicting landslide hazards. • Design and operationalize alternate power sources (back-up standby power) for lighting and communications.
State Industrial Development Corporation (SIDCO), Small scale Industrial Development Corporation Limited (SICOP)	• Strict implementation of Factory Act. • Planning permission of any factory/industry should consider the land use planning in view of hazard, risk and vulnerability of the State. • Install eco-friendly technology in industrial areas. • Ensure that all essential installations meet the carrying capacity and capable of withstanding working conditions. • Application of Science and technology and engineering inputs to improve industrial infrastructures. • Establish infrastructure for onsite and offsite warning dissemination.
State Pollution Control Board	• Strict implementation of guidelines issued by Central Pollution Control Board.

Development Corporation (SPDC)	• Installation of appropriate facilities for portable water supply.
Telecommunication Department	• Prepare contingency plan for emergency situations. • Make arrangement for emergency communication in case the normal network fails. • Develop alternate means of communication which are culturally and socially accepted.
Traffic Department	• Prepare traffic management plan. • Deelop appropriate mitigation plans to deal with road accidents • Develop designs and plans for evacuation and closure of traffic routes. • Exploring alternative road management options. • Re-routing roads in avalanche prone areas.
Transport Department	• Enforcement of Motor Vehicle Act. • Regulation of quality of vehicle. • Regulation of speed governance to mitigate road accidents. • Identify black spots (accident prone areas) in the state : 50 at present and taking necessary steps for their immediate addressal
Urban and Housing Development Authority	• Incorporate BIS seismic codes for construction. • Strict implementation of land use measures. • Review and revise building codes integrating disaster resilience.
Sate Power	• Construction of barrages in and around rivers.

3.9 Psychosocial Support and Mental Health Services: Mitigation Plan

Disaster Psychosocial Support and Mental Health (PSSMH) that has gained prominence in the past two and half decades have opened up new spaces and opportunities to the exploration of psychosocial dimensions in relation to well being. The conceptualization of mental health and approaches to target the same has seen a sea change since these two and half decades. It has moved from a bio medical understanding to a more comprehensive bio-psycho social approach which has been much more comprehensive than that of the conventional sector of mental health interventions. The traumatic nature of disasters, the attention that it draws on psychological suffering and the non suitability of conventional ways of addressing distress among a large population has made the shift true to its nature, beyond just the use of terminologies and jargons. More over since disasters warrant a whole range of basic support services such as safety, protection, relief, housing, livelihood etc., it becomes practically possible to comprehensively address all dimensions of wellbeing and thus evolve, research and document comprehensive Psychosocial support and care interventions. A balanced approach that bridges the gap between mental health and Psychosocial interventions as proposed by WHO, NDMA and IASC is used as a frame work to evolve the disaster PSSMH mitigation and preparedness plans for the state of J&K.

Technical, Scientific, Academic Regional and Nodal Institutions	**Mental Health**	**Disaster Management**	**Ministry of Health**	**Other Ministries and Line Departments**
NIMHANS – Centre for Excellence (National Nodal Centre for PSSMHS) – planning and coordination Regional Nodal Centre – IBHAS, MIMH, LGBMH, TISS and Others – for Planning, Coordination, Key Responders and Capacity Building Regional Mental Health Institutions like NIMHANS, MIMH, IBHAS, LGBMH will develop appropriate tools, materials, standard intervention models NIDM, ATI's & NIRD – Build Capacity of Administrative officials and Community Representatives in PSSMHS	National Mental Health Programme – Central mental health authority - Officer with the NMHP	NDMA – Chairperson NDMA – Members (with responsibilities for psychosocial care and Medical Preparedness)	Ministry of Health and Family Welfare Department Of Health And Family Welfare -will coordinate with other Line ministries And departments	Labour, Women and Child Welfare, Human Resource Development, Social Welfare, Youth affairs and sports, tribal affairs, social justice and empowerment, housing and urban poverty alleviation, agriculture, culture, information and Broadcasting, Micro, small and medium enterprises, minority affairs

National Coordination Committee for PSSMHS
- To co-ordinate, implement, monitor and evaluate programmes

State Level				
Technical, Regional, Nodal Institutions	**Mental Health**	**Disaster Management**	**Ministry of Health**	**Other Ministries and Line Departments**
Zonal Centres to be created or upgraded within mental health institutions in the State or where ever not available the department of psychiatry in medical colleges can be ugraded – To provide MH services and capacity building programmes Schools of Social Work, Sociology/Psychology/Departments of Social Work, Sociology, Psychology in State Level Universities, State Level NGOs – To provide PSS services and capacity building programmes	State Mental Health Authority – Chairperson Principal Secretary HealthState Level Nodal Officer with the NMHP Unit in State Mental Health Institute	SDMA – Chairperson SDMA will cordinate with SMHA to provide training and services	State Ministry of Health and Family Welfare - will coordinate with other ministries And line departments	Labour, Women and Child Welfare, Human Resource Development, Social Welfare, Youth affairs and sports, tribal affairs, social justice and empowerment, housing and urban poverty alleviation, agriculture, culture, information and Broadcasting, Micro, small and medium enterprises, minority affairs

State Working Group for PSSMHS
(Nodal Officer, other designated focal points from line departments, NGO and selected community leaders) - effective planning, execution, monitoring and evaluation of PSSMHS activities

District Level				
Technical, Regional, Nodal Institutions	**Mental Health**	**Disaster Management**	**Ministry of Health**	**Other Ministries and Line Departments**
Local Centres - Referral Centre for Mental Health Services – District Hospital and Medical College Psychiatric Departments to be Nominated -	District Mental Health Programme - Nodal Officer	DDMA – Chaiperson DDMA will coordinate with DMHP	District Health Department - Chief Medical Officer	Labour, Women and Child Welfare, Human Resource Development, Social Welfare, Youth affairs and

DMHP will coordinate and monitor the referral services in district and state Centres for PSS at the District Level – Social Work/Psychology/Sociology Departments, DIET (District Institute of Education and Training), NGO at District Level, Civil Society Groups, Academic Institutions		authorities to provide training and services		sports, tribal affairs, social justice and empowerment, housing and urban poverty alleviation, agriculture, culture, information and Broadcasting, Micro, small and medium enterprises, minority affairs

District Working Group for PSSMHS
- effective planning, execution, monitoring and evaluation of PSSMHS activities

Institutions at the District Level	Functionaries at the District Level
Family and Community	NSS, NCC, NYKS, CLW, Civil Defense, First Responders, NDRF, Panchayati Raj Functionaries, Local Non-Government and Community based organizations, Civil Society Fuctionaries, Department of Education Functionaries, Health Department Functionaries, NRHM, NHRM, NRLM, NMEW, MGNREGA functionaries.
DIET (District Institute of Education and Training), DMHP, NGO at District Level – Infrastructure to be used for mitigation and preparedness	
Academic Institutions, Professional Bodies	
Block Development Office	
Local Panchayati Raj Institutions	
NGOs, Community Based organizations and Civil Society Organizations	
Private Sector Institutions and Organizations – Corporate Sector	

3.9.2 Core PSSMH Mitigation Action Points

The mitigation strategies will be based on the mission of reaching out to all communities.

- **Mapping communities**

  For context specific major needs, gaps, resource availability, entry points, barriers and challenges to Psychosocial Well-being, with special focus on enlisting and mapping the most vulnerable specific to each context.

- **Building Networks of Support at Different Levels (As Elaborated in the Institutional Framework for Disaster PSSMHS)**

  Family, Community, Panchayath, Block, District, State, Regional and National Level.

- **Development of a PSSMH Mitigation Action Plan and Intervention Continuum at Each Level**

- **Capacity Building**

  Human resource development for PSSMHS shall be carried out in accordance with the available human resource vis-a-vis human resource needs in the country.

  SDMAs and department of health will identify medical colleges in various states that would be designated and assigned the responsibility of formulating short courses of 3 – 6 months duration to train medical officers and other professionals. This would help in combating the existing deficiency of psychiatrist, psychologists and psychiatric social workers as part of the NMHP.

  Capacity development of functionaries of various programmes and institutions at all levels to integrate the PSSMH services in their regular activities.

- **Community Activities and Direct Service Delivery**

  PSSMH Awareness raising and psycho education, Community Group discussions and Forums to Discuss Psychosocial Issues, Support Groups or Self Help Groups, Structured and Ongoing Support through established networks, Collaboration with existing

community and institutional Structures to address the need for psychosocial support and mental health services.

Extending all social support services/schemes/programmes under various ministries and line department to all needy especially the most vulnerable in the given context, to promote PSSMH

3.9.3 Sectoral Mitigation Plans for Disaster PSSMH

Humanitarian Sectors	Mitigation – Action Points (Reaching Out to all Especially the Most Vulnerable)
Rights of the people during humanitarian crisis	• Promote human rights, international humanitarian law and related good practices. • Review existing policies and laws related to protection. • Identify factors contributing to insecurity and human right violation and mitigate root causes. • Promote resilience and reduce vulnerabilities of at risk groups. • Mainstreaming human rights and protection by integrating with educational curriculum.
Food Security	• Assess the population's pre-existing food preparation habits, beliefs and main staples. • Promote and support community based strategies for ensuring food security. • Facilitate access to food for all especially the most vulnerable identified specific to each context.
Housing, Water and Sanitation	• Map social dimensions of existing resources, gaps, practices and at-risk groups regarding shelter and site planning. • Facilitate access to safe housing to all especially the most vulnerable identified specific to each context. • Ensuring Support Services for Homeless, including the provision of shelters. • Support community strategies to protect and safe-guard water sources and access to all. • Support community strategies to ensure safe sanitation to all.
Health Services	• Map existing formal and non-formal resources and practices. • Promote gender and age disaggregated health information systems that cover essential mental health data. • Provide access to affordable quality health services to all especially the most vulnerable specific to the given context (Mentally Ill, Chronic

	Illness, etc). • Ensuring support services to vulnerable patients with chronic debilitating Illness and their families (economic, palliative, social, psychological etc). • Implement strategies for reducing discrimination and stigma of people with mental illness and/or mental disability. • Develop capacity to prevent and address harm related to alcohol and other substance use.
Education	• Map existing resources for formal and non-formal educational practices. • Determine levels of education and vocational options for girls, boys and adults who may have missed out on education. • Promote child friendly practices in schools. • Ensuring access to quality education for all. • Life skills inputs in school curriculum. • Promote resilience and reduce vulnerabilities of at risk groups to prevent school dropout. • Provide support services to retain children in schools.
Dissemination of Information	• Disseminate information on factors that promote and deter mental health of Individuals and Communities – especially indigenous practices.
Community Mobilization and Support	• Conduct participatory mapping and context analysis of local communities (current situation, resources, divisions, services and practices). • Facilitate communities to identify and map factors that promote or deter mental health of individuals and communities. • Support communities to indulge in resilience building activities that are culturally relevant and contextual. • Establish and Support existing support networks.
Livelihood	• Ensure access to livelihood to all especially the most vulnerable specific to the context. • Map livelihood resource, strategies and challenges in the community. • Promote livelihood resilience and reduce vulnerabilities of high risk groups.

4. Mainstreaming DRR Concerns into Developmental Plans/ Projects

Disasters are determined by a combination of factors. This includes types of hazards that affect people and the different levels of vulnerability among different groups of people. People's vulnerability is determined by social systems and power, not by natural forces alone. It is overwhelmingly acknowledged that women, persons with disabilities and socially excluded groups (low castes and minorities) are at higher risk with regards to natural hazards. Disaster risk reduction (DRR) programmes of the State of Jammu and Kashmir need to respond to these needs and built on capacities of such vulnerable groups. This plan proposes to formulate an inclusive DRR framework, which through enhanced partnerships and cross-fertilization, increases the coping capacities of the most vulnerable population in the state to face and manage adverse conditions, emergencies or disasters. A significant step to develop and implement an inclusive DRR framework is to mainstream disaster management concerns into developmental plans and projects. The proposed plan conceptualizes mainstreaming as a process by which DRR components are defined and operationalised in all sectoral plans. All sectoral ministries, line departments and related governmental agencies have active DRR units. This implies that a separate ministry or department for DRR is not a solution and that a series of discrete DRR programs that are divorced from normal, well-funded development will never be effective. Thus, the budget allocation for DRR has to be integrated within the larger/specific development plans.

4.1 Key Assumptions and Conceptual Framework

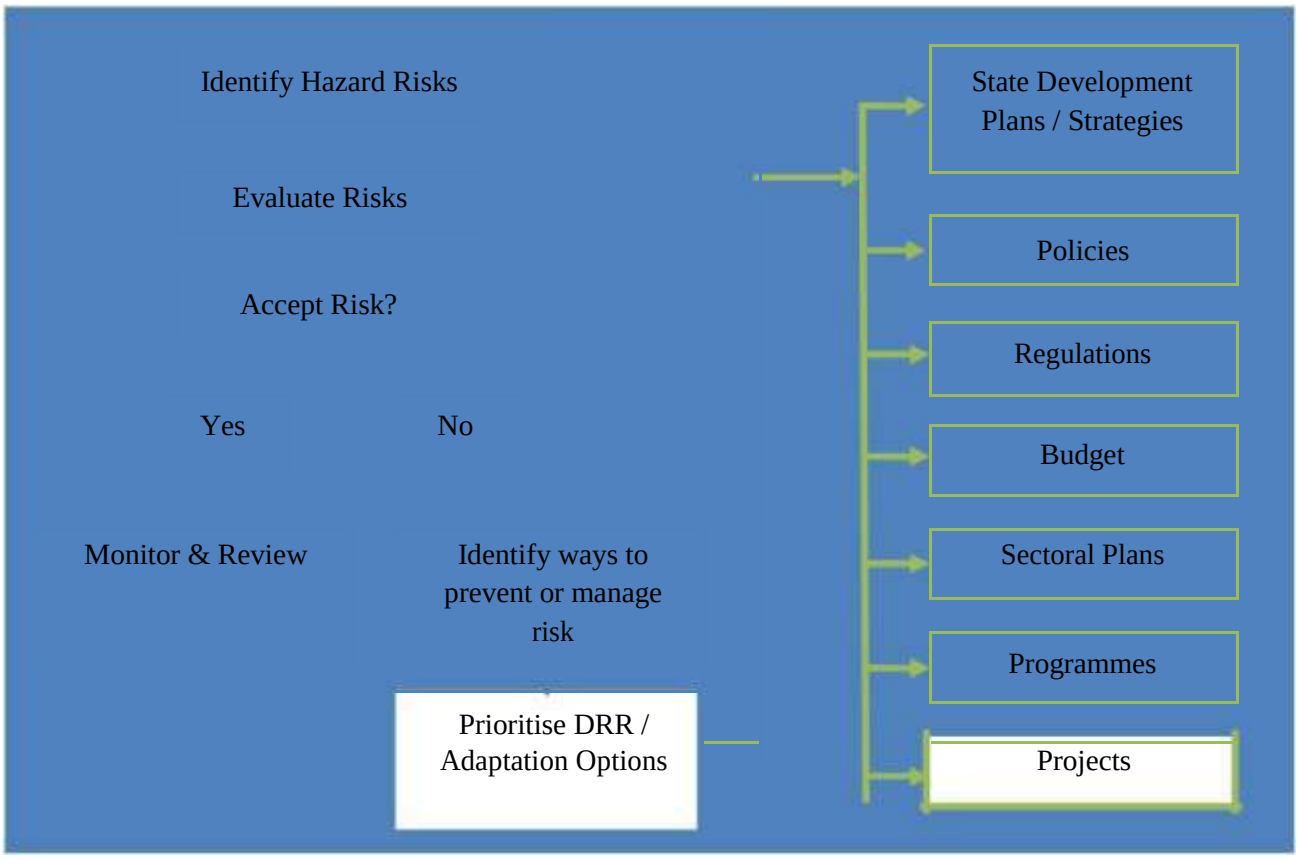
Certain assumptions underlie the processes of mainstreaming DRR in development planning. They are given below, which needs to be imbibed in the planning processes of each sector and line department in the state of Jammu and Kashmir. Figure 4.1 provides the conceptual framework of mainstreaming DRR in development planning.

- Flawed development processes interact with population vulnerability leading to disaster risk. Inappropriate land use, environmental degradation, unplanned urbanisation,

exposure of population and assets in hazardous locations, economic inequalities, weak social organisation, deficient infrastructure and weak governance systems are all symptoms of flawed development process. Corrective development planning that ensures development does not generate risk.

- Disaster reduction, adaptation and sustainable development need to be promoted as mutually supportive goals.
- Risk reduction needs to be considered as an essential investment in sustainable development and not as an additional work.
- Mainstreaming DRR requires assessing the implications of disasters and climate change on any planned development action across all thematic practice areas and sectors and at all levels of planning and governance.
- DRR mainstreaming for building resilience requires sustained engagement fostering in more appropriate and long term funding mechanisms and promote integrated solutions by working across discipline to address complex issues of risk, especially DRR and adaptation.

Figure 4.1 Integrating DRR in Development Planning – Conceptual Framework



4.2 Steps in integrating DRR in Development Planning

Table 4.1 details the steps in integrating DRR in Development Planning.

Table 4.1 Steps in integrating DRR in Development Planning

Steps	Illustration
1. Current Situation of Analysis & Challenges	All planners/line departments develop short notes of analysis on the socio-economic situation of the district and what possibilities exist in securing the needs of the citizens. The state and sector plans need to be made in the contexts of Agriculture, Industry, Commerce, Infrastructures, Energy, Transportation, Hydraulics and Irrigation, Human Resources through Education and Eco-tourism. Planners should also analyse about the barriers and challenges to the region/state/district's development activities caused by chronic natural hazards/disasters.
a) Economic Situation Analysis	Trained planners should analyse the main and sub- economic activities and factors that have been assumed as the potential issues of the district/state or each sector for supporting daily livelihoods of population such as agriculture, infrastructure, industry, commerce, livelihoods and tourism. Planners should also analyse the barrier and challenges to the region/state/districts main and sub-economic activities and its figures caused by natural hazards/disasters.
b) Social Situation Analysis	Trained planners analyse situations of Education, Health, Poverty of citizens and possibility of emergency relief and response to victims of disaster.
c) Natural Resources & Environmental Analysis	The analysis of potential natural resources, level of resource utilisations done, with respect to local people's access to lands, forests, wild animals, fisheries, lakes, rivers etc. is carried out.
d) Climate Change Analysis	The analysis of potential impact to environment, social life & economy due to climate change, with emphasis on the best possible ways/measures for adaptation is carried out.
2. Vision Development	Line departments along with trained planners will develop the vision relating to the improvement of socio - economic situations and good governance in the state based on the State Development Plan & Sectoral Plans. Nevertheless, this reference should be based on their respective

	ministries' strategy. The vision should also incorporate components of DRR in terms of challenges/measures/capacities to cope with disaster.
a) Development Goal & Objectives	Mainstreaming of DRR in Development Planning could take use from the efforts to localise the plans and provide right direction in terms of how to adapt policies to different places and how to develop synergies among different sectoral interventions.
3. Development Strategy	
a) Economic Development	Planners and the line departments should develop plans focused on what are the core programmes or priority sectors of the state/district for each sector such as agriculture, tourism, commerce, industry, taxations, irrigation system, transportations, livelihoods, infrastructure, water supply, electricity etc. Focus should be on how the plan can contribute to the state/district/sectors/line departments in social and economic progress and at the same time in DRR. The linkage between economic development and DRR needs to be well worked out in these plans.
b) Social Development	Planners and line departments should develop plan components focused on what kind of social development measures (structural & non- structural) are effective in the present and for the future. These could be with respect to education, capacity building, health services, response and relief etc.
c) Land use Planning Strategy and Natural Resource Management	The plan strategy should focus on how potential natural resources such as land, other natural resources, environment and human capacities are the most concerned for sustainable development activities in the state/district/sectors. The analysis could also describe situations of land use management, specific roles/responsibilities of relevant committees and challenges to the conservation of resources.
d) Climate Change and DRR Strategy	The planners/ line department should evolve strategies based on analysis of natural hazards and extreme disasters, duration, intensity, frequently affected areas, number of victims and affected people, agricultural productivity, infrastructure etc. in relation to climate change and adaptation as a DRR component. The roles and responsibilities of the relevant committees for disaster management at all level and resources for DRR preparedness plan to cope with hazards and climate change adaptation needs to be specifically outlined.

4.3 Strategies for Integrating DRR in Development Planning

This plan proposes the following strategies to integrate DRR in Development Planning.

1. DRR should be an integral component in each governmental development project.
2. Feasibility studies of infrastructure projects assessing impact of potential natural hazards needs to be carried out.
3. Instead of seeing DRR as a different sector/responsibility, any development plan/project should take into consideration mitigation infrastructure, site development improvements and drainage, move to scale through investments in finance, training and capacity building as core components of the plan.
4. Policies and guidelines for cooperation, co-ordination and action in finding realistic solutions and enabling well coordinated action need to be framed.
5. Focus should be towards improving livelihoods and quality of life that are in tune with environmental conservation and judicious natural resource management, which can contribute to economic development that is sustainable in nature.
6. Promote innovative local action that is respectful of global implications as well.
7. Bridging the knowledge gap and promoting awareness of the practical and operational aspects of climate variability and change science, and DRR.
8. Institutions need to become adaptive and able to respond to new information about emerging risk covering both future hazards and socio – economic vulnerabilities.
9. Mainstreaming DRR and climate change adaptation in development planning includes resilience building measures such as rainwater harvesting, aquifer recharges, changes in types of crops/plantation season, better planning of construction and water management, safe dwellings and sustainable livelihood resources.
10. Incorporate DRR in existing national and state development strategies and policies such as MGNREGA, NRLM, NRHM, IAY, SGSY, RGSY etc.
11. Develop systems for mandatory hazard and risk assessment for major infrastructure development projects. Develop system and mechanisms to include Disaster Impact Assessment along with EIA in all major projects.
12. Establish focal points in each ministry with designated roles and responsibilities for planning and implementing DRR.

13. Integrate DRR for better response in the development plans, programmes and regular activities of local development institutions. District Administration, Municipalities and PRIs to incorporate DRR and preparedness into their development plans, programs and regular activities.
14. Develop and implement systems to ensure that all new hospitals and schools are built with a level of safety.
15. Mainstreaming DRR in development planning also implies that vulnerable groups need to be given special attention. For instance, integrating schemes under the Special Component Plan (SCP) with DRR is emerging as an important innovation stream in the financing of disaster risk reduction. The Jammu and Kashmir government is already in the process of spending SCP money for inclusive development. Strengthening location and community specific plan through the SCP will be an important strategy to mainstream DRR in development programmes. In a similar way, the mainstreaming processes could address the needs of the disabled population in tune with the guidelines of the Person with Disability Act, 1998. The Act makes many provisions mandatory. For example, the Act provides enough scope to use human, financial and infrastructural resources to design a special livelihood plan for the disabled. Nevertheless the larger plan development process should then involve the Chief Commissioner for Persons with Disabilities (CCPD) and the National Handicapped Development Financial Corporation in ensuring that the concerns of the disabled are well met.

4.4 Priority Implementation Projects

The plan proposes the following Priority Implementation Projects that would facilitate faster and effective mainstreaming of DRR in development planning (Table 4.2).

Table 4.2 Thematic wise Priority Implementation Projects

Thematic Area	Priority Implementation Projects
Education	• Introduce DRM modules into the school curriculum. • Promoting hazard resilient construction of new schools; • Introducing features into schools for their use as emergency shelters.
Health	• Vulnerability assessment of hospitals in hazard-prone areas. • Promoting hazard resilient construction of new hospitals.

	• Implementing of disaster preparedness plans for hospitals.
Infrastructure	• Introducing Disaster Risk Impact Assessments into the construction of new roads and bridges. • Promoting the use of hazard risk information in land use planning.
Agriculture	• Promoting programs of contingency crop planning. • Crop diversification. • Supplementary income generation from off-farm and non-farm activities. • Effective insurance and credit schemes to compensate for crop damage and loss to livelihoods.
Housing	• Promoting the increased use of hazard-resilient designs in rural housing in hazard prone areas. • Utilization of national building codes; and the compliance and enforcement of local building laws in urban hazard prone areas.
Natural Resources Management	• Optimizing natural resources through better management of natural resources, cost effective energy provision, intensive and innovative agricultural and animal husbandry practices, communication connectivity, livelihood opportunities within the villages and a commitment to social development.
Skill Building	• In a disaster recovery context, maximum resources go towards shelter and physical infrastructure reconstruction. Skill building should thus be a strategy to develop a cadre of local masons, materials and building technology and construction related services. • Promoting skills and knowledge in modifying locally available building technologies to enhance their safety features. • Train local people in these slightly modified technologies.
Livelihoods	• Livelihoods are the greatest priority for vulnerable populations at risk. Livelihood and especially that is linked to natural resources and local capacities and opportunities hold the key to long term and sustainable recovery. • MGNREGS has tremendous potential in dealing with alternative livelihood for the poor if Disaster Risk Reduction (DRR) is mainstreamed with it. MGNREGS aims to provide an assured job involving unskilled manual work for minimum hundred days per year. MGNREGS supports individual asset-building and also contributes to reduction of physical vulnerabilities through structural measures. It represents an important social safety net. It provides employment when households find it difficult to restore their productive assets, entailing irreversible damages to their livelihoods. • Livelihood alleviation in the framework of sustainable development is possible if the entire social development programmes meant for asset-

	building of the poor are integrated with disaster resilient components at planning stage. Access to resources and asset-building are critical to coping, resilience and recovery. It is therefore necessary to develop instruments and implement programs through which the people can get better access to resources for building and owning assets. It is not just the level of assets, but also the mix of assets that influences the capacity to manage risks.

5. Preparedness Measures

5.1 Resource Availability

The primary focus is to enable the decision makers to find solutions on availability of equipment and human resources required to combat any emergency situation. A State Disaster Resource Network has to be established to collect, compile and update information on resources available and integrate with the GIS – based state resource network for timely use. The different agencies involved at the time of (i) collection and compilation, (ii) creating GIS based network and access, (iii) maintaining and updating the network needs to be identified.

Table 5.1 Resource Planning for Disaster Preparedness

Strategies	Task	Responsibility
Resource Mapping	Identify available resources viz. human, financial and equipment for disaster preparedness and response with - State Dept. - Dist. Level - Tehsil level - Village level - Public sector - Private sector - Community level Identification of gaps of resources as per the need. Delineate processes for procurement of lacking resources.	Revenue Department Fire and Emergency Services Relief Commissioner Dist. Collectors Municipal Commissioner Civil Defence (SDRF) Para military forces Traffic Police Forest Department Police Irrigation and Flood Control Electric Department Agriculture Department Horticulture Department CAPD Veterinary Department Animal Husbandry Department Health Department Government Medical College Education board Social welfare Red Cross District Administration SDM Block Development Officers NGOs

The format given in Box 5.1 should be filled in by the head of departments of the respective stakeholders. The stakeholders as identified from above table includes the Revenue department, Fire and Emergency Services department, Civil Defence (SDRF), Para military forces, Traffic Police, Forest Department, Police, Irrigation and Flood Control department, Electric department, Agriculture department, Horticulture department, Consumer Affairs and Public Distribution (CAPD), Veterinary department, Animal husbandry department, Health department, Government Medical College, Education board, Social welfare, Red Cross, District Administration, SDM Block development officers, NGOs. The availability of resources should be updated regularly to combat any emergency situation. Information in the database will enable stakeholders in DRR to assess the level of preparedness for specific hazards.

Box 5.1 Format for Resource Mapping and Periodic Update

Name of the department: Date:

Human Resource		**Equipment / Infrastructure**		**Funds**
Total number of personnel (staff) available	Total number of personnel trained in disaster context	Type of equipments / infrastructure	Quantity / Numbers of equipment / infrastructure	Total amount of funds available with the department for handling emergency situation / equipments (including capacity building & training)

5.2 Community based Disaster Management

The plan recognizes that people are often the first responders to any disaster situation. Their capacities determine the extent to which communities are able to resist and recover from the consequences of catastrophic events. In this context, this plan suggests some broader strategies for strengthening community preparedness. Some of these steps would involve

(i) Identifying and working with vulnerable population and groups at risk.

(ii) Communicating and generating awareness about their vulnerability and nature of risks to these populations.

(iii) Evolving and designing participatory institutions in dealing with disaster risk and mitigating them, including the development of culturally and geographically suited disaster preparedness measures.

The purpose of any community based disaster preparedness is to strengthen local level capacities for disaster response. In order to enhance communities' capacity, the plan envisages creating necessary awareness about hazards, risks, vulnerability and response. Thematic areas that need to be specifically addressed for community preparedness are the following.

(i) Developing Village Contingency Plans: Specific attention should be given to process underlying on who makes the plan and how it is made. The steps in developing village contingency plans are given below in table 5.2.

Table 5.2 Steps in Developing Village Contingency Plan

Steps in Developing Village Contingency Plan
Step 1: Review and Analysis of Past Hazard Events / Experiences at the Community Level
Step 2: Situational Analysis
Step 3: Hazard, Risk and Vulnerability Mapping at Village Level
Step 4: Opportunity Mapping to identify resources to reduce risks to life and property

(ii) Identifying & Strengthening Task force groups: From the opportunity mapping exercise, community representative and authorities of local governing bodies should collectively identify responsible men, women and youth volunteers who can implement and supervise the activities of the contingency plan. These individuals are

then to form small action groups of 5-10 members vested with a particular responsibility. These task groups are the following:

Table 5.3 Task Force at Community Level

Task Force at Community Level
Task Force 1: Communication and Early Warning
Task Force 2: Shelter Management Group
Task Force 3: Evacuation and Rescue Group
Task Force 4: First aid and Medical Group
Task Force 5: Sanitation Group
Task Force 6: Relief Group
Task Force 7: Patrolling Group
Task Force 8: Liaison Group between Government and Community

There are certain pre-requisites for the setting up of the community task force. Firstly, local communities should be equipped with adequate and essential medical supply, communication infrastructure and equipment such as radio, wireless systems and extrication equipment. Early warning mechanisms should be established and tested. Local level stock pile for relief and warehouses need to be ensured.

5.3 Training, Capacity Building and Other Proactive Measures

5.3.1 Training

There are four prime responsibilities in this regard. This involves the

(i) The identification of stakeholders who are to be trained.

(ii) The departments and other agencies who will offer the training.

(iii) Designing training modules as per the need and context.

(iv) Offering the training.

The stakeholders who need to be trained include Civil Defense Personnel, NCC & NSS cadets, Personnel belonging to educational and training institutions, Civil Society actors and CBOs, Corporate entities, Personnel of Fire and Emergency Services, Police and Traffic Departments, State Disaster Response Teams, Media, Government Officials at different levels, Health Personnel and Personnel in the engineering and construction industry. This plan proposes the following training strategy for preparedness.

Table 5.4 Training Strategy for Preparedness

Components of Training	Stakeholders to be Trained	Trainers/Resource Personnels
Information Education Communication Management & Administration First aid Response & Evacuation Mass casualty preparedness Emergency coordination Search and Rescue operations	Civil Defence Police Fire Brigade Line Departments Anganwadi Workers Medical, para-medical and supportive staff Civil Society Networks (NGOs) Volunteers from educational institutions NSS / NCC cadets	Fire and Emergency Service department Health department Social Welfare & Social Protection Civil Defence Traffic police Police IMPA Red Cross Government Medical College

5.3.2 Awareness

An important task to generate awareness will be towards information dissemination, education and communication. The various strategies will be advertising in media, demonstration through modern and traditional media that are sensitive to culture and local realities, folk arts, street plays and exhibitions, documentaries, campaigns in schools etc. Some of the crucial strategies and tasks related to awareness generation in preparedness are given below.

Table 5.5 Strategies for Awareness Generation

Strategy	Task	Responsibility
Information Education And Communication	Imparting awareness about do's and don'ts for various emergency situation through electronic media like television, print, radio, internet, pamphlets, literature, education, in vernacular languages. Generating awareness on disaster preparedness using mediums like public meetings, speaker announcement, street plays, village task force/ volunteers training, sign board, hoarding, walling, poster, religious and discourses utilizing the services of preachers. Organizing declamation/debate, poster and quiz competition for mass public awareness	Information centre Education department Religious leaders Media Municipal Corporation Elected members Telecommunication Civil society Red Cross NGOs PRIs IMPA Civil Defence Line Departments
Fail safe communication and last mile connectivity	Undertake research to establish fail safe two way communication – information system from state level to disaster site connecting State, District, Tehsil and city/village level. Set up alert/siren with multi-lingual recorded massages in risk prone areas. Establishment of multiple/alternative system of warning . Training/IEC campaign for general public of the risk prone areas.	Revenue Dept. Relief commissioner Science & Technology Dept. Information Dept. District Administration PRIs IMPA Municipal Commissioner

	Plan for re-establishment of disrupted systems of communication and network .	
Plan Testing	Provide copy of the plan to each stakeholder. Organize mock drills and rehearsal for plan testing. Lesson learnt through mock drill; identification of gaps through feedbacks and modification of plan. Organize annual mock drill and updation of plan	Revenue Department Relief Commissioner Science & Technology Dept. IMPA Information Dept. District Administration PRIs

5.3.3 Capacity Building

Table 5.6 Strategies for Capacity Building

Strategies	Task	Responsibility
Mock Drills	Conduct mock drill periodically. Organize combined mock drills among various actors to create a cordial atmosphere. Develop training programmes for volunteers to conduct mock drills Arrangement of advance preparatory periodic mock drills on disaster management	Fire and Emergency Service department Health department Civil Defence Red Cross,IMPA District Administration Government Medical College
Immediate Response	Ensure availability of rescue materials.	District Administration

	Establish search, rescue, relief and rehabilitation task force. Co-ordinate with NCC / NSS / Civil defence / NGO / UNICEF / Red Cross / other voluntary organizations and PSUs	Revenue Department Fire and Safety Police Civil Defence PRIs
Planning	Carrying out detailed vulnerability analysis and risk assessment in the wards / villages as per hazards / disaster. Preparations of disaster preparedness in consultation with experts on specific subject plans for: Women / housing and infrastructure / livestock / community based participation / industrial disaster / drinking water / electricity / land use. Formulation of various committee for different hazards.	District Administration Line Departments. PRIs

5.3.4 Computer based programming

A scientific database needs to be developed towards facilitating easier and accessible steps in disaster preparedness. This would include developing information systems (GIS enabled) for different lifeline services and sectors such as medical and health, civil supplies, fire and emergency services etc. The information system also needs to be hazard specific such as floods or avalanche, and a hazard specific disaster management system thus enabled. The database should also be accessible in terms of contact details, resources, response agencies, NGOs, trained personnel, most vulnerable groups, evacuation routes, available shelters, relief centres, critical infrastructures, storage go-downs, etc. Participatory GIS (PGIS) models can also be worked out in strengthening community-based hazard forecasting and early warning.

5.4 Techno-legal Regime

The institutionalization of disaster preparedness in the state requires appropriate techno-legal support systems. These include certain crucial steps such as:

- Operationalize State Level Disaster Management Authority.
- Appropriate legislations pertaining to Emergency Medical Services.
- Development of Standards of Relief and Recovery.
- Preparation and distribution of manuals and handbooks.
- Development of disaster management Plans including contingency plans, departmental disaster management plans and District/Tehsil/City/Village level disaster management plans. Space should be created in the beginning itself for regular rehearsal, review and updation of these plans. All these plans need to be published and disseminated and should be accessible to concerned stakeholders at all levels.
- The Early Warning Systems needs to be in place and strengthened. There needs to be an integration of localized warning systems with the advanced forms of formal warning systems.
- Safety Measures in terms of safe evacuation routes, identification of places for shelter, alarm system, access to protective equipments, promotion of life saving methods and techniques has to be identified/developed and integrated with the early warning system.
- Strengthening of relief distribution and accounting system at different levels of the state has to be done. This would include strategic measures such as identification of centralized system for receipt, storage and distribution of relief as well as establishing norms/logistical tools of rate contract, procurement and stockpile of relief material.
- Yet another important step will be the strengthening of EOC at state, region and district levels. This would include retrofitting of existing buildings, enhancing resources in terms of finance, manpower and equipment. The SOPs will be generated accordingly and there will be specific arrangements for mock drills, logistics, communication means etc

Table 5.7 Strategies and Techno-legal Regimes for Disaster Preparedness

Strategies	Task	Responsibility
Strengthening Institutional Arrangement and Practices	Creation of State Level Disaster Management Authority Creation of an Emergency Medical Services Authority (EMSA) Establish paramedic cadre through training programmes and accredit / license them Impart training to manpower for emergency services Recognize and accredit trauma centres Standardize and license ambulance services Establish state-wide medical emergency access number Creation of City / District EMS councils Creation of guidelines for Emergency Care of special section of people like children, elders, BPL beneficiaries, citizens of remote and disaster prone areas Development of relief norms and packages	Revenue & DM Dept. Relief commissioner Dist. Collector Municipal Commissioner BIS PWD ISR IMD Fire & Emergency Services Irrigation & Water resources Dept Other Line Dept.

5.5 Medical Preparedness

A very crucial preparedness strategy will be to strengthen the medical preparedness to disasters and emergencies in the state. This will include:

- The preparation and provision of accessible medical database of public and private facilities available in the state.

- Strengthening and provision of manpower, logistics, equipment and infrastructure, medicines including vaccinations and antidotes, protective gears, disinfectants etc.
- Identification of Medical and Health Incident Command System at all levels of the administrative structure.
- Diverse task force need to be set up.
- Control rooms needs to operationalized and activated.
- A medical management plan including hospital preparedness suited to deal with both natural and man-made disasters has to be evolved and disseminated at levels.
- Training and capacity building of diverse stakeholders associated with the health sector has to designed and conducted. Some of the important themes will be hospital preparedness, first-aid, mass casualty management etc.

Table 5.8 Strategies for Medical Preparedness

Strategies	Task	Responsibility
First Aid	Train volunteer groups in first aid	Red Cross
Awareness	Awareness generation about various infectious diseases and their prevention before and after a hazard event. Spreading awareness message to stop the outbreak of epidemic.	Directorate of Health Services Government Medical College Health Department Primary and Community Health Centres ASHA workers
Capacity Building	Resource management: In terms of manpower, logistics, medical equipments, medicines, antidotes, personal protective equipments, disinfectant, vaccines. Training of field personnel, training birth attendants, community leaders, volunteers, NGOs and CBOs in first aid, measures to be taken to control outbreak of epidemic during and after a disaster, etc. Manage and develop volunteer groups at district, taluk and village level.	Directorate of Health Services Government Medical College Health Department Primary and Community Health Centres Medical institutions

	Establish DM cell in all associated hospitals to cater any kind of disaster. Establish Triage in the hospital in case of emergency. Establish early warning, evacuation and EOC practices. Establish Primary Health Centres in all villages. Organizing free medicare camp. Conducting drills in hospitals. Formation of adequate number of mobile units with trained personnel, testing facilities, communication system and emergency treatment facilities.	Social Welfare
Logistics	Preparation of authentic medical database for public and private facilities available in the state: Collection of Data, Mapping and gap analysis and Strengthening. Ensure availability of survival / emergency kits during disaster situation. Stock sufficient medicines and life saving drugs at district / sub district, PHC and CHC levels. Arrangement of standby generators for every hospitals.	Directorate of Health Services Commissioner of Health Medical institutions
Planning	Identification of medical incident command system - Incident Commander ○ State Level ○ Dist. Level ○ Disaster site Identification of each section head at each level - Operation - Planning - Logistic - Administration & Finance - Media and Public information Identification of key members of different task force - Control room arrangement	District Administration Revenue Department Directorate of Health Services Commissioner of Health Medical institutions

	o Departmental control room o State and district control room Preparation of medical management plan - State level - Dist. Level - Hospital preparedness plan Identification of areas endemic to epidemic and natural disaster for emergency operation camps. Ensure that the nutritional requirements for children, expectant and nursing mothers are met. Practicing constant surveillance of public health measures including immunization and vaccination. Identification of site operation camps. Ensure that trained medical staffs are in operation to attend all types of sick and injury cases. Regular updating of available medical staff with their contact information.	Social Welfare
Information and communication	Disease surveillance and transmission of reports to the higher authorities on a daily basis. Obtain and transmit information on natural calamities to District Control Room.	Medical & Health dept. Commissioner of Health Medical institutions Social Welfare
Others	Disinfecting drinking water sources to prevent the spread of water-borne diseases. Arrangement of treatment and transportation of the injured to the hospital. Develop a network of volunteers for blood donation with blood grouping data.	Medical & Health dept. Commissioner of Health Medical institutions Social Welfare

5.6 Knowledge Management

Knowledge management is not only documenting existing processes and practices, but it also involves a complex task of identifying, storing and disseminating tacit knowledge related to disaster risk reduction at all levels of the disaster preparedness process. This knowledge need not be vested with local communities alone but with different officials and agencies of the state government, NGOs, CBOs and other civil society actors. Some of the crucial steps would include:

- Documentation of disasters, risk and vulnerability and their state-specific history.
- Undertake research on effectiveness and outcomes in disaster risk reduction and recovery practices.
- Documenting field data, experience and indigenous knowledge as well as channels of communication and storage of knowledge across different actors.
- Development and dissemination of plan by using available resources like SDRN, IDRN, etc.
- Development and dissemination of field-level manuals
- Use of Information and communication technology at disaster management centres, state, district, Tehsil, village EOCs.

5.7 Data Security

Data security is an integral part of Disaster Risk Reduction and must be a priority for all stakeholders. It is important to remember that data is held by all stakeholders in a variety of media. Data here includes databases to store data for any purpose and includes essential documents, records and so on. The importance of data security must be understood by all as loss of data can have very negative impacts on the quality of services after disasters, operation management and short term and long term recovery. Therefore, safe guarding data through viable planning is critical to the functioning of the state during and after any unforeseen disasters. Following are the steps to develop a data security:

- Formulation of information security guidelines and its strict enforcement: A written guideline must be available to all stakeholders for maintaining the security of data or information maintained in the Offices. Guidelines should include a strategy to ensure that all critical information is backed up in some form.
- Identification of personnel responsible for the same across the Departments: ensure data safety by identified concerned personnel who will be responsible for the same.
- Allocation of security responsibilities to the identified person for carrying out specific security processes, which must explicitly define the guidelines
- Information security, education and training: concern personnel across departments must be given adequate security, education and technical assistance.

5.8 Communication

The plan also envisages that there should be appropriate provisions for effective risk communication. Risk communication need not be only from state to communities vulnerable to disasters but it can also be vice-versa. Many times, local stakeholders are the first informers of hazard events, which are later verified and confirmed by formal authorities at the district and state level. An effective communication channel to capture this process of sharing and receiving warning has to be designed and implemented. Apart from these, there is a need to establish hazard/region/culture specific early warning systems or alert systems. The relevant actors and agencies for the same needs to be identified and their capacities need to be enhanced. These are specified well in the chapter on EOC.

5.8 Shelter Management

Table 5.9 Strategies for Shelter Management

Strategies	Task	Responsibility
Capacity building	Setting up of Shelter / temporary shelter in suitable and safe places. Assigning responsibilities to officials for distribution of emergent relief / running of free kitchen. Provision of lightning facilities for shelter places.	Block development officer Tehsildar District Administration Revenue Electric department PRIs NGOs
Planning	Identification of shelter places with maps. Arrangement of free kitchen in the shelter camps and affected areas.	Block development officer Tehsildar District Administration Revenue Electric department PRIs NGOs Health Department
Logistics	Arrangement of food / drinking water / medicine in the shelter places. Deployment of vehicle. Deployment of Police Personnel.	Block development officer Tehsildar District Administration Transport department PHE Health department

	Arrangement of tents (for workers as well) Temporary supply of safe drinking water.	Police Consumer Affairs and Public Distribution

5.9 School Safety

Table 5.10 Strategies for School Safety

Strategies	Task	Responsibility
Techno legal regime	Strict implementation of Hon'ble Supreme Court directions of School Safety dated 13 April 2009 Strict implementation of Jammu and Ksahmir School Education Rules, 2010..	Education board School Authority District Administration PRIs
Capacity building	Conduct mock exercises on the perceived disaster in school every six month. Equip the school to be self reliant, till the first respondent arrives. Participatory exercise, to practise taking various life-saving measures during the occurrences of a disaster and evacuation of the school buildings after the disaster has occurred should be conducted. Formation of various DM teams in school: Disaster Awareness Team, Early Warning & Information Dissemination Team, Evacuation Team, Search & Rescue Teams, First Aid Team, Fire Safety Teams, Transport Safety Team.	Education board School Authority District Administration PRIs
Planning	Setting up of School Disaster management Committee (SDMC). Formulation of DM plan in each school. Formulation of DM structure in each school. Establishment of DM committee with principal as its chair person. School Disaster Management Plan should include: Hazard and safety assessment; Various School DM teams; Delineation of roles and responsibilities; Required Equipments; Evacuation plan -Assembly Areas, Location of school control room ; On conducting the mock exercise Coordinator before conduct a mock drill should review: The updated	Education board School Authority District Administration PRIs

	SDMP ; The type of disasters in which the mock exercise is to conducted (to be given by the Principal of the school); Incident commander during mock exercise; The presence of members of various school DM Teams; The Floor Evacuation Plan; The location of school control room; The assembly areas.	
Logistics	Daily stock of the situation Deployment of vehicle . Arrangement of sound system for information dissemination. All concerned department should prepare an inventory of resources both human and infrastructure. Providing material machinery and manpower immediately soon after the demand by the special relief teams from the affected villages. Dispatch emergency repair gangs equipped with food, bedding, tents and tools only on the recommendation of the concern officer. Procurement and transportation of Relief materials to affected pockets/areas.	Deputy Commissioner District Administration PRIs

5.10 Food Supply and Nutrition

Table 5.11 Strategies for Ensuring Food Supply and Nutrition

Strategies	Task	Responsibility
Techno legal regime	Strict implementation of Infant Milk Substitute Act, 1992 (amended in 2003).	Social Welfare Health department
Capacity building	Provision of alternative crop strategy for maximum output of Kharif crop and a better ensuing Rabi crop. Provide insurance coverage of crops.	Agriculture department Horticulture department
Infant Care	Integrating infant feeding during emergencies. Ensure adequate strategies to maintain optimal infant and young child feeding as it is paramount for child's survival.	Social Welfare Health department

5.11 Livestock and Animal Welfare

Table 5.12 Strategies for Animal Welfare

Strategies	Task	Responsibility
Capacity building	Establish cattle camps to take complete care of the cattle population. Encourage fodder cultivation wherever feasible. Arrangement of safe shelter for animals. Ensure insurance cover to livestock through Livestock development board where the department provides 50% of the total premium. Ensure that adequate staff is available by establishing work schedule by cattle camp and hospital administrator. Construction of mounds/local strategies for safe shelter of animals. Training of volunteers and creation of local units for carcass disposal.	Animal Husbandry Animal Welfare board & society Veterinary Hospital PRIs
Logistics	Procurement of fodder and medicine for animals in selected outlet. Ensure supply from molasses to cattle feed plants. Ensure that extra supplies and materials should be obtained quickly. Ensure that sterilized surgical packs are stored in protective cabinets. Mobilizing community participation for carcass disposal.	Animal Husbandry Animal Welfare board & society Veterinary Hospital PRIs
Planning	Monitor the prices of fodder in selected places/market.	Animal Husbandry Animal Welfare board &

	Carry out thorough survey of cattle sheds which are more vulnerable to collapse all over the district. Foresee expected injuries and illness. Determine sufficient amount of drugs and medicine in case of emergency. Develop emergency admission procedure (with adequate record keeping). Promote the eradication and control of animal diseases, treatment of injured animals. Ensure proper sanitation (disposal of carcasses) to avoid outbreak of epidemics. Identify various water sources that are required by animals in case of prolonged hot and dry spells	society Veterinary Hospital PRIs
Information and communication	Provide information to all staff of veterinary hospitals about the disaster, likely damages and effects and ways to protect life, equipments and property. Establishment of police information centre with a means of communication, to assist in providing an organised source of information.	Animal Husbandry Animal Welfare board & society Veterinary Hospital PRIs
Others	Rescue injured animals in collaboration with other emergency service departments. Protection of abandoned and lost cattle.	Animal Husbandry Animal Welfare board & society Veterinary Hospital

5.12 EOC – Preparedness

The holistic operation of an EOC at the State level is provided at the Annexure 1. This section specifically deals with the functions and roles of EOC during the preparedness phase.

Table 5.13 Emergency Operations Centre – Preparedness Phase

Strategies	Task	Responsibility
Early Warning	Ensure functioning of warning system & communication systems. Facilities for early warning like radio, TV, police	Revenue Department Relief Commissioner District Administration IMD

	wireless and telephones should be made available. Public address system should be installed in all associated hospitals. Installation of hotline/communication system. Arrangement of vehicle and sound system for spreading the information.	Line Departments
Capacity building	Setting up control room and manning of control room round the clock. Equipping the control room with following: *District maps showing identified school building/shelters* *List of Resources Persons with contact address* *Data base on Resources & Inventory* *First Aid & other basic medical assistance* *One retiring room with adequate facilities such as: Generator sets. /Emergency light /Candles etc; Telephone, Fax, Satellite phones, telephonic linkage with Army, Para-military like ITBP, CRPF etc; Printer & Modem; Thermometer, Fire extinguisher, White Hard board & soft board.* Ensure IEC through: *DM Cell* *BDO's* *Tehsildars* *NGO's* *Street plays* *Workshops* *Wallings* *Public Relations* *Media* Capacity assessment of different NGO's need to be recorded in order to work hand in hand with the government officials at the event of calamities. Assignments of specific duties to officers/Sr. Officers at Headquarters.	Home Dept. Commandant General Home Guards Director Civil Defence Deputy Director IMPA Police Fire Brigade NCC NSS Civil Defence NGOs PRIs BDOs IMD Communication Department

	Ensure the formation of village level Disaster Management Committee through Block Development Officers. Create awareness with the target groups. Each ward offices should act as disaster management units (DMU). Equip district headquarter and Tehsil headquarter for providing all the necessary services and facilities to the affected areas / villages. Set up forest range wise fire fighting parties headed by one FPF inspector equipped with fire fighting equipments. Reporting centres are put on extra alert with complete duty roaster and contact details and location of Reporting centre. Pre positioning of staff or site operation centres. Establish at each sub-station a disaster management tool kit comprising cable cutters, pulley blocks, jungle knives, axes, crowbars, ropes, hacksaws, spanners. Ensure that adequate staffs are available by recalling personnel out of station officers or those on leave when required and assisting extension officers to establish work schedule. Set up teams of extension personnel and assistants for visiting disaster sites.	
Planning	Prepare department wise resource checklist. Assess preparedness level and report the same as per the format to district control room every six months and consider suggestions for improvement of the response document DDMAP. Regular updating of Disaster Management Plan on the basis of past experience.	Communication Department All line Department District Collector

	Collect the information on the agencies who will involve at the time Disaster. Regular updating of Telephone numbers. Review of advance preparation undertaken at field level. Categorizing Hazard zones and strategy meeting to combat. Prepare a notebook for recording the information on hazard wise Do's and Don'ts. Activate District Control Rooms and depute senior officers from time to time to review the receipt of information and dissemination. Linkage with other line departments. Advance preparatory/mock drills through, Civil Defence volunteer /Institutions/NGOs on management of Disaster. Arrange meeting with stakeholders such as: Sectoral Departments/Police/Army/Para military/NGOs for assigning specific responsibility that need to be carried out at the event of a disaster. Prepare an accessibility map showing the location of temporary shelter camps. Decentralize disaster management plan at the local self government level and adjacent level for effective response. Sufficient funds for all types of hazards may be kept available for all the department. Review and update precautionary measures and procedures.	

	Keep a check on high tension lines, towers, sub stations, transformers, insulators, poles and other equipments from the time of receipt of alert warning. Fire fighting control room in each Gamma unit should be activated and operationalized round the clock with duty roaster.	
Logistics	Funds for manual clearance should be kept available for areas where machine cannot be displayed. Procurement of pre operative items like snow clearance machine, snow cutter, disaster management store, trucks, tippers, light vehicle, etc. Mobilizing machine man power. Providing of basic equipments and installation of equipments in the specific DM areas. Availability of 90 functional fire stations without formal issue. Forest protection force teams in different Gamma units should work together in close coordination with Forest Department territorial staff. Divide the whole fire fighting operational plan into range wise with respective range officers supervising the whole operations. Setting up of central control room in Jammu during summer for prevention, control and combating forest fire by co-ordinating all fire fighting activities. Maintain a list of storage points and facilities available, dealers of food stuffs. Ensure buffer stock of fuel exists. Arrange emergency generator on loan if not available in the hospital. Purchasing of resources in advance and kept ready in	Communication Department All line Department District Collector Civil Supplies

	district. Storing of non-perishable items in Disaster Management Store (DMS). Stock emergency equipments which may be required after a disaster. Procurement of pre operative items. Deployment of early warning infrastructure like sufficient machinery and dumper to handle any situation. Update the inventory of resources. Take note of the calamity situation in the district over the next one-year through District level Natural calamity meeting and through other agencies. Take stock of the DCR and make it functional as per SOP that are prepared earlier. Check stock of the Public distribution system and arrangement of the temporary go-downs. Take stock of Resource / Resource personnel of other department viz. Police, Fire, Civil Defence and of NSS/NCC/NYKS. Assist the state authorities to make arrangements for stand by generators in the following public service form the time of receipt of alert warnings: hospitals, water dept., collectorate, police stations, telecommunication buildings, meteorological stations. Take stock of road cleaning equipment and vehicles for relief operation. Proper record keeping and transmission of information to all the levels.	
	All valuable equipments and instruments should be packed in protective coverings and stored in the damage proof room.	
	Provide communication facility to the inaccessible villages. Ensure the functioning of warming systems &	Revenue Dept.

Information and communication	communications systems. Dissemination of Warning / Information. Provide information to all concerned people about impact of disaster on crops and plantations and also information on ways to protect the same. Warn people about the impending danger and provide information on the rescue shelter.	Relief Commissioner Information Dept. Education Dept. All line dept. Dist. Collectors Municipal Commissioners Other Dist. Authorities
Evacuation	Identification of safe zones. Resources like snow cutters should be made available from the month of October. Funds for manual clearance should be kept available for areas where machine cannot be displayed. Identify shortest possible foot routes and transportation in consultation with village heads. Identify machinery and other equipments to save life and property. Identify expert man power for rescue and evacuation of the people from the dangerous spots. Evacuation of people from affected areas. Choppers should be pressed into for emergency evacuation for places which remain close due to closure of passes. Recording of list of cut off areas with alternate route map.	District Relief Team

	Updating of Maps displayed in DCR with up-to date information.	
Public Health	Arrange emergency supplies of anesthetic drugs. Request from central warehouse on an emergency priority basis, those supplies likely to be dispatched to the hospital immediately.	Health Department

5.13 Key Responsibilities of Stakeholders

5.13.1 District Administration

The general responsibilities of the District Administration with respect to the preparedness are given below:

- Prepare District Disaster Management Plan
- Meeting with district level officials at head quarters and chalk out emergency plan with vulnerable areas and resource list.
- Overall supervision and management of disaster affected areas.
- Collect information from different areas and to act accordingly.
- Identification of places for opening of operational sites.
- Arrange food and other basic requirement for emergency response.

The specific roles of key officials within the District Administration are given below in the tables (Table 5.14).

Table 5.14 Roles and Responsibility of District Administration & Line Departments in Preparedness

Authority	Roles and Responsibility
Deputy Commissioner	• Equip with relevant data pertaining to the district. • Maintain list of official manpower available which he/she should use in case of emergency. • Issuing alert to concerned Tehsil level DM committee and the responsible personnel of various shelters sheds. If person deployed on shelter shed is not available it will be brought to the notice of the DC/ADC to provide alternate official • Activate the district control room and keep close vigil over the

	situation.
District Treasury Officer (Chief Finance Officer)	• Keep track of incident related costs, personnel and equipments record and administering procurement contracts associated with the incident.
District Collector	• Convene the district level natural calamity meeting when ever required. • Designate one or two officers as the nodal officer to carry out the disaster risk management activities in the district.
District Project Officer	• Help the nodal officer in developing the work plan for the district. • Provide technical support for preparedness and mitigation plan for the district and the levels below. • Training of master trainers along with the resource persons and Superintendent of Police (SP). • Facilitate the training of disaster management committees and training of DM teams at all levels.
District Information Officer	• Managing information flow to media giving media briefs, arranging media visits etc.
District Disaster Management Committee	• Formation of committee under the Chairmanship of the president of the Zilla Parishad or the District Collector. • The committee should constitute all officers of line department, civil defence, NGOs, Red Cross and NCC/NSS. • Assist in preparing district disaster preparedness and mitigation plan. • Approve the work plan of the district for Disaster Preparedness Programme and help in implementation of the programme.
Department of Public Health Engineering	• Development of checklists and contingency plans. • Prior arrangement of water tankers and other means of distribution and storage of water to the risk prone areas. • Provision of safe drinking water to all habitat. • Ensure sanitation in all block areas. • Identification of appropriate potential water supply. • Ensure sufficient supply of drinking water and regular cleanliness / chlorination of all water sources. • Adequate prior arrangements to provide water and halogen tablets at identified sites to used as relief camps or in areas with high probability to be affected by natural calamities • Maintain list of manpower and materials available in the district.

Agriculture Department	• Establishment of pests and disease monitoring system. • Management of control activities following crop damage, pest infestation and crop disease to minimise losses. • Pre-positioning of seeds and other agro inputs in strategic points so that stocks are readily available to replace damage caused by natural calamities. • Detail response manuals to be drawn up for advising the farmers for different types of disasters, e.g., rain failure in July or September and development of a dynamic response plan taking into account weekly rainfall/snow patterns. • Promotion of drought,snow and flood tolerant seed varieties. • Provide information about the hazard and likely damages to crops and plantations. • Provide fodder to the animals which would be affected by any type of hazard. • Establish communication with District and Block/Tehsil control rooms and departmental officer within the division.
Consumer Affair & Public Distribution Department (CA&PD)	• Stock piling of food and essential commodities in anticipation of disaster. • Adopt appropriate preservatives methods to ensure that food and other relief stock are not damaged during storage, especially precautions against moisture, rodents and fungus infestation. • Arrange food and other basic requirement for emergency response. • Maintain list of wholesale traders of local market and traders dealing with temporary shelter materials. • Maintain list of petrol pump dealers and medical shops. • Maintain list of storage agents with quantity of monthly allotment and uptake. • Diversion of essential commodities to probable pockets to be affected as and when required.
Department of Sheep / Animal husbandry	• Eradication and control of animal diseases, treatment of injured animals. • Carry out surveillance of pests and diseases. • Protect abandoned and lost cattle. • Provide shelter and fodder to the animals which would be affected by any type of disaster. • Mobilising community for carcass disposal. • Disposal of carcasses ensuring proper sanitation to avoid outbreak of epidemics. • Organize transport, storage and distribution of

	seeds/fertilizers/pesticides. • Establish communication with District and Block/Tehsil control rooms and departmental officer within the division.
Veterinary Department	• Constitute animal rescue team which would be available during any type of disaster. • Arrangement of anaesthetic drugs and vehicles or injured animal.
Health and Medical Service Department	• Assess preparedness level at District, Block and Community levels. • Developing a network of volunteers for blood donation with blood grouping data. • Formation of adequate number of mobile units with trained personnel, testing facilities, communication systems and emergency treatment facilities. • Arrangement of standby generators for every hospitals. • Good number of ambulance should be made available in districts headquarter. • Ambulance should always be ready. • Life saving drugs should be utilized and replenished on and on. • Stock Position of life saving drugs, ORS, IV fluids and other equipment should be done. • Strengthen disease surveillance. • Establish communication with District and Block/Tehsil control rooms and departmental officer within the division.
Police department	• Establish communication with District and Block/Tehsil control rooms and departmental officer within the division. • Ensure that all communication equipments including wireless are regularly functioning. • Deployment of extra wireless units in vulnerable pockets. • Co-ordinate with the district administration. • Over all traffic management and patrolling of all highways and other access roads to disaster sites. • Maintain information on manpower available at each level. • Appoint officer as a nodal officer on behalf of Sr. Superintendent of Police. • Keep watch on anti social elements, rumour mongers and those elements who want to take advantage of the situation. • Identify hazardous situations reviewing safety implications, investigating accidents etc. • Provision of security in transit camps, relief camps, feeding

	centres, cattle camps, cooperative food stores & distribution centres.
Irrigation and Flood Control Department	• Dissemination of flood warning. • Undertake the responsibility to repair irrigation channels and flood protection activities. • Stockpile of sand bags and other necessary items for breach closure at the Panchayat level . • Store sufficient material for drought and other type of disaster. • Inspection of bunds of dams, irrigation channels, bridges, culverts, control gates and overflow channels. • Inspection and repair of pumps, generator, motor equipments, station buildings. • Monitoring and protection of irrigation infrastructures.
Defence / Home Guard	• Triage of casualties and provision of first aid and treatment. • The Commandant should work in close coordination with the district administration and shall have access to all the available manpower, machinery and materials.
Social Welfare Department	• Prepare a list of all the Anganwari Centres (Village wise) in the district along with infrastructure details (i.e. No. of rooms available in the centres, bathroom etc). • Prepare/ Equip Anganwadi centres/ Schools for shelter purposes during disaster. • Deploy Anganwadi workers as Volunteers. • Prepare a database of all the staff posted in different Anganwari centres .
Forest Department	• Keep saws (both power and manual) in working conditions. • Trekking and camping materials including diverse routes to be made readily available.
Urban and Housing Development / Municipality	• Providing basic urban services of viz. sanitation and Conservation, potable water, Street lighting, Disposal of carcasses, Shelter and lodging facilities. • Prepare special teams to look keenly in the area to stop pollution. • Prepare schedules which will play an important role in the cleanliness in the area.
Transport Department	• Maintain list of vehicles which can be used for emergency operations. • Requisition vehicles, trucks, and other means of transport to help in the emergency operations. • Ensure all vehicles follow accepted safety standards. • Build awareness on road safety and traffic rules through

	awareness campaign, use of different IEC strategies and training to school children. • Arrange transportation means during the occurrence of any type of hazards. • Formation of rescue team for evacuation of people.
PWD	• Keep a list of earth moving and clearing vehicles / equipments (available with Govt. Departments, PSUs, and private contractors, etc.) and formulate a plan to mobilise those at the earliest. • Inspection and emergency repair of roads/ bridges, public utilities and buildings. • Meeting with district level officials/ officials at Head quarter and chalk out emergency plan with vulnerable areas and resource list. • Establish communication with District and Block/Tehsil control rooms and departmental officer within the division. • Arrange extra vehicles/ heavy equipments, such as front end loaders/ towing vehicles/ earth moving equipments/ cranes. • Should give priority to reopen the blocked/closed roads. • Provide route strategy for evacuation and relief measures. • Inform all staff about hazards, likely damages and effects. • Maintain information on manpower, machinery and materials at all the places in the district.
Fire and Emergency Services	• Always keep ready a good number of vehicles to combat situations. • Linking VHF network and fire service with revenue and police networks. • Should work in close coordination with the district administration and shall have access to all the available manpower, machinery and materials.
Power Development Department	• Prepare contingency plan to ensure early electricity supply to essential services during emergencies and restoration of electric supply at an early date • Identify materials/tool kits required for emergency response. • Stand-by arrangements to ensure temporary electricity supply or generator.
Electricity Department	• Emergency inspection by mechanical engineer of all plant and equipments. • Inspection and repair of high tension lines/ substations/transformers/ poles etc. • Ensure and educate the minimum safety standards to be adopted for electrical installation and equipments and

	organize training of electricians accordingly.
Department of Education	• Prepare a list of all the educational institutions (village wise) in the district along with infrastructure details (i.e. no. of rooms available in the institution, bathroom etc) for evacuation and relief shelters. • Prepare a database of all the staff posted in different educational institutions.
Information department	• Manage information flow to media giving media briefs, arranging media visits etc.
ACD/BDOs	• Arrangement of alternative communication/ generator sets etc. • Prepare vulnerability maps at block levels. • Maintain list of cut off areas with safe route maps. • Ensure convergence with village committee. • Maintain list of storage facilities, dealers of food. • Pre-positioning of staffs for site operations centres. • Preparation of shelters in clubs, schools , halls • Collection of tents, blankets, torch lights etc.

5.14 Core Disaster PSSMH Preparedness Action Points

5.14.1 Mapping communities

- To identify the priority districts and sub-districts based on the hazard, vulnerability and disaster profiles
- To identify disaster specific psychosocial support and mental health service needs, gaps, resource availability, entry points, barriers, and challenges in the post disaster context for priority sub/district

5.14.2 Building Networks of Support at Different Levels (As Elaborated in the Institutional Framework for Disaster PSSMHS) – **prioritized based on hazard, vulnerability and disaster profiles of the unit.**

- Family, Community, Panchayath, Block, District, State, Regional and National Level

5.14.3 Capacity Building

- Special attention be given to the development of trained manpower, their availability during disasters, knowledge networking and scientific up-gradation at all levels especially in sub/districts prioritized based on hazard, vulnerability and disaster probability
- Mainstreaming the disaster PSSMH aspects in the education system - psychologist, psychiatric social workers, psychiatrist and sociologist
- Standardized training for disaster PSSMHS will be imparted to all MH professionals and paramedics
- Integrating disaster PSSMH component in Continuous medical education (CME) and other TOT. The training of state level master trainers will be conducted at designated national and regional institutes. Training of district level trainers shall be held at administrative training institutes (ATIs), District Institutes of Education and Technology (DIETs), State Institutes of health and Family Welfare (SIHFW), universities and other places. - sensitization, orientation, TOT, basic, advanced and refresher programmes need to be organized
- Integrating disaster PSSMH component in the training of Community Level Workers, Civil defence, first responders, panchayati raj functionaries, local non government and community based organizations, civil society and NDRF personnel.
- Civil defence can be actively involved in training CLWs for disaster PSSMHS.
- Local Universities and National bodies will enhance the infrastructural inadequacies of the training providing organization/ institutions in the district/state.
- NIDM and ATI's NIRD will train and build disaster PSSMH capacities of administrative officials and community representatives.
- Psychological First Aid and Practical Support training and skills to hospital emergency paramedics, ambulance crew, community level workers, students and other first responders to disasters, to enhance the reach of the PSSMHS.

5.14.4 Development to Disaster PSSMHS preparedness action plan and intervention continuum at each level

5.14.4.1 Community Activities and Direct Service Delivery

- PSSMH services to be formally linked with various health programmes (like NMHP/DMHP, NRHM) as well as non-health development programmes like Rural Employment Scheme, Community Development Programme, NSS/NYKS programmes.
- Community sensitization and information dissemination regarding disaster PSSMH through activities like street plays, dramas, posters, distribution of reading material, school exhibition and interaction with media and publicity
- Need to expand the infrastructure available for management of PSSMHS in mental hospitals and the creation of additional facilities in the state and district level.
- The PSSMH facility in every district has to be enhanced, based on hazard, vulnerability and risk, to address the needs of capacity building for pre and post disaster situation
- Few more zonal centres created or upgraded within medical colleges to meet disaster needs – where ever it is not available the department of psychiatry in medical colleges can be upgraded
- The district hospital and medical college psychiatric departments will be nominated as referral centres
- Private facilities to be enlisted and incorporated in the plans and resource inventory – NGOs, CBOs, medical health facilities, paramedical staff – block development office and panchayathi raj institutions to maintain the inventory.
- India disaster resource network functioning under the ministry of home affairs will be upgraded with PSSMHS related information.
- Coordination mechanisms for operations during disasters to be worked out with private facilities, government, non government organizations, private and corporate sector.
- Disaster PSSMHS shall form an integral part of all hazard district management plans.
- Amending and extending all social support services/schemes/programmes under various ministries and line departments to support disaster survivors towards enhancing their PSSMH.

- PRO at district level will be responsible for providing authentic reports – he will collect reports from designated nodal officers of the PSSMHS plan and will distribute it to the media for the general public.

5.14.5 Sectoral Preparedness Measures for Disaster PSSMHS

Humanitarian Sectors	Preparedness – Action Points
Protection and Human Rights Standards	Develop mechanisms to monitor, report and seek redress for human rights violations. Work with people at risk to identify priorities and develop capacities and strategies for protection and security. Train armed forces on international protection standards. Implement strategies to prevent violence, including gender based violence.
Food Security	Monitor access to key micronutrients known to influence child psychological development. Plan and develop equitable distribution according to needs during emergencies. Amend the provisions of the food security act to meet the address the needs of disaster survivors.
Housing, Water and Sanitation	Conduct participatory assessments on safety and appropriateness of potential sites. Plan to provide emergency shelter for all people (with appropriate targeting of people at risk) in a manner that supports safety, dignity, privacy and empowerment. Plan to prevent people being placed in camps long-term. Plan for the heating of shelters (in emergencies involving cold climates). Map social dimensions of existing resources, gaps and at-risk groups regarding water and sanitation. Plan to provide water and sanitation for all people (with appropriate targeting

	of people at risk) in a manner that supports safety, dignity, privacy and non-violent problem solving. Amend the provisions of the existing housing schemes to address the needs of disaster survivors.
Health Services,	Strengthen the national capacity of health systems for providing MHPSS in emergencies. Train staff in culturally appropriate clinical care of survivors of gender-based and other violence. Orient health staff in psychological first aid. Bring the national essential drug list in line with the WHO Model. Essential Drug List and prepare emergency stocks of essential psychotropic medications. Develop emergency preparedness plans for institutions. Amend the provisions of existing health schemes to address the needs of disaster survivors.
Education,	Using participatory methods, train and supervise teachers in basic psychosocial support, children's rights, participatory methods, positive discipline and codes of conduct. Strengthen the capacity of national education systems for school-based MHPSS in emergencies. Establish general and psychosocial crisis plans for schools. Strengthen emergency education capacities, addressing prominent issues in the curriculum. Amend the provisions of educational programmes to meet the needs of disaster survivors.
Dissemination of Information	Prepare a risk communication strategy for disseminating essential information during emergencies. Advocate against media use of harmful images and the distribution of inappropriate information. Involve key stakeholders in developing, pilot-testing and distributing information on positive coping.

Community Mobilization And Support	Conduct risk analysis, develop a community response plan, including an early warning system, and strengthen local capacity to implement such plans. Develop mechanisms for mobilization of internal MHPSS resources and integration of external resources. Train and supervise existing community workers on how to provide appropriate emergency MHPSS services. Develop community plans on protecting and supporting early childhood development in emergencies.
Livelihood	Conduct livelihood risk analysis and develop a community response plan during emergencies. Amend provisions of existing livelihood programmes to accommodate the needs of disaster survivors, especially the most vulnerable.

6. Disaster Response

The aim of disaster response measures need to be aimed at rescuing those who are affected or likely to be affected by hazards. This involves minimizing the impact of injuries, loss of life and damage to property and the environment. Usually disaster response is carried amidst periods of heightened stress and often with constraints of time, information and resources. Apart from addressing the immediate needs and functions of search and rescue, it also involves the activation and coordination of various lifeline systems.

The Revenue Department of the State would be the Nodal Department for disaster response which includes the coordination of rescue, relief and rehabilitation. All other concerned line departments will be extending their full cooperation in all matters pertaining to disaster response. The State EOC, ERCs and other control rooms at the State level as well as district control rooms will be activated with full strength. The State Government may publish a notification in the official gazette, declaring such area to be disaster-affected area under NDM Act.

6.1 Institutional Arrangements

The institutional framework that the plan proposes towards facilitating disaster response is given below.

Institution	Vested Roles and Responsibilities
State Disaster Management Authority (SDMA)	• Convening meetings on the direction of Chairperson • Situation Analysis • Preliminary Impact Assessment • Estimating level of outside assistance required
State Executive Committee (SEC)	• Chief Secretary will convene the meeting • Situation Analysis • Allocation of Roles & Responsibilities • Review and Coordination of Line Departments • Invite assistance from outside including NDRF, Armed

	Forces etc. • Depute teams for preliminary impact and need assessment • Resource mobilisation and distribution • Monitoring and Review of situation • Liaisoning with other state departments
Emergency Operations Centre (EOC), State level.	• Planning, Coordination and Monitoring of all activities related to disaster response in the State. • All line departments will depute nodal officers to the State EOC, once the EOC is activated.
District Disaster Management Authority (DDMA)	• Planning, Coordination and Monitoring of all activities related to disaster response at the district level.
Advisory Committee, DDMA	• An experts committee representing government department, scientific organizations and civil society networks to offer expert opinion on key interventions.
Emergency Operations Centre (EOC), District Level	• Planning, Coordination and Monitoring of all activities related to disaster response in the district. • Communicating and taking orders from the State EOC. • All line departments will depute nodal officers to the District EOC, once the EOC is activated. • All departmental resources will be made available for the EOC to take action during the emergency phase.
Disaster Management Committee (Tehsil/Block level)	• Planning, Coordination and Monitoring of all activities related to disaster response at the district level. • Communicating and taking orders from the District EOC.
Disaster Management Committee (Village/Gram Panchayat level)`	• Planning, Coordination and Monitoring of all activities related to disaster response at the district level. • Communicating and taking orders from the District EOC / Tehsil DMC.

6.2 State Emergency Operations Centre (EOC)

Emergency Operations Centre (EOC) plays an important role in effectively and efficiently coordinating multi-agency, intergovernmental responses to disaster events. The EOC not only assembles resources for an incident scene, but also command responsibilities associated with decisions taken towards threat abatement and deploying agencies and personnel. It is very critical to comprehend that during routine emergencies, the Incident Management Systems (IMS) that are in place gathers and controls required resources to deal with the situation. Usually, such routine emergencies are taken care by law enforcement agencies, emergency public health and medical services, fire and emergency services, hazardous material teams, police and first responders. However, as the emergency or disaster situation escalates, the response requirements become huge and the EOC gets activated from its regular mode of functioning to the emergency mode and comes in to the scene to handle the crisis. The EOCs thus become active usually during major emergencies or disaster events, where the situation demands large-scale government and other stakeholder response across several jurisdictions and geographical locales. During large scale emergencies and disasters, the EOCs become the centre of co-ordination, planning, resource mobilization and deployment, communication, information management and dissemination. Yet another significant feature of the EOC is that it acts as the platform where key decision makers and administrators interface with technical experts in the provisioning of legitimate emergency authority and expertise.

6.2.1 Objectives of EOC

- To be the central platform of planning and coordinating disaster management activities during situations of large-scale emergencies and disasters in the State of Jammu and Kashmir.
- To manage disaster events that require resources of many agencies that may be local or may come to the jurisdiction from elsewhere in the country.
- To coordinate the forecast and monitoring of hazards, issue accurate and reliable warnings to populations at risk.
- To design and facilitate safe evacuations and coordinate emergency response activities.

- To plan, coordinate and control relief and rescue operations.
- To effectively manage the gathering and dissemination of crucial information to the public and the media.
- To maintain and control law and order situations during emergencies.

6.2.2 Functions of the EOC

The six primary functions of EOC are: (i) Coordination, (ii) Policy Making, (iii) Operations, (iv) Information Gathering, (v) Public Information and (v) Visitor Hosting. These functions are elaborated as follows.

(i) **Coordination:** It involves assessing the disaster threat in terms of both agent-generated and response-generated demands and marshaling the available resources to act in concert to counter the threat. In this regard, it is the EOCs responsibility to ensure that responder organizations are aware of one another's missions, responsibilities and areas of operation. The State Disaster Management Plan and the respective District Disaster Management Plans will be the key framework to achieve coordination. Box 6.1 details the specific tasks of EOC with respect to coordination.

Box 6.1. Coordination Functions of EOC: Specific Tasks

- EOC becomes the Central Coordinator.
- Enumeration of all agencies involved in Disaster Response, accessing resources and Networking with other Institutions in Disaster Preparedness and Response.
- Other Key functions of coordination include:
  - Notifying EOC staff to gather at EOC in crisis
  - Communicating decisions, needs, resource information to response partners
  - Agreeing in advance on EOC relationships/networks to other institutional structures
  - Coordinating preparation of preparedness plans by national and / or local structures before crisis
  - Coordinating joint training exercises and drills
  - Providing venue for response coordination meetings
  - Coordinating actual crisis response to ensure effectiveness and efficiency

(ii) **Policy Making:** Researches have pointed out that the policy concern operates at two levels: (a) a disaster action plan that deals with technical emergency management issues and (b) the integration of needed political and legal authorities. Together, these levels of policy-making define the creation of strategy for the overall community response to a particular disaster event.

Box 6.2 Policy Making Functions of EOC: Specific Tasks

- The Secretary (Revenue) will coordinate the Key EOC functions with the help of the Steering Committee.
- Establishing clear policies on leadership and decision making structures for EOCs
- Making broad policy decisions to guide the overall jurisdiction's response
- Establishing policies on activating and de-activating the EOC
- Preparing communications policies for EOC and all services
- Establishing safety and security policies for responders

(iii) **Operations:** The EOC has to oversee or support the conduct of disaster operations. The EOC has to continuously monitor the threat environment and the response resources (including personnel) need to be continually reviewed and re-deployed to insure optimum community wide management of the disaster impact.

Box 6.3 Operations Functions of EOC: Specific Tasks

- Activating the EOC from its regular mode to the emergency mode.
- Giving directions quickly and properly to response agencies
- Equipping response partners with needed relief supplies
- Deploying fire, emergency medical, search and rescue services
- Managing EOC staff on daily basis
- Ensuring EOC staff security and safety
- Ensuring other EOC staff needs (food, water etc.)
- Establishing telecommunications systems (main and backup)
- Ensuring needed measures are taken to guarantee public security and safety
- Coordinating response monitoring activities
- Deactivating the EOC from the Emergency mode to Regular mode

(iv) **Information Gathering:** The scope of information gathering by the EOC is necessarily very broad. It pertains both to the incident demands and activity and to available resources. The various modes of information include (a) damage assessment, (b) progress (success and failures) in disaster response, (c) timing and effectiveness of operational decisions and deployments. The EOC also collects and collates information on the activity and success of different responder agencies and relays the information to other responder agencies with related tasks.

Box 6.4 Information Gathering Functions of EOC – Key Tasks

- Inventorying available public and private resources for response
- Obtaining damage and needs assessment information

- Coordinating, cross-checking, verifying all data/information as they arrive at EOC
- Generating and storing lessons learned

(v) **Public Information**: While the need for public information is usually obvious, it is sometimes separated from the EOC. Such arrangements invite difficulties associated with misinformation and ambiguity, to the extent that those who disseminate information are not directly connected to the principal source of accurate response data – the EOC. Incident managers in the field should not be burdened by this information need and the EOC can be designed to effectively accomplish it. With regard to public information needs, two audiences are of principal concern: the general public and the public-at-risk. Another important audience that sometimes serves as a buffer between the EOC and other publics is the mass media. EOC taking up this function can avoid the difficulty stemming from multiple and conflicting messages being disseminated regarding the threat and the progress of the response. By centralizing this function in the EOC, and placing it under the supervision of a Public Information Officer (PIO), one ensures that consistent and accurate messages are disseminated and at the same time makes it easier for media to obtain authoritative information.

Box 6.5 Public Information Functions at EOC – Key Tasks

- Issuing public warnings of possible incident
- Communicating information to the general public
- Communicating information to the media

(vi) **Visitor Hosting**: EOCs need to develop capacities for hosting visitors in a constructive fashion. One should not underestimate the number of visitors (usually government VIP's

and elected officials) that arrive on site. Sometimes these visitors have legitimate disaster related functions and sometimes there is no function beyond a desire to show concern for the situation.

Box 6.6 Hosting Visitors Function of EOC

- Hosting/handling VIP visits during crisis situations

The above mentioned primary functions can be elaborated as in Table 6.1, specifically with respect to the task force at the activated EOC phase.

Table 6.1 Functions of Emergency Operations Task Force

Emergency Operation Taskforce	Functions
Coordination and Planning	Coordinate early warning, Response & Recovery Operations.
Administration and Protocol	Support disaster operations by efficiently completing the paper work and other Administrative tasks needed to ensure effective and timely relief assistance.
Warning	Collection and dissemination of warnings of potential disasters.
Law and Order	Assure the execution of all laws and maintenance of order in the area affected by the incident.
Search and Rescue (including Evacuation)	Provide human and material resources needed to support local evacuation, search and rescue efforts.
Public Works	Provide the personnel and resources needed to support local efforts to reestablish normally operating infrastructure.
Water	Assure the provision of sufficient potable water for human and animal consumption (priority), and water for industrial and agricultural uses as appropriate.
Food and Relief Supplies	Assure the provision of basic food and other relief needs in the affected communities.
Power	Provide the resources to reestablish normal power supplies and systems in affected communities.
Public Health and sanitation (including First aid and all medical care)	Provide personnel and resources to address pressing public health problems and re-establish normal health care systems.
Animal Health and Welfare	Provision of health and other care to animals affected by a disaster.
Shelter	Provide materials and supplies to ensure temporary shelter for disaster-affected populations

Logistics	Provide Air, water and Land transport for evacuation and for the storage and delivery of relief supplies in coordination with other task forces and competent authorities.
Survey (Damage Assessment)	Collect and analyze data on the impact of disaster, develop estimates of resource needs and relief plans, and compile reports on the disaster as required for District and State authorities and other parties as appropriate.
Telecommunications	Coordinate and assure operation of all communication systems (e.g; Radio, TV, Telephones, Wireless) required to support early warning or post disaster operations.
Media (Public Information)	Provide liaison with and assistance to print and electronic media on early warning and post-disaster reporting concerning the disaster.

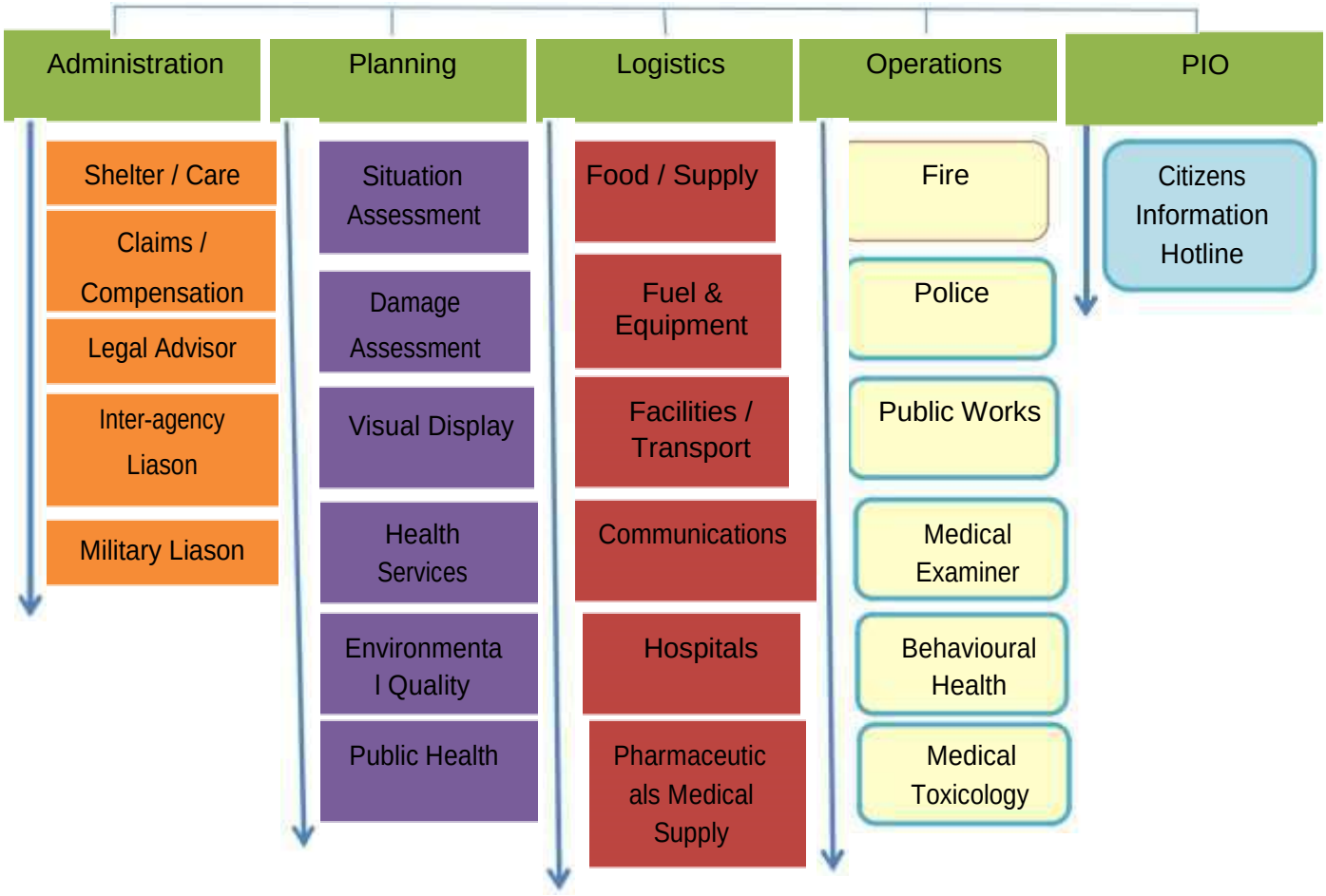
6.2.3 EOC Structure and Operation

The EOC is a place that brings together communication capability, logistical and personnel support that represent all of the resources of the jurisdiction, including the authority to make decisions in crisis. The EOC commander will be the Chief Secretary or Secretary (Revenue). There will be an advisory body to the EOC commander. The Advisory body will be headed by a chief administrative officer and includes the secretaries or directors of key departments in the state such as police, fire, public health and public works. The disaster response policy will be devised by the EOC commander in consultation with the advisory group. In the context of Jammu and Kashmir, it is also relevant if a WMD specialist is part of the advisory group. The WMD specialist could provide interpretation and specialized chemical, biological and radiological agent information to the EOC command. Figure 6.1 illustrates the EOC Organisation as such.

Figure 6.1 EOC Organization

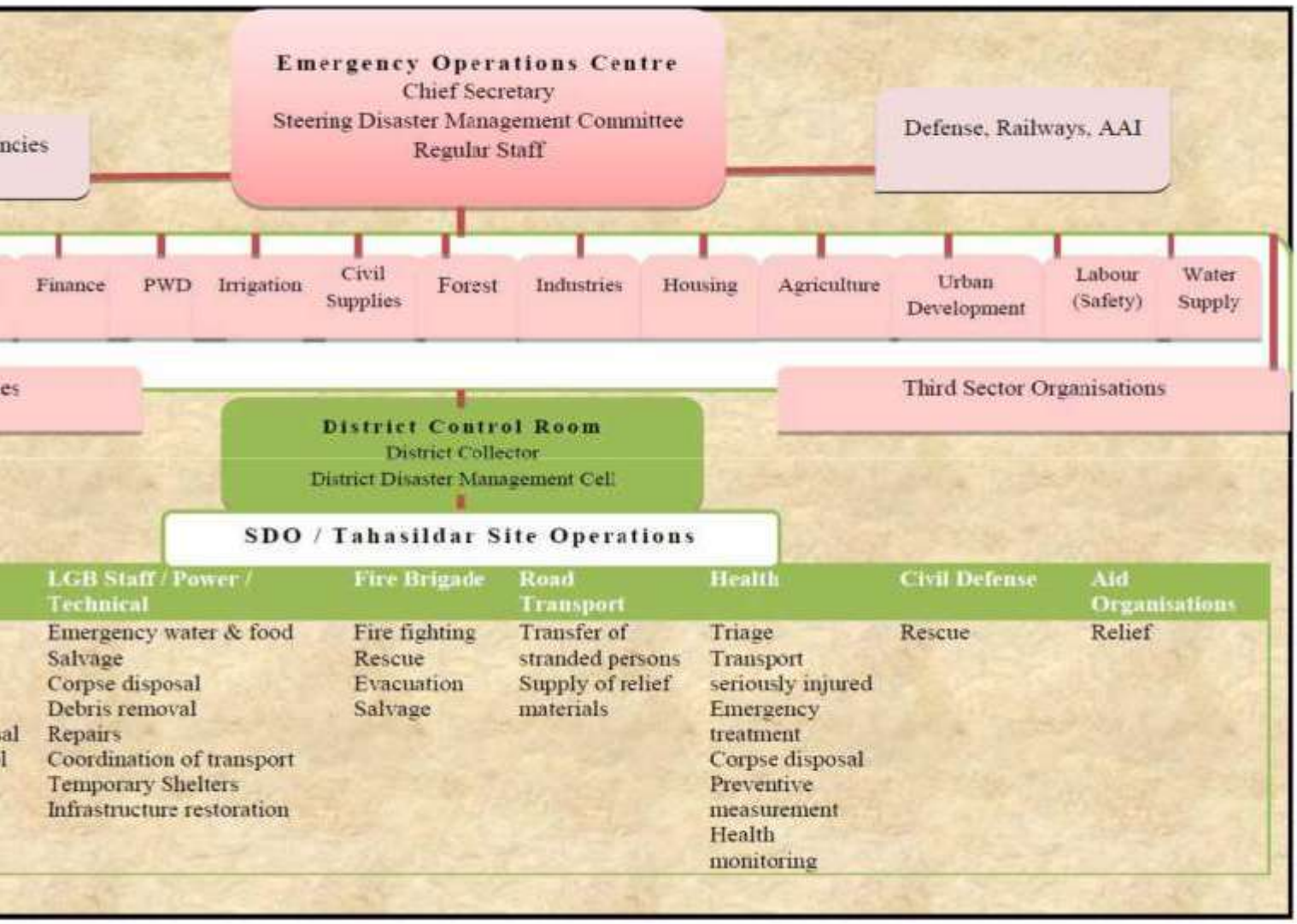
Steering Disaster Management Committee

Chief Secretary
(Secretaries, Relief Commissioner / Director of Police, Fire, Public Health, Public Works, Emergency Management, WMD Specialist)



Jammu and Kashmir State DM Plan Final Draft

Figure 6.2 EOC Structure and Operations in Activated Phase



While Figure 6.1 provides the EOC Organisation in a generic manner, the Figure 6.2 depicts the EOC Structure and Operations when it is activated. The EOC has to be operated for 24 hours a day and worked in three shifts. The team for each shift comprised a senior clerk, an office assistant and an attendant. Some of the vertical functional units of the EOC are the District Emergency Control Room and Tehsil Level Control Room. The District EOCs/C ontrol Rooms are to be set up within the campus of district Collectorate. The district collector is the Incident Commander of the District level EOCs. During emergency situations, he/she takes over the charge of the Control Room and commands all emergency operations. All the task force leaders

shall take position in the District Control Room along with Incident Commander to enable one-point coordination for decision-making process. The Tehsil Level Control Room shall be located at the Office of Tahasildar. The Liaison Officers of the respective Tehsils shall take charge of the Control Room. The respective Liaison Officers shall coordinate between the task group members working at disaster sites and the district level Task Force Control Room (TFCR) for the mobilization of resources and dissemination of instructions received from TFCR/DCR.

6.2.4 EOC Operations

The EOC along with its core regular staff will remain operational throughout the year (Table 6.2). This operation of the EOC will be at L0 level of maintenance pursuing the following activities:

Table 6.2 Regular Functions of EOC during Normal Times

1. Updating and Maintenance duties of the EOC
2. Managing Inventories and reviewing existing logistic facilities
3. Keeping updated with other hazard, weather and terror events across the world.
4. Tracking and documenting new forms of disaster response measures and technology used around the world. Innovating these in the context of the state of Jammu and Kashmir.
5. Capacity Building including dry exercises and other preparedness and training exercises.
6. To ensure the continuous operation of the regular Public Safety facilities at all times.

The EOC is normally staffed twenty-four hours a day during seasons of extreme weather events and therefore it can quickly be activated for any emergency. When a major emergency occurs, or is imminent, it will be the responsibility of the Emergency Coordinator to set up and staff an appropriate Emergency Operations Center (EOC). The EOC is usually activated at the orders by Chief Secretary at the State level or the collector in the district level respectively. The activation of EOC should normally occur when the Government proclaims a State of Emergency affecting the area due to weather, hazardous materials, terrorism, etc. It also depends upon the severity and nature of the hazard event. It should be noted that the activation of EOC should be followed by the issuance of warning by nodal technical agencies. When the situation returns to normal, automatically the response operations cease and the EOC staff strength also reduced automatically. The deactivation of EOC takes place upon the receipt of Chief Secretary's order.

In case of extreme disasters such as chemical disasters, bomb blasts and terrorist attacks, national security and control takes precedence. The Ministry of Home has to establish special measures to ensure the security of the nation by sealing and evacuating strategic government and national institutions well within 3-4 hours of the occurrence. National borders, air and sea space also have to be protected and if need be, sealed off. The designated officers of the Home Guards at the EOC will provide security to the EOC entrance points. In addition to EOC staff, the authorized individuals are allowed by the Home Guards to enter the EOC.

6.2.5 EOC Levels of Operation

The EOC activation at various levels depends on the level of disaster. Table 6.3 details these levels of operation.The National/state/district EOCs are activated in the L3, L2 and L1 levels of disasters respectively.

Table 6.3 EOC Levels of Operation

Level	Nature of EOC Operation
Level 1 (L1)	**Normal**: Situation is monitored by EOC in charge
Level 2 (L2)	**Watch**: When an event / disaster may occur, notification is made to agencies and support staff who would need to take action as part of their responsibilities.
Level 3 (L3)	**Partial Activation**: Limited activation of EOC when an event / disaster is very

	probable or following an event which doesn't require full activation. All primary or lead staff will be notified and will staff the EOC.
Level 4 (L4) Full	**Scale Activation**: All primary and support agencies are notified. All EOC Support personnel will staff the EOC**.**

6.2.6 Immediate Tasks on EOC Activation

The Chief Secretary will initiate the activation of the emergency services of the EOC as established. Table 6.4 spells out the immediate tasks as the EOC is activated.

Table 6.4 Immediate Tasks upon EOC activation

1.	The Chief Secretary will determine what staff he/she deems necessary to effectively operate the EOC apart from the prescribed staff. The Personnel from various departments and agencies are called to work in the EOC.
2.	Orders are faxed from the crisis management committee to related ministries and departments for additional resources.
3.	The emergency operation taskforces are asked to send report on the situation and their immediate resource requirements to the EOC within 4-8 hours of activation.
4.	The EOC produces a situation report summarizing these reports.
5.	Records will be maintained in the emergency control room.

The step by step tasks as detailed by the High Power Committee on Disaster Management is given in Table 6.5.

Table 6.5 EOC Tasks during emergency phase as suggested by HPC

Time	Task
First 24 hours of the emergency	1. Establishing Control rooms at the airport with information desks at the arrival, departure and assembly points. 2. Set up General Information Desk at airport EOC. 3. Establish and activate emergency phone lines and helplines immediately within few hours of the disaster. 4. Set up separate desks for each ESF and international aid /NGO. 5. Set up desks for donations (cash and material). 6. Establish contact with the affected State EOC. 7. Set up EOC at neighboring States.

	8. Establish contact with NRSA/ISRO/Defence for aerial and satellite imageries of the affected area. 9. Provide information and standard operating procedures for civilian population such as media, researchers, volunteers, field workers, etc. through: o Organize/coordinate aerial surveys for rescue operations o Establish contact with the disaster site which will have Incident Command Systems placed at the disaster site based on the scale of the disaster o Deploy Incident Commanders in consultation with the Center at strategic incident commands.
Next 48 Hours	EOCs at the State and the central levels will be jointly involved in the following: 1. Set up information desks at critical locations 2. Identify and channelise different categories of workers under the following at the information desks and provide identification tags for the following: - Media - Researchers - NGO/International Agency - Field workers/Volunteers - Government officials 3. Place situation reports at bulletin boards outside information desks and E O C. 4. Direct Central and international agencies to priority areas (worst affected areas). 5. Identify locations for international and other NGO agencies to set up their site offices for the uniform distribution of aid in all parts of the affected area. 6. Communicate with the District Magistrate and the SRC for local information through: - Information flow chart of Information and Arrival Centre at airport. - Material/Manpower flow chart of Information and Arrival Centre at airport. - Information flow chart of EOC at Centre. - Information flow chart of desk for ESF. - Information flow chart of NGOs. - Information flow chart of media. - Information flow chart of researchers.

6.2.7 EOC Communication

The Telecommunication Task Force Leader of the EOC shall ensure immediate restoration of disrupted communication facility or infrastructure to ensure uninterrupted communication for effective disaster management operations. The task force will also ensure that the communication shall be brief and simple, and no chaotic situations arise. Telephones or Hot Lines shall be used wherever possible to avoid congestion of radio communication. All task force members shall communicate only through their allotted frequency channel to avoid congestion in the particular channel. The personnel who use radios should be acquainted with the operation of the equipment, various channels, code words, length of speech, etc. The EOC has an important role in issuing early warning. The flow chart of early warning dissemination is given in the figure below (Figure 6.3).

6.2.8 EOC Information Center Management

The principal role of information center in the EOC constitutes collection of data, analysis and dissemination of information to relevant organization.Upon the activation of EOC, this center coordinates the flow of information with respect to activities associated with relief operations. During normal times, it maintains a systematic database of the resources available, important phone numbers, name and addresses of important government officials, EOC emergency staff members, trained officials and first responders, international aid agencies and NGOs. The EOC-information center does damage assessment of the affected areas, collect all related information of government schemes for smooth management, monitors different disaster mitigation programmes, coordinate with different organizations, also conducts evaluation of the programmes and immediately takes up. The information flow chart from EOC-Information center is given in the figure 6.4.

Figure 6.3. Communicating Early Warning

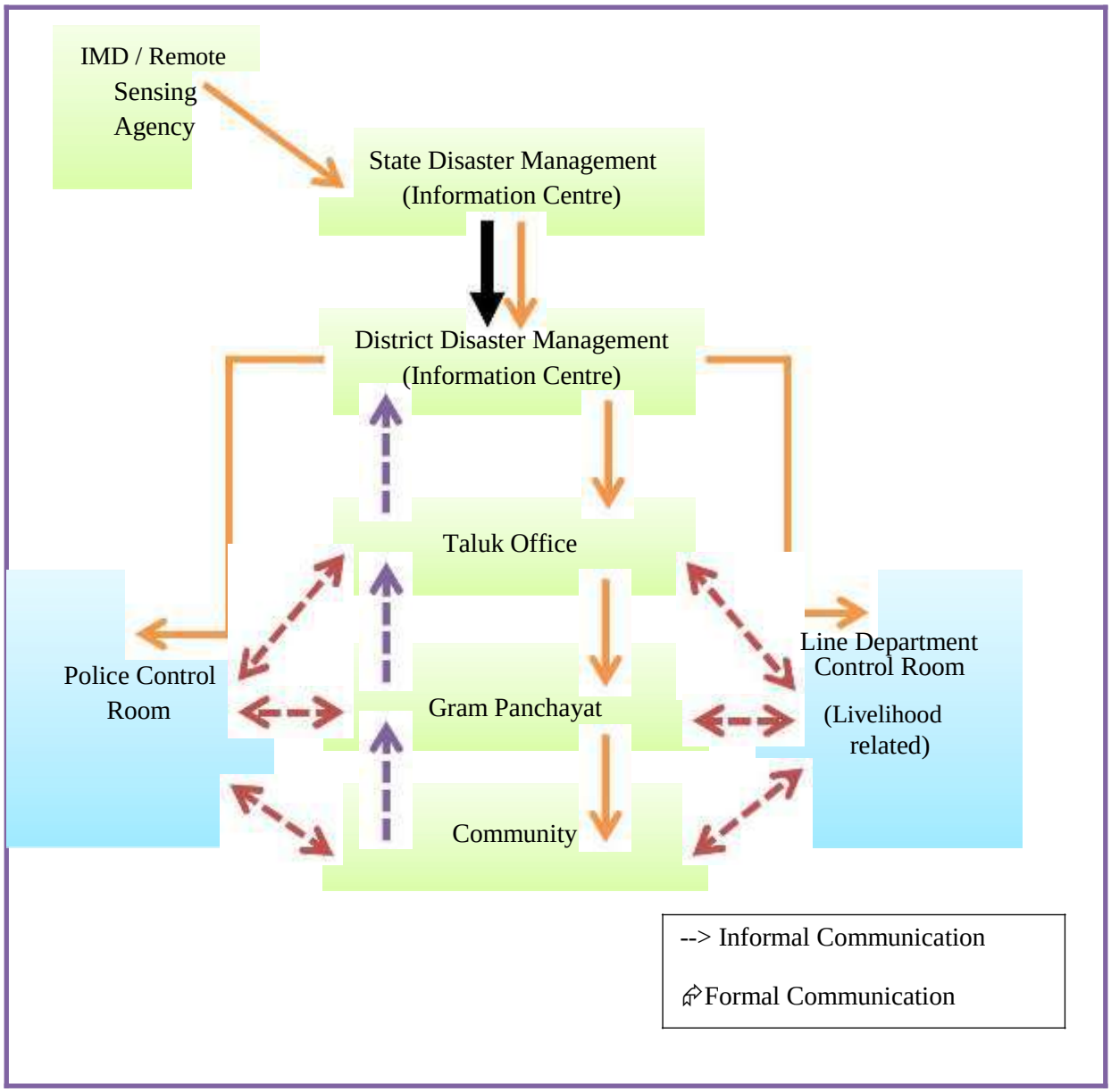
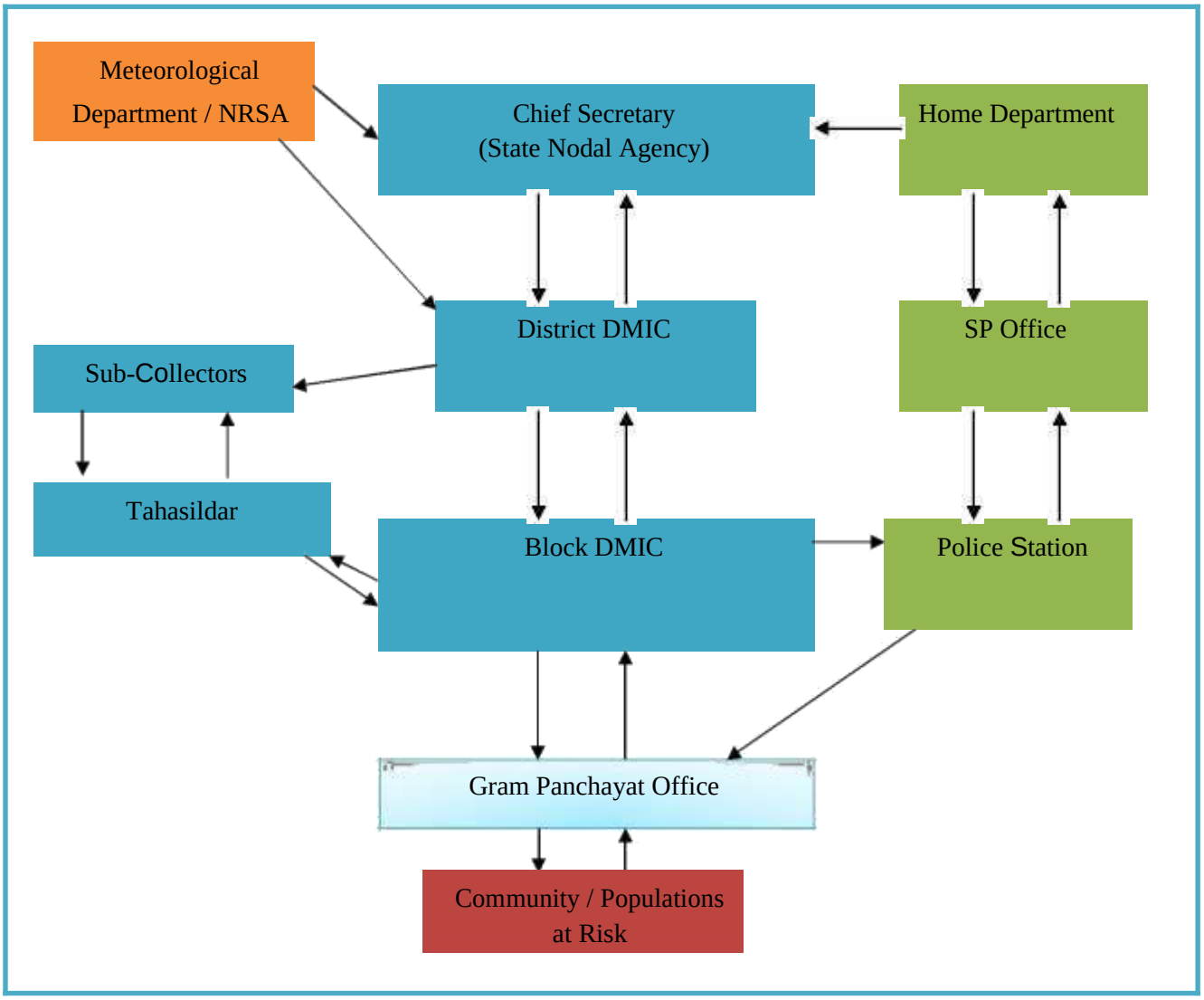


Figure 6.4 Information Flow in EOC



6.2.9 Geo-Informatics: Disaster Response and Emergency Operation

Geo-informatics constituting Remote Sensing, GIS and GPS are very effective tools for forecasting, monitoring and assessment of pre, during and post disasters in a particular region by utilizing prior information and developing commensurate strategies. For example use of spatial information to make decisions regarding targeting the affected population, demarcating the

affected area, relief material distribution and holistic management. The role of geo-informatics in disaster response and emergency rescue operations are follows:

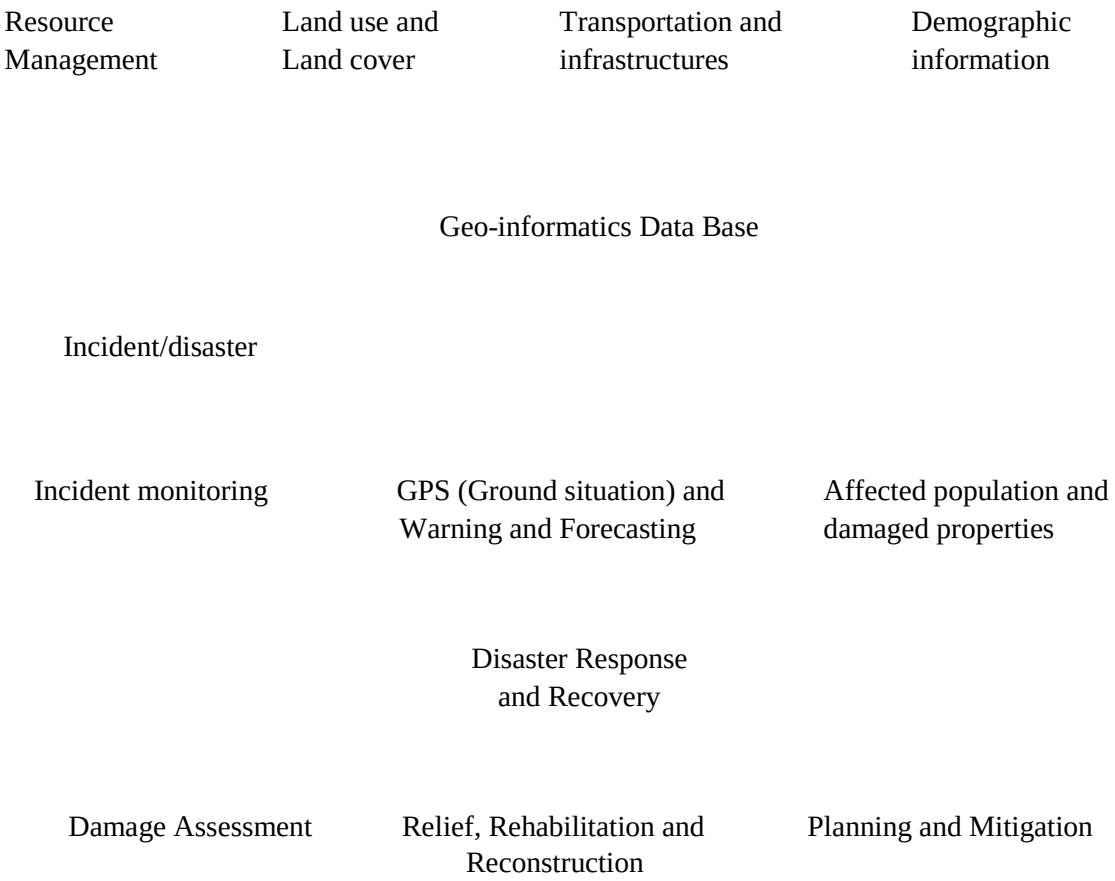
- Pre-assessment of the incident area
- Identifying the area for early warning
- To display the EOC, ICP, command units and their duties in the warning area
- To draw rescue routes and make a emergency operation plan
- To analyze the relief material distribution
- Monitoring the incident situation
- Disaster information display and real-time dissemination
- Disaster assessment and reconstruction (assess the disaster losses such as population, damages - building, road, infrastructure, agricultural, socio-eco loses, livelihood. Assess the relief, rehabilitation and reconstruction cost in accordance with post disaster needs.

The geo-informatics data base must be consists of the following significant information to hand the incident in better manner:

- ICP's
- Resource management (including human and other resources)
- Demographic details (including children, aged and gender)
- Livelihood and habitation etc.
- Positioning of line department
- Infrastructure and basic amenities
- Public health hospitals, health post, health centre
- Logistics and distribution system, and transport network
- Land use and land cover (built-up, agricultural, forest, water, waste and others)
- Academic institutes (schools, colleges, institutes and universities)
- Research institutes
- Industries and mining area

The following Figure 6.5 shows the important parameters with Geo-informatics components.

Figure 6.5 Geo-informatics - Disaster Response and Emergency Operation



6.2.10 GIS in EOC system

GIS in EOC or mobile GIS is new technology and widely used in many countries during incident situations. It will support multiple mobile terminals (PDA, Cell phone and laptops), real-time services (navigation devices supported (GPS)), and support multiple types data acquisitions (locations, transport networks and regions by PDA, images, audios, videos and positioning services).

Mobile GIS is integrated with GIS, GPS, remote sensing, and mobile communication systems (GSM/GPRS/CDMA). It is utilized for the following.

Spatial data management and spatial analysis with GIS

- Positioning and tracking with GPS
- Data acquisition with PDA
- Transmission of information as images, text and audio with mobile communication technologies.

Figure 6.6 shows the system architecture of the Real-time incident monitoring and communication system.

Figure 6.6 System Architecture for real-time incident monitoring and communication system

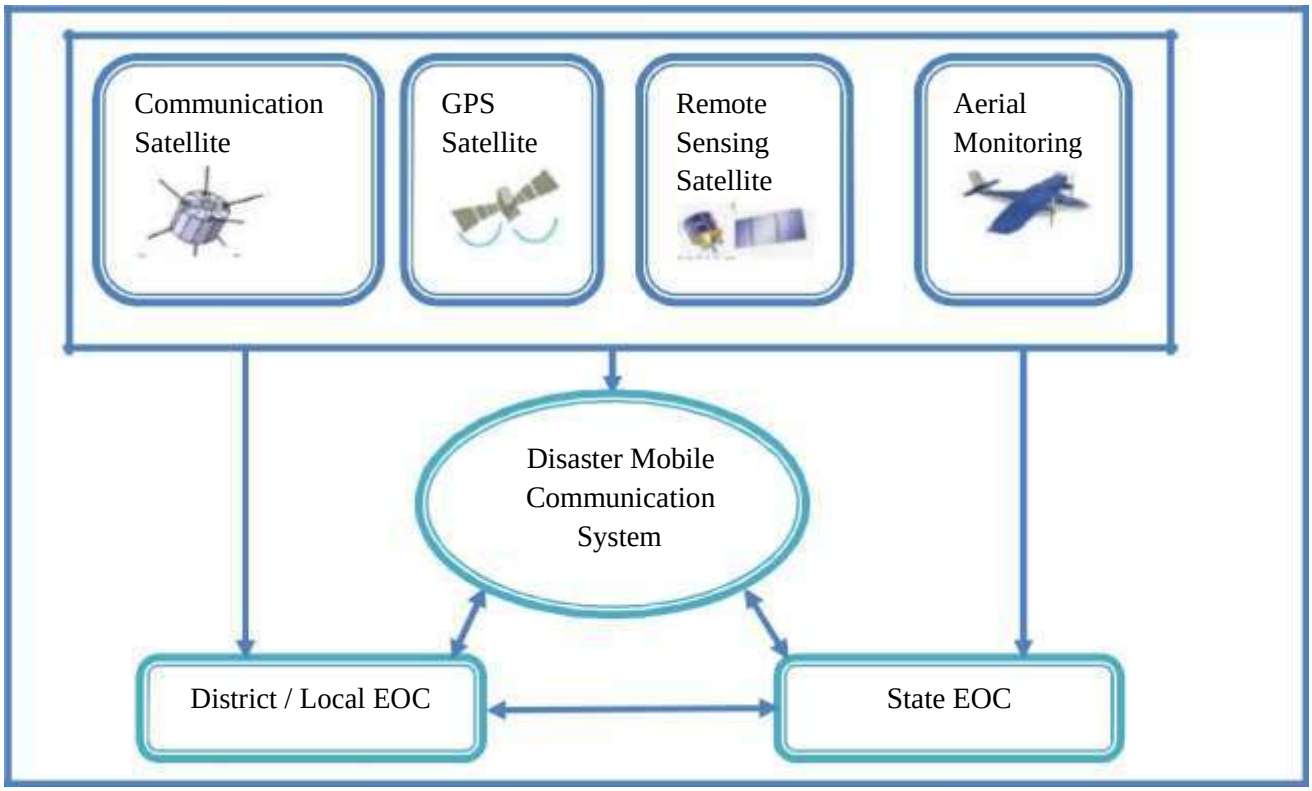


Figure 6.7shows the Mobile GIS communication system and incident monitoring.

Figure 6.7 Mobile GIS Communication System and Incident Monitoring

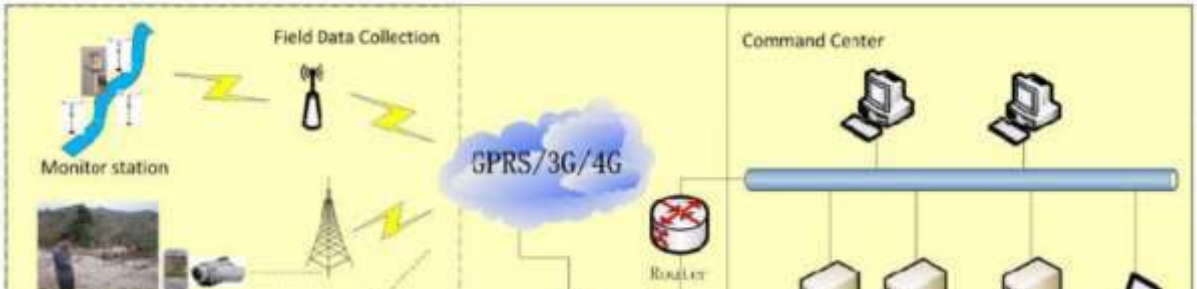
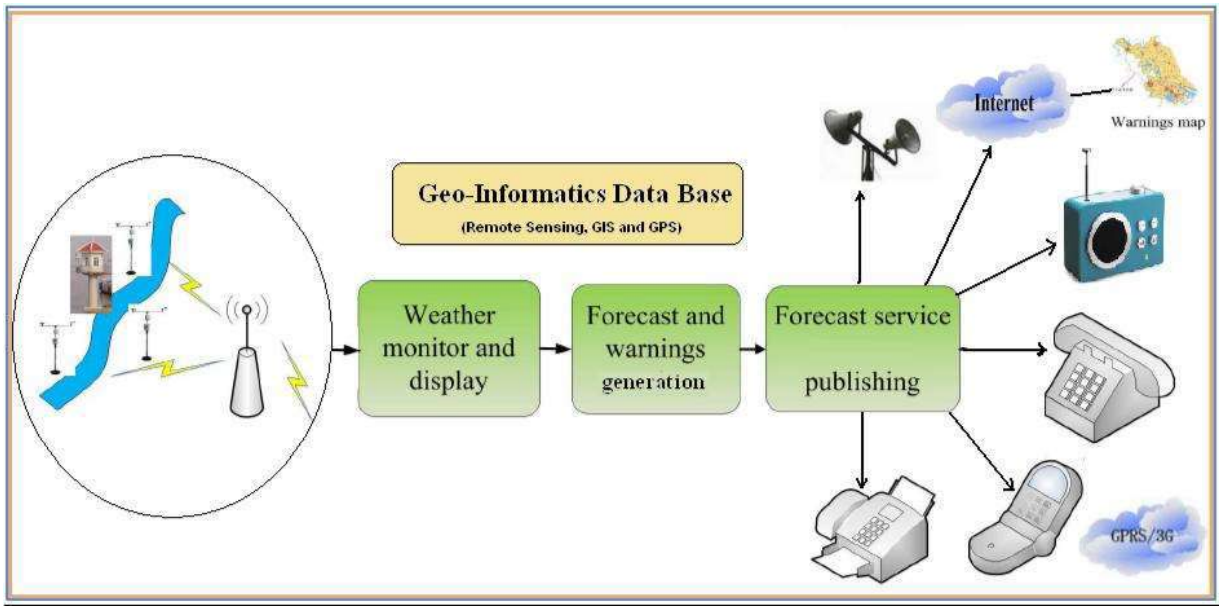


Figure 6.8 shows the information dissemination during disaster using Geo-informatics.

Figure 6.8 Information dissemination using Geo-informatics



6.2.11 Preliminary Steps to Set Up an Emergency Operations Center

While setting up of an EOC, the following aspects should be given due consideration:

a) **Number of people involved:** The number of people at an EOC should be limited to the people directly involved in the EOC operations.

b) **Presence of decision makers and operations staff:** All key individuals involved in decision making and executing them needs to be present at the EOC, as and when policy decisions are being taken.

c) **Communications and other equipment:** The EOC should have sufficient physical space and support equipment to enable staff to operate effectively. An EOC requires the best available communications and other equipment to operate efficiently. However, the lack of equipment should not be used as an excuse for not setting-up an EOC. Runners can work in the place of radios, paper and pens in the place of computers and printers, and chalk boards in the place of white boards.

d) **Information Resources:** The EOC should contain maps and documentation on other relevant resources needed to respond to a disaster.

e) **Alternate sites:** There should always be an alternate site for the EOC in case it has to be abandoned.

f) **Knowledge of the EOC location**: Only those who need to know where the EOC is located should be told its exact location.

6.2.12 EOC Basic Requirements

- **Site or Location of the EOC:** The Emergency operation center (EOC) should be established near the office of key government functionaries and is ideal to be positioned away from the disaster scene. As per the recommendations of the HPC, a network of EOCs is to be set up in national, state capitals and headquarters of disaster prone or vulnerable districts.
- **EOC Space Requirements:** Table 6.6 suggests the space required for specific functions of the EOC.

Table 6.6 EOC Space Requirements

Functions	Space Requirement
Policy Makers	A separate room from the main EOC area, often designed also as a conference room.
Media Information Provision	Separated from the main EOC area.
Communications and Data Processing	Designed separately from the main EOC as a Radio Room. It should include computer servers and similar equipments.

Incident Commander	Separate cabin for the Incident Commander
Task Forces	Space for up to 15 Task Forces. Each task force should be provided separate desks, which is able to host atleast 3-4 persons at a desk at a time.
Logistics Coordination	Desks and space to host five persons
Administrative Personnel	Desks and space to host five persons
Finance Personnel	Desks and space to host five persons
Restrooms and Toilets	Restrooms and toilets for personnel at EOC

While designing EOCs, specific attention should also be given to aspects related to the electrical/data circuit layout, security considerations, lighting considerations, projection displays, visual aids, equipment, communication considerations, UPS/backup power considerations, and functional considerations with a view toward avoiding potential pitfalls in design, construction, and equipment functionality.

6.2.13 EOC Equipment

A list of equipment that is essential for the Emergency Communication Centre of the EOC is given in Box 6.7 below.

Box 6.7 Emergency Communication Centre – Essential Equipment

- Radio communications supported with capabilities on all public safety frequencies
- Amateur radios (multiple bands)
- Secure satellite telephone
- Doppler weather radar and infrared satellite imagery
- Quick-call and community siren warning system
- Emergency Alert System encoder/decoder
- Primary telephones, backup phone system and dedicated circuits
- Group paging terminals
- Fax machines
- Internet (both network and dial-up as a redundancy)

6.2.14 Back up Control Room

In case of rare incidents or disasters, the EOC building may be severely damaged and cease to function. In that case a backup EOC or a temporary set up can be used for coordination and control of emergency operation. The HPC has emphasized on setting up of Back up EOCs at all

levels right from National level to district levels. In the context of Jammu and Kashmir, it is advisable to have two EOCs at the State level, one positioned at Srinagar while the second state level EOC is set up at Jammu. This will also be in tune with the state's administrative structure and will help coordinate the activities when the administration moves from Srinagar to Jammu or vice versa.

6.3 Alert Mechanism – Early Warning

On the receipt of warning or alert from any such agency which is competent to issue such a warning, or on the basis of reports from District Collector of the occurrence of a disaster, the response structure of the State Government will be put into operation. The Secretary (Revenue) will assume the role of the Chief of Operations during the emergency situation. The details of agencies competent enough for issuing warning or alert pertaining to various types of disasters are given below.

Table 6.7 Agencies involved in issuing first alert

Disaster	Nodal Agencies
Earthquakes	IMD, ISR, GSI
Floods	IMD, Irrigation Department
Windstorm/ Rains/ Cloudburst/ Heat waves/ Cold Waves	IMD, Revenue Department
Avalanche	IMD, ISR, SASE
Drought	Agriculture Department
Epidemics	Health & Family Welfare Department
Industrial & Chemical Accidents	Industry, Labour & Employment Department
Fire	Fire & Emergency Services

The occurrence of the disaster will be communicated to the Governor, Chief Minister, Home Minister, State Cabinet, Guardian Minister of the district, and non-officials namely MPs and MLAs from the affected district. The PMO, Cabinet Secretary, Secretary-Home and Defence, NDMA, MHA, Command Officers will also be appraised of the situation.

The EOCs and ERCs will be put on full alert and expanded to include Branch arrangements, with responsibilities for specific tasks, depending on the nature of disaster and extent of its impact. The number of branches to be activated will be decided by the Chief of Operations. i.e. Financial

Commissioner (Revenue) and Relief Commissioner at the State level and respective Deputy Commissioners / District Collectors at the District level. All line departments and nodal officers will work under the overall supervision and administrative control of the Chief of Operations. All the decisions taken in the EOC have to be approved by the Chief of Operations. Immediate access to the disaster site through various means of communications such as mobiles, VSAT, wireless communication and hotline contact needs to be established and maintained. As mentioned earlier, the EOCs and ERCs in its expanded form will continue to operate as long as the need for emergency relief and operations continue and the longer term plans for rehabilitation are finalised. For managing long-term rehabilitation programmes, such as reconstruction of houses, infrastructure and other social amenities, the responsibilities will be that of respective line departments through a well-structured R & R Programme.

6.4 Search and Rescue

The District Collector, in conjunction with local authorities will be responsible for the search and rescue operations in an affected region. In doing so, the Collector will be guided by relevant disaster management plans and will be supported by Government departments and local authorities. Table 6.8 shows the key components and actors of the rescue services.

Table 6.8 Key Components and Actors in Rescue

Components	Tasks	Responsibility
Rescue Service	Rescue the victims under debris in damaged buildings. Give necessary first aid to such casualties at the post before rescue. Recover the dead bodies. Carry out demolition of dangerous structures and remove debris.	Rescue Team consist of : - Paramedical Staff - Home Guard - Police personnel Other actors include: - Fire Services - Paramilitary forces - Civil Defence - Public Sector Undertaking

		(PSUs) - Civil Society - Civilians
Evacuation	Shift the injured and the affected population from the disaster site. Employ sufficient manpower and material resources, transport facilities what so ever available in the district for immediate evacuation. Formation of rescue sub-committee. Civilian should be evacuated from military areas to prevent their interference with the operation of troops. Control of spontaneous exodus to prevent panicky condition.	District Administration SDMs Tehsildars Police BDOs DFO Range officer Fire Brigade
Emergency Operation	Rescue people trapped in burning, collapsed or damaged buildings, damaged vehicles, including motor vehicles, trains , industries, boilers and pressure vessels etc. Control fires and minimise damages due to explosions. Control other dangerous or hazardous situations such as oil, gas and hazardous materials spill. Protection of property and the environment from fire damage. Provide support to other agencies in the response to emergencies. Investigate on the causes of fire.	SDM/ Tehsildars Chairman BMO Co-ordinator SDPO/SHO Member BDO Member Executive Officer MC Member Zonal Education Officer PWD, PHE PDD
Relief/ Aid	District Headquarters is the focal point for all rescue and relief activities . Provide immediate first aid and relief. Carry out relief operations at one place so that control / sub-control centre can easily issue orders	Police Fire Services Paramilitary forces Civil Defence Civilians PSUs Civil Society

	for movement of services. Organize relief camp. Immediate freezing of 75% stock of POL Bunkers in the districts and should be used during time of disaster followed by scarcity. Assisting in distribution of relief material. Maintaining law and order. Cash relief/ex - gratia grant to affected families. Encourage the formation of Mutual Aid and Response Groups(MARGS). Prepare a damage list to by conducting a preliminary damages assessment at Tehsil/bock Level/ Panchayat Level. Help the evacuees for returning to their houses. Co-ordination between agencies is needed on the issue of compensation.	
Welfare Service	Provide orphans, widows and other vulnerable people every sort of relief and rehabilitation. Establish rest centres to provide shelters, food and care to them. Establish rest centres for homeless citizens. Collect clothing from NGO's and other like Red Cross and distribute them amongst the deserving and needy people.	Social Welfare Department Civil Society

6.5 Coordination with Armed Forces, Airport Authority of India (AAI) and Indian Railways

The Armed Forces, AAI, and Indian Railways shall be called upon to assist the civil administration only when the situation is beyond the coping capability of the State Government. Since, Jammu and Kashmir being an international border state has the presence of large Army spread throughout the State, assistance and support of highly trained dedicated and well equipped human resources will be utilised in the crisis situation by the State Disaster Management Authority.

6.6 Subsistence, shelter, health and sanitation

Disasters situations typically result in an immediate need for shelter and protection against an incidence of epidemic. The concerned Government departments and local authorities would provide temporary shelter, health and sanitation services to rescued victims in order to prevent an outbreak of diseases.

6.6.1 Public Health

The components of public health response are given in Table 6.9.

Table 6.9 Public Health and Disaster Response

Components	Tasks	Responsibilities
First Aid	Provision of Medical facilities. Provision of required medications such as dressing, antibiotics, I.V Fluids, steroids, tincture iodine / fly repellants, digestive tonics, phenyl, NSAIDs etc. Vaccinations after disaster for Food-Mouth Disease and other infections in cattle and livestock. Vaccinations against Typhoid, Hepatitis A, Cholera etc. CMO shall ensure that the teams are assigned zones	Chief Medical Officer (CMO) Surgeon Specialist Physician Specialist Child Specialist Gynecologist Microbiologist Health Supervisor Sr. Assistant Deputy Commissioner Animal Husbandry

	for providing necessary medical assistance. Medical team shall continue to assist till situation returns to normal.	
Ambulance Service	Administer first aid to injured individuals. Evacuate people to relief camps/shelter.	Health Services Trained civil society volunteers.
Casualty Service	Immediate response in handling the causalities. Medical assistance should be given to the needy and injured persons. Carry out on spot first aid facilities. Transport the patients who are in critical conditions to hospitals for treatment. In patients having sustained craniofacial (i.e. head and neck region) trauma it is essential to understand that the patient has to be transferred in such a way that the neck area (cervical spine) is put to minimum strain.	Civil Defence Command officers Deputy Director Health Service Civil society Semi-govt organisation Medical Staff
Management of Epidemics	Draw up Plans at PHC level to cope with any epidemics. Immunization against infectious diseases. Disease surveillance and transmission of reports to the higher authorities on daily basis.	Medical Staff District Officials
Corpse Disposal Centre	NDMA guidelines regarding corpse disposal would be followed. Arrange sufficient manpower for burial of dead bodies immediately to prevent spread of diseases. Recovered dead bodies shall be kept in mortuary of the local hospital dispensaries for identification purpose. Identified and claimed bodies should be handed over to their kith and kin's. Assistance in funerals.	Municipality Government Hospital District Hospital Police District Administration

	Manage the disposal of dead bodies and carcasses to clean the environment The process of identification and handing over to next of kin shall be followed. Mass burial/disposal of bodies shall be the last resort. The bodies shall be disposed in honourable manner by observing religious and cultural practices in the area.	

6.6.2 Food Supply and Nutrition

Table 6.10 Food Supply and Nutrition Services during disaster response

Component	Task	Responsibility
Food Security, Nutrition & Food Aid	Pre-positioning of staff in the areas that are vulnerable to the risk and arrange food and other basic requirement for emergency response. Assign responsibilities to the officials for distribution of emergent relief and to run free kitchen. Assign role to trained voluntary staff/task force/Anganwadi workers etc. for delivering effective service. Provision of supplementary nutrition through Integrated Child Development Schme (ICDS)/Anganwadi to the vulnerable groups. Monitor the price through committees from the Panchayat level. Ascertain the availability of dry food, drinking water and medicines to the evacuees especially the ones in the in the cut-off and inaccessible areas. Arrangements for food and ration etc. to be made available to the people.	DCR SDMs Tehsildars BDOs All Line dept PRI

	Prior storage of food grains in the vulnerable pockets. Make necessary arrangements for air dropping of food packets in the marooned villages through helicopters.	

6.6.3 Water Supply, Sanitation and Hygiene

Table 6.11 Water Supply and Nutrition Services during disaster response

Component	Task	Responsibility
Water Supply	Provision of drinking water. Normal water supply in the affected areas either by arranging tankers or fire tenders. Desalting and dewatering of the inundated areas. Provision of water supply schemes and check dams across nallahs and riverbeds. Disinfection of water sources.	Revenue Department Water Department Municipality PRIs
Sanitation	Ensure round the clock sanitation and shall take necessary help from NGOs & volunteers. Provide assistance till situation returns to normal.	Municipality PRIs Health Services Civil society

6.7 Infrastructure and Essential Services

Disasters can result in breakdown of essential infrastructure and support systems such as roads, public buildings, airfields, ports, communication network etc. An immediate priority after a disaster is to bring the basic infrastructure into operating condition and deal with fires and other hazardous conditions that may exist in the aftermath of the disaster. The local authorities would work in close coordination with relevant Government departments like PWD (R&B), Police etc. to restore infrastructure to normal operating condition. Some of the crucial tasks that the PWD (R&B) will take up are given below.

- Maintenance and construction of infrastructure facilities such as roads, embankments.
- Inspect, strengthen and repair all the roads and sewer system.

- Repair power, telephone and sewerage lines on priority basis to restore normalcy.
- Filling of ditches, disposal of debris, and cutting of uprooted trees along the road.
- Schemes should be sanctioned for repair/restoration of public as well as private properties.

Some of the crucial tasks associated with re-establishing road network connectivity is given below in 6.12.

Table 6.12 Establishing Road Network Connectivity after Disasters

Component	Task	Responsibility
Road Network Connectivity	Establish Connectivity. Identification and notification of alternative routes to strategic locations. Mobilise the community to obtain assistance for clearing blocked roads. Facilitate movement of heavy vehicles carrying equipments and materials**.**	PWD (R&B) Police Fire Services Paramilitary forces Civil Defence Civilians Public Sector Undertaking (PSUs) Civil Society
Transport Services	Availability / arrangement of high ground clearance vehicle. Maintain the transport in an efficient and road worthy condition. Make arrangements for quick service training of drivers.	Transportation Department

6.8 Security

Usually, in a disaster situation, the police and security personnel are preoccupied with conducting search and rescue missions. Some people could take advantage of the situation and resort to looting and other anti-social activities. Consequently, it is necessary that security agencies functioning under the administrative control of the district authorities be geared to prevent this and provide a sense of security to citizens.

6.9 Communication

The Relief Commissioner, the district administration and local authorities would communicate to the larger community the impact of the disaster and specific activities that are required to be undertaken to minimize the impact. Some of these activities could include precise communication of the impact of disaster and relief measures being taken and generate goodwill among community and other stakeholders. It would also aim at preventing panic reactions, while providing relevant information and handling welfare enquiries. The communication channel will also act as a feedback mechanisms on relief measures and urgent needs of various agencies involved in emergency relief measures and relief.

- A standardized daily situation report will be submitted by EOC at the District level to the State level EOC, which will be then submitted to the NDMA/MHA.
- Based on instructions from the EOC Commander of Operations, the nodal officers from the Department of Public Information will be responsible for the dissemination of information to the electronic and print media, including press briefing.

Some of the key tasks that will be carried out as part of information dissemination and creating public awareness of the disaster are given below. These are the responsibilities of information management and dissemination team of respective district EOCs.

- Prepare a damage list to by conducting a preliminary damages assessment at Tehsil/Block Level/ Panchayat Level.
- Co-ordinate meeting with the officials at District Control Room at 12 hours interval and 24 hours interval with the field to get the up-to-date information of the situation.
- Regular collection of situation report of the risk and vulnerable areas from the officers assigned for the purpose. Continue to operate till post disaster scenario returns to normal.

- Submission of daily reports and disseminates correct information through mass media to avoid rumours.
- Generating public awareness through locally acceptable and accessible announcement measures.
- Establish alternate communication links to have effective communication especially in the marooned/isolated areas.

6.10 Preliminary Damage Assessment

Once a disaster strikes, the government departments and the local authorities shall carry out a preliminary 'need and loss assessment' and the district administration shall mobilize resources accordingly. The members of the rapid impact assessment will be officials drawn from various line departments facilitated by the Tehsildar of the affected Tehsils. The rapid impact assessment report will be detrimental to take decisions on the requires rescue and relief operations. The preliminary report should be made available within 24 hours of the calamity.

6.11 Funds generation

The Jammu and Kashmir government allocates funds in the state budget for relief activities. In addition, funds may be available through the State Disaster Response Fund. However, these funds may not be adequate to meet disaster management requirements in the aftermath of large-scale disasters like the 2005 earthquake in the State. In such circumstances, the J&K government shall explore additional sources of funding through aid, grants, loans etc., as identified in the pre-disaster phase. The State Disaster Response Fund (SDRF) and National Disaster Response Fund (NDRF) are the state and central level funding assistance provided for immediate relief. Under the guidelines, people affected by avalanches, cloudburst, drought, earthquake, fire, floods, hailstorms, landslides, frost and cold waves, and pest attack are eligible for accessing the assistance.

The list of items and norms of assistance from SDRF and NDRF according to letter No. 32-3/2013-NDM, dated 21st June 2013 is given in Table 6.13*.

Table 6.13 Items and Norms of Assistance from SDRF and NDRF

Heads	Items	Norms of Assistance
Search and Rescue	a) Cost of search and rescue measures/ evacuation of people affected/likely to be affected	As per actual cost incurred, assessed by SEC and recommended by the Central Team (in case of NDRF). By the time the Central Team visits the affected areas, if these activities are already over, the State Level committee and the Central Team can recommend actual near – actual costs
	b) Hiring of boats for carrying immediate relief and saving lives	As per actual cost incurred, assessed by SEC and recommended by the Central Team (in case of NDRF) The quantum of assistance will be limited to the actual expenditure incurred on hiring boats and essential equipment required for rescuing stranded people and thereby saving human lives during a notified natural calamity.
Clearance of Affected Area	a) Clearance of debris in public areas	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for assistance to be provided under SDRF and as per assessment of the Central team for assistance to be provided under NDRF.
	b) Draining off flood water in affected areas	As per actual cost within 30 days from the date of start of the work based on assessment of need by SEC for the assistance to be provided under SDRF and as per assessment of the Central team (in case of NDRF)
	c) Disposal of dead bodies/Carcase	As per actual, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF)
Infrastructure	Repair/restoration (of immediate nature) of damaged infrastructure:	Based on assessment of need, as per States' costs/rates/scheduales for repair, by SEC and recommendation of the Central Team (in case

	Roads and bridges Drinking Water Supply Works Irrigation Power (only limited to immediate restoration of electricity supply in the affected area) Schools Primary Health Centres Community assets owned by Panchayat Sectors such as Telecommunication and Power (except immediate restoration of power supply) which generate their own revenues, and also undertake immediate repair/restoration works from their own funds/resources are excluded.	of NDRF). As regards repair of roads, due consideration shall be given to Norms for Maintenance of Roads in India, 2001, as amended from time to time, for repairs of roads affected by heavy rains/flood, landslides, snow etc. to restore traffic. For reference these norms are: Normal and Urban areas: upto 15 % of the total of Ordinary Repair (OR) and Periodical Repair (PR). Hills: Upto 20 % of total of OR and PR.
Procurement	Procurement of essential search, rescue and evacuation equipments including communication equipments etc for response to disaster	Expenditure is to be incurred from SDRF only (and not from NDRF), as assessed by the State Executive Committee (SEC). Total expenditure on this item should not exceed 5 % of the annual allocation of the SDRF.

* These norms are subjected to revision from time to time.

6.12 Finalizing Relief Payouts and Packages

Relief packages would include details relating to collection, allocation and disbursal of funds to the affected people. Relief would be provided all the affected families without any discrimination of caste, creed, religion, community or sex whatsoever.

6.13 Post-relief Assessment

The post-relief assessment will be aimed at faster recovery and in reducing vulnerabilities to future risks. The SDMA, with assistance from Government departments, district administration and local authorities will also document learning from the relief experience, which can be inputs into further mitigation, relief or rehabilitation and reconstruction plans.

6.14 PSSMHS in Disaster Response

The District level authority will coordinate the following functions towards ensuring the Psycho-Social Support and Mental Health Services during the disaster response phase.

- Establish a committee which will co-ordinate and implement district mental health response plan.
- Conduct a ‘co-ordinated’ rapid and detailed needs assessment of mental health and psychosocial issues ‘to avoid duplication’ in an ethical and appropriately participatory manner.
- Share the needs assessment information to all stakeholders and conduct feedback sessions with community.
- Ensure that interventions are based on consultation with and, whenever possible, participation of affected communities (include sub-groups varying in interests and power and marginalize) which protect local people’s dignity, strengthen local social supports and mobilise community networks.
- Increase affected people’s awareness of their legal rights and their ability to assert these rights in the safest possible way, using culturally appropriate communication methods.
- Activate or establish social protection mechanisms, building local protection capacities where needed.

- Provision of emergency Psychosocial First Aid (PFA) acknowledging the cultural and traditional beliefs, practices and sensitivity through mass catharsis, ventilation, resuming

ritual practices, organizing regular meetings of the survivors, and providing needs for the children.

- Design a referral system for survivors needing specialize intervention/service.
- Ensure care for care givers and young children (0-8 years)

6.15 Standard Operating Procedures

6.15.1 District Administration

- Immediate arrangement of free kitchen in the cut off and inaccessible areas.
- Provision for administering emergent relief and the other basic needs.
- Monitor relief distribution.
- The Deputy Commissioner (DC) will co-ordinate the meeting with the officials at District Control Room at 12 hours interval and 24 hours interval with the field to get the up-to-date information of the situation.
- The DC will provide for administering emergent relief and the other basic needs.
- The DC will coordinate the activities at various camp sites and affected area
- Considering the gravity of situation the DC shall convene the District-level National Calamity Meeting when ever required and (i) assign duties to the required line department, (ii) pre-position the staff in the likely cut off areas and (iii) develop emergency action plans in the most vulnerable/impacted areas.
- The DC will arrange for the deployment of rescue team to the site of disaster with all the gadgets, machinery and medical aid.
- The DC will monitor the processes of bringing basic infrastructure facilities into operational conditions, in restoring power supply and towards ensuring uninterrupted power to all vital installation facilities and sites.

6.15.2 Fire and Emergency Services

- Control of other dangerous or hazardous situations such as oil, gas and hazardous materials spill.

- Support to other agencies and line departments in the response to emergencies.
- Rescue of persons trapped in burning, collapsed or damaged buildings, damaged vehicles, including motor vehicles, trains, industries, boilers and pressure vessels etc.
- Investigation into the causes of fire.

6.15.3 Health Department

- Conduct situational assessment and review the status of response mechanisms in the known vulnerable pockets.
- Immunization (priority less than one year old) and nutritional surveillance.
- Identification of appropriate locations and setting up of site operation camps for combating epidemics.
- Treatment and socio-medical rehabilitation of injured or disabled persons.
- Provision of adequate health care, monitoring and other epidemic control prevention activities till the situation is brought under control.
- Chief Medical Officer will ensure the sufficient stock of medicines and other supplies that has to be procured and distributed.
- Chief Medical Officer coordinates the identification of risk prone sites, to set up respective relief centres.
- Chief Medical Officer will ensure the despatch of both personnel and medical supplies to areas requiring disaster relief measures.
- Chief Medical Officer oversees the arrangement of ambulance services. In the absence of transport facilities, adequate mapping plans to the nearest health units and local transport facilities need to be networked.
- Track the locations of pregnant mothers through ANC registrations and those due for childbirth for transport to safer and adequately equipped comprehensive emergency obstetric care units with neonatal facilities.

- Sterilisation of dressing pads and ensuring stock availability of the pads.
- Managing inventories of medical supplies and ensuring the adequate provisioning of Oral Rehydration Solutions, Chlorine tablets, Bleaching Powder, Anti diarrheal and Anti emetic medicines, intravenous fluids, surgical dressings, splints, plaster rolls, disposable needle and syringes, local antiseptics and Sutur materials.

6.15.4 Consumer Affairs and Public Distribution

- Ensure supply of essential commodities.
- Pre-positioning of staff in the areas that are vulnerable to the risk and arrange food and other basic requirement for emergency response.
- Assign responsibilities to the officials for distribution of emergency relief and to run free-kitchen.
- Assign role to trained voluntary staff/task force/Anganwadi workers etc. for delivering effective service.
- Provision of supplementary nutrition through Integrated Child Development Scheme (ICDS)/Anganwadi to the vulnerable groups.
- Monitor the price through committees from the Panchayat level.
- Ascertain the availability of dry food, drinking water and medicines to the evacuees especially the ones in the in the cut-off and inaccessible areas.
- Arrangements for food and ration etc. to be made available to the people with the help of Assistant Director CAPD.
- Prior storage of food grains in the vulnerable pockets.
- Make necessary arrangements for air dropping of food packets in the marooned villages through helicopters.
- Coordinate with local authorities and other ESFs to determine requirements of food for affected population.
- Control the quality and quantity of food that is distributed to the affected population.
- Ensure that special care in food distribution is taken for women with infants, pregnant women and children.

6.15.5 Telecommunications

- Should restore telecommunication services in the affected areas immediately to avoid communication gap.

6.15.6 Public Health Engineering

- Ensure sanitation and water supply to all affected areas.

- The Superintending Engineer (Hydraulic) will ensure the supply of drinking water; and adequate arrangement will be made to provide water to relief camps/affected villages, alternate water supply arranged in feeding centers/cattle camps etc.
- Arrange for the purification, transportation and distribution of water in coordination with local administration.
- Disinfection of water bodies and locating/setting up drinking water facilities separate from sewer and drainage facilities.
- Encouraging a culture of conserving water.
- Identify and repair damaged pipes, blocked sewages and salvage important and damaged facilities.
- In case of repair of drinking water distribution systems, the required main should be flushed and disinfected with a chlorine solution of 50mg/ liter for a contact period of 24 hours. After which the main is emptied and flushed again with potable water. If the demand for water is urgent, or the repaired main cannot be isolated, the concentration of the disinfecting solution may be increased to 100mg/liter and the contact period reduced to 1 hour. At the end of disinfection operations, but before the main is put back into services, samples should be taken for bacteriological analysis and determination of chlorine residue.

6.15.7 Police Department

- Deploy personnel to guard vulnerable embankments and at other risk points.
- Deploy all the teams immediately as per the directions of the District Administration.

- Security arrangements for relief materials in transit and in camps.
- Assist administration in taking necessary action against hoarders, black marketers etc.
- Conduct search, rescue and evacuation operations in coordination with the administration.
- The Superintendent of Police (SP) will coordinate the above mentioned procedures of the Police.
- The SP will also co-ordinate with military service personnel in the area under relief operations.

- The Superintendent of Police (Traffic) will restrict or restrain traffic movement and communicate to the Deputy Commissioner, Superintendent of Police, and the Divisional commissioner.
- The SP (Traffic) will be in-charge of emergency traffic management.
- Prevention of sexual abuse of children, women and other vulnerable population.

6.15.8 Defence

- Act as support agency for movement of relief.
- Assist the police for traffic management and law and order.

6.15.9 Department of Animal and Sheep Husbandry

- Supply of medicines and fodder to affected areas.
- Ensure adequate availability of personnel and mobile team.
- Rapid impact assessment.
- Arrange for quick and proper disposal of carcasses.
- Rehabilitation/quarantine of affected livestock.
- Develop a strategy for rehabilitation of affected animals.
- Linkages with veterinary hospitals to ensure the timely care, treatment and emergency supply of drugs.
- Information dissemination on the services provided.
- Provide technical expertise for the designing and construction of cattle camps.
- Organize vaccination campaigns in disaster prone villages.

6.15.10 Social Welfare Department

- The Director, Social Welfare Officer will identify and ensure the rescue of orphaned children, widowed women, aged and infirm and make special arrangements for their case.

6.15.11 Transportation Department

- Call for emergency meeting to take stock of the situation. Develop a strategy to support in search, rescue and first aid.
- Continuously be in touch with the District/State EOCs.
- Identify and disseminate information regarding operational/safe routes to personnel involved in response.
- Arrange for alternative fuel supply.
- Provide vehicles suiting the terrain and casualty for evacuation and for ensuring supply chain continuity of relief and rescue operations.
- Arranging for the transportation and accommodation of relief personnel and material to affected areas.
- Aiding the district administration in the movement of affected population to safer areas.
- Launch recovery / repair missions for stranded vehicles, damaged critical infrastructure and routes.

6.15.12 Public Works Department (Building and Roads)

- Preparation of Technical Visual Damage Identification Guide for the Field Assessment of damage.
- Provide assistance to the damage assessment teams for survey of damage to buildings and infrastructure.

- Zonation of affected areas and estimate the total loss to buildings (by building type and damage grade) in urban and rural areas.
- Identification and notification of alternative routes to strategic locations. Adequate road signs should be installed to guide and assist the drivers.
- Undertake construction of temporary roads to serve as access to temporary transit and relief camps, and medical facilities for disaster victims.
- Undertake the construction of temporary structures required, for organizing relief work and construction of relief camps, feeding centres, medical facilities, cattle camps etc.
- Help the evacuees for returning to their houses.
- Provide sites for rehabilitation of affected population.

- Mobilize community for road clearing and debris removal.
- Assist in relief distribution.
- Restore roads, bridges and where necessary and make alternate arrangements to open the roads to traffic at the earliest. Begin clearing roads. Assemble casual labourers to work with experienced staff and divide into work gangs.
- Facilitate movement of heavy vehicles carrying equipments and materials.
- Setting / building of adequate temporary toilet blocks separately for men and women.

6.15.13 Power Development Department

- The Superintending Engineer (Electric Maintenance and Rural Electrification) will ensure restoration of uninterrupted power supply to the affected areas.
- Generators need to be reinstated for essential public facilities such as hospitals, water supply, police stations, telecommunication networks and meteorological stations.
- Establish temporary electricity supplies (after thorough check of infrastructure damage and short circuit) for relief material warehouses, transit camps feeding centers, relief camps and site operation center, EOC and on access roads to the same.

6.15.14 Housing and Urban Development Department

- Provide civic amenities such as community assets, community halls, footpath, drain, retaining wall etc.
- Identification of priority areas for intervention in the short and medium term, using local, State and Central Government and other donor assistance.

6.15.15 Irrigation Department

- Organize round the clock inspection and repair of dams, check dams, irrigation channels, control gates, overflow channels.
- Inspect and repair pumps, generators and motor equipment.

6.15.16 Department of Agriculture

- Continuous monitoring of damage to crops.
- Initiate steps for faster recovery.
- Develop a preliminary agriculture/livelihoods recovery plan keeping in mind the quantity of input capital required in the altered circumstances such as seeds, organic fertilizers and pesticides and labour.
- Design the agrarian logistics for the same incorporating transportation, storage and distribution of the primary inputs.
- Communicate information related to access of these primary inputs.
- Address issues of water-logging, debris accumulation and salinity in agricultural fields and canals.
- Activate Agricultural Extension Centres and KVKs as Village level Knowledge Centres.

6.15.17 Department of Education

- Assisting the State and District EOCs in arranging schools and similar buildings as emergency shelters and relief camps, wherever necessary.
- Encouraging students, teachers and staff to volunteer in disaster response and relief.

6.15.18 Department of Rural Development

- Rapid impact assessment in terms of livelihoods, housing and related resources.
- Developing and implementing an alternate livelihood recovery plan.
- Integrating certain response functions that are managed by affected communities to development programmes such as IAY, MGNREGS.
- Linking the recovery of essential infrastructure to the various rural development schemes.
- Identification of beneficiaries on an equitable, but fast track basis.
- Ensuring access to the provisioning and appropriation of village level common property resources.

6.15.19 Department of Forests

- Ensuring the protection of wildlife and minimising their interface with humans during disaster situations.

- Ensuring access of essential forest resources such as fuel-wood, timber/bamboo for making agricultural implements and housing that local communities depend for sustenance and livelihoods.
- Assisting other line departments in building alternate evacuation/relief supply routes.
- Strengthening the coping capacities for hazard affected forest dependent communities by recognising their indigenous knowledge systems on natural resource and disaster risk reduction.
- Preventing the spread of secondary hazards such as forest fires.
- Making available the personnel, transportation vehicles and equipment for the search and rescue operations.

6.15.20 Department of Information and Public Relations

- Provide required, unambiguous and correct information for relief and rescue workers.
- Public display of emergency contact numbers on television and radio networks, loudspeakers and other locally available forms of communication.
- Provide unambiguous and correct information for culturally suited humanitarian aid (resources).
- Risk communication should ensure that panic responses to the information given are avoided.
- Encourage on the spot reporting by media. Nevertheless, care should be taken that the influx of media persons should not hamper local rescue and relief operations.
- Initiate a 24 hour communication help-line that is accessible by concerned stakeholders.

6.15.21 Department of Finance

- Quick allocation of funds for meeting rescue and relief operations.
- Maintain a centralized account/fund transfer mechanism to coordinate rescue and relief operations.
- Mobilisation of resources for disaster recovery.

Hazard Specific Response Plan

7.1 Nodal Ministries and State Departments for Specific Hazards

7.1.1 Hydro-Meteorological Hazards

DISASTER	Nodal Ministries and Department	Nodal State Department
Flood	MHA / Ministry of Water Resource	Irrigation and Flood Control Department
Drought	Department of Agriculture and Cooperation / Ministry of Agriculture	Revenue Department
Snow Avalanche	MHA / Ministry of Defence	Snow Avalanche Study Establishment (SASE), DRDO
Hailstorm	Department of Agriculture and Cooperation / Ministry of Agriculture	Agriculture and Horticulture Department

7.1.2 Geological Hazards

Disaster	Nodal Ministries / Department	Nodal State Department
Earthquake	MHA / Ministry of Earth Sciences	Revenue Department
Landslide	MHA / Ministry of Mines	Revenue Department
Dam safety	MHA / Ministry of Water Resources	Irrigation and Flood Control Department

7.1.3 Chemical, Industrial and Nuclear Hazards

Disaster	Nodal Ministries / Department	Nodal State Department
Chemical and Industrial disasters	Ministry of Environment and Forests	Department of Home
Nuclear disasters	MHA / Ministry of Atomic Energy	Department of Home

7.1.4 Accidents

Disaster	MINISTRIES / DEPARTMENT	State Department
Forest Fire	Ministry of Environment and Forests	Forest Department
Serial Bomb blasé	MHA	Department of Home
Building fires	Directorate General Civil Defence, MHA	Department of Home
Building Collapse	MHA	Department of Home
Boat capsizing	MHA	Department of Home

7.1.5 Biological Hazards

Disaster	MINISTRIES / DEPARTMENT	State Department
Epidemics	Ministry of Health and Family Welfare	Department of Health and Education
Pest Attack	Department of Agriculture and Cooperation / Ministry of Agriculture	Agriculture department
Cattle Epidemic	Department of Agriculture and Cooperation / Ministry of Agriculture	Revenue Department
Food Poisoning	Ministry of Health and Family Welfare	Department of Health and Education

7.2 Hazard-Specific Action Plan

7.2.1 Earthquake

Earthquake can be categorised into four levels namely L0, L1, L2 and L3. Such categorisation is done with the help of firsthand information, earthquake sensors and related disaster communication system.

L0 level disaster

- An earthquake with less than 5.0 Richter scale having no impact on human, property and livestock.
- Requires very limited response, if it falls under L0 level.

- The District Disaster Management Cell should maintain a close watch over the state of preparedness.
- Mock drills at various levels have to be undertaken to check the preparedness.
- Efforts at local level should be made to find out damage/loss if any and to take appropriate actions.

L1 level disaster

- Earthquakes, when the magnitude is greater than 5.0 and less than 6.0 Richter scale.
- Necessary actions are initiated, even without waiting for formal reports and orders.
- District level ERCs are activated and alerts all concerned according to a predetermined procedure.

L2 level disaster

- Earthquake of magnitude greater than 6.0 and less than 6.7 Richter scale.
- Necessary actions are initiated, even without waiting for formal reports and orders.
- State level EOC and District level ERCs are activated and alerts all concerned according to a predetermined procedure.
- The search and rescue operations would commence immediately.
- The state government initiates impact assessment, relief and recovery measures.

L3 level disaster

- Earthquakes of magnitude greater than 6.7 Richter scale.
- EOC becomes fully operational.
- Outside assistance (Central Government, its Agencies, NDRF and Armed Forces) is called for.

7.2.1.1 Roles and Responsibility of State Government with respect to L2 and L3 Earthquakes

i. Warning / Information

- The Chief Commander of Operations activates the EOC.
- Incident of earthquake should be reported to Addl.CEO/Dep. CEO/SDM.
- Addl.CEO/Dep. CEO/SDM/ Team Leader Emergency Coordination & Early warning (ECEW) task force should carryout Rapid assessment on the emergency.
- Addl.CEO/Dep. CEO/SDM orders CRPF, JKP should support/coordinate with DM task force team.
- ECEW team to alert all other task force teams.
- Search and rescue team equipped with all safety gadgets and accessories.
- District Administration should maintain chain of communication for back up and reinforcement of human and material resources.
- Keep ambulance and first aid task force, para – medics and medical staff on alert.
- Resource evaluation regarding manpower, equipment, transport, hospitals, fire fighting units and so on.
- Draw hospital contingency plan. Mobile field hospitals and surgical units.

ii. Search and Rescue

- Allotment of responsibilities of officials and non-officials agencies. Coordination of relief and rescue organizations. Identification of search and rescue teams. Assistance from defence services.
- Search and rescue to take on command of operation.

- Stop movement of people-demarking the areas; restrict moment of people surrounding the area.
- Assessment team to look out for trapped humans and animals.
- Assessment teams to look out for damaged and collapsible structure.
- The level of emergency is communicated to the Addl.CEO/Dep. CEO/SDM by the assessment team and emergency is declared respectively.

- Communication is sent to the EOC and the loop is activated.
- Apply first aid to injured and call in ambulance.
- Put off fire using fire beaters, sand, water buckets etc.
- Note the human resource involved in fire fighting.
- Note the tool and equipments used to put off fire.
- Note the area of fire cover.
- Note the area of fire extinguished.
- Note the timings of operation.
- Note the causalities and rescue.
- Enrolment of volunteers trained for basic first aid instructions and relief and rescue operations.

iii. Impact Assessment

- The state government with support from the district administration will initiate rapid impact assessment procedures.

- All possible means of carrying out the impact assessment will be activated. If needed aerial surveys will be conducted to determine the scope of the damage, casualties, and the status of key facilities.

- The district administration will gather information regarding the deaths, injuries and damages to the buildings/infrastructures.

- State Government/District Administration will identify areas and assess the requirement of NDRF teams for search and rescue operations.

- Assess the magnitude of problem likely to arise. Carry out studies on possible scenarios of future earthquake to point out gaps in planning and preparedness.

- Assess vulnerability of structures and retrofit and strengthen weak structures.

iv. Emergency Medical Relief

- The CMO/Department of Health and Family Welfare will dispatch a team of medical specialists to the affected site with medicines etc. and prepare the nearest hospital for receiving the victims.
- Red Cross volunteers and SDRF trained for providing emergency first aid should be deployed.
- The CMO/ Department of Health should devise/operationalize mass casualty management

v. Identification and Disposal of Dead Bodies

- The Home Department shall deploy forensic teams and equipment for DNA fingerprinting of victims in mass casualty cases.
- The Home Department shall coordinate with MHA for central assistance as per requirement.

- NDMA Guidelines shall be followed while disposing of unclaimed/unidentified dead bodies.

vi. Setting Up and Managing Relief Camps

- District administration should set up relief camps or shelter for the people in distress.
- Army assistance should be acknowledged in case the efforts of the civil authorities are considered inadequate.

- The Consumer Affairs and Public Distribution should organize controlled kitchens to supply food initially at least for 3 days and arrangements of cooked food in the relief camps.

- The Public Health Engineering should ensure that provision of basic amenities like drinking water, sanitation and public health care are provided in relief camps.

- Cattle camps, if necessary, should be established and provision for veterinary care, fodder and cattle feed to the affected animals be made available by Agriculture Department and Animal Husbandry department.

vii. Repair and Reconstruction

- Department of Telecommunication should ensure that all essential telephones works un-interrupted and necessary arrangements made for timely installation of the telephone at the control rooms and other concerned duty officer's room.

- The PWD should repair and restore damaged public infrastructure (roads, bridges, critical life line structures).
- PHE department should restore water supply to the affected areas and should also ensure water supply through tanker until pipelines are fully restored.

7.2.2 Landslide

Landslides could result in loss of life, injuries, extensive damage on roads and highways and road blockade. Severe intensity landslide can also create extensive damage to habitation leading to relocation and resettlement of the population, damage to crops and cultivable land. Landslides can also induce severe structural damage to hydroelectric and multi-purpose projects. There are instances where landslides have resulted in the creation of artificial lake followed by flooding upstream and downstream.

7.2.2.1 Risk Identification and Information Dissemination

- Under the guidance and coordination of GSI, the Technical Committee will develop a landslide specific early warning framework for landslides.
- A periodic report will be generated and submitted to the State Government and MHA. Periodical reports on the progress in the implementation of the action plan to be submitted to MHA for discussion and review by the National Core Group for Landslide Mitigation.

- The GSI shall monitor landslides for identified sites.

- The GSI will notify about the impending landslide to all the user agencies and departments of the state and district administration.

- A landslide incidence inventory should be developed and maintained by GSI in consultation with the state governments and other agencies such as BRO, CPWD, Forest Department.

7.2.2.2 Reporting

- The PWD (R&B), the Forest Department or the Irrigation Department shall notify the State/District EOC about the occurrence of the landslide.
- While reporting, the preliminary information on location, magnitude, damage caused, etc. needs to be clearly articulated.
- If the magnitude of the landslide is huge, taking advice from the GSI, the State EOC shall notify the NEOC if any assistance of central agencies is required.

7.2.2.3 Response Planning

- The District Level EOC will establish contact with both its sub-division control rooms and the State EOC.
- The Tehsil level ERC or the District level EOC (whenever Tehsils are not operational due to impact) should establish contact with the site and obtain relevant information.

- Rapid assessment needs to be carried out regarding deaths, injuries, damages to building/infrastructure, environment etc.

- The District Level EOC in consultation with the State EOC should communicate regarding the impact to all designated line departments and authorities for appropriate and timely action.

- Local authorities in coordination with the district administration should mobilize search and rescue teams at the local level.

- The district administration will also undertake a primary assessment of risk prone areas and the corresponding requirement of SDRF/NDRF teams shall be done.

- In case there is a requirement, the District Magistrate should prepare and send an FIR to the State EOC. The FIR should clearly articulate the requirement for external assistance such as the NDRF and other state/central resources.

7.2.2.4 Emergency Medical Relief

- The CMO/Department of Health and Family Welfare will dispatch a team of medical specialists to the affected site.
- Adequate stock of medicines, first aid kits, triage supplies and trauma will be sent with the medical specialists to the disaster site.

- A clear cut response plan detailing the contacts and locations of the nearest hospitals will

also be maintained.

- The Department of Health and Family Welfare at the State Level would coordinate with its counterpart at the national level for medical assistance required for the State.
- Red Cross and Civil Defense volunteers trained for providing emergency first aid should be deployed.

7.2.2.5 Repair and Reconstruction:

- Local governing bodies including Municipal Corporations should make arrangements for clearance of the roads being blocked and removal of debris from the streets and lanes.

- The PWD (R&B) should lay out an emergency plan to repair and restore damaged public infrastructure (roads, bridges, critical life line structures).

- The PHE department should restore water supply to the affected areas. It should also ensure water supply through tanker until pipelines are fully restored.

7.2.3 Cloudburst and Floods

The Irrigation and Flood Control Department has already well-laid out operational guidelines to respond to flood situations. During flood seasons, the Revenue Patwari (Village Accountant) shall remain available at the risk prone villages to ensure timely contact and evacuation, if required. The operational guidelines to sound flood alarms is given in the table below.

Table 7.1 Sounding of Flood Alarm

Gauge Site	Gauge Readings (Water level)	Action Site
Sangam Gauge	18 feet	Central Flood Committee (CFC) sound the first alarm to all district head quarters and engineering wings of zonal committees.
Sangam Gauge	21 feet	Anantnag and Pulwama district flood duty starts.
Munshi-bagh	16 feet	CFC sounds the flood alert in Srinagar and Budgam.
Munshi-bagh	18 feet	Srinagar and Budgam district flood duty starts.
ASHAM guage	14feet	Flood duty in sumbal sonawari starts .but if wular lake water level happens to be high,the duty may start at a lower guage in consultation with CDC

	14 feet lake water level	Flood duty in Sumbal Sonawari starts. But, if Wular level happens to be high, the duty may start at a lower gauge in consultation with CDC.
For other areas of district Baramula and Kupwara, the flood duty starts as and when deemed necessary on the declaration of Member Secretaries of District Coordinator Committee / Zonal Committee.		
The following procedure is laid down for timely communication of gauges: • Up to 2.00 ft. gauge, no levels to be communicated. • Between 2.00 ft to 5.00 ft gauge, rise of water to be communicated at three hours interval. • Rise in water level beyond 5.00 ft, hourly gauge to be transmitted. • Wireless set is required to be installed so that proper communication is maintained with the flood control room for exchange of critical information. • Strict watch over the rise in river water level at head works. • Closing of head work (gates) at the time of floods.		

Committee	**Actions**
Central Flood Committee (CFC): (Chief Engineer I&FC, Divisional Commissioner,)	• Maintain Police control room as its headquarter, during flood season i.e. from 1st July to 15th October. • Get the flood duty declared through electronic and print media. • Outlines policies regarding anti flood measures and their implementation. • Establish contact with district co-ordination committee (DCC). • Ensure that flood fighting machinery is set into action and that central flood store starts round the clock functioning.
District Coordinator Committee (DCC): (Chief Engineer, civil investigation PDC)	• Linking sector officers with DCC and beat officer to bridge the gap between the administration and field staff. • Ensure that the flood fighting machinery has swung into action. • Create a close liaison between engineering operations and shall be assisted by zonal committees constituted in the district in this regard. • Monitor the latest developments and necessary measures to be taken with speedy transmission of instruction to Zonal Committee.
Zonal Committee / Sector Committee (ZC / SC):	• Look after various sectors for effective supervision / patrolling and timely action to avert / minimize flood havoc zone in collaboration with R&B department, Development Authority.

7.2.3.1 Issuing Early Warning and Recording

- The Executive Engineer Flood Control will issue warnings regarding floods to the army as well as to the members of the flood committee.
- The Assistant Executive Engineer Flood Control sub-division-II Jammu/Srinagar should be responsible for recording for recording the gauges of the river.

7.2.3.2 Rescue operations

- Make necessary arrangements for air dropping of food packets in the marooned villages through helicopters with assistance from Air Force.
- Mobilize enough relief parties to the rescue of the marooned people with the reasonable time limit.
- Establish alternate communication links to have effective communication with marooned areas.
- Non-official and voluntary organizations should enlist relief measures.
- Availability of Mobilized Rubber Boats at least 15 in each district.
- Fixation of contract for emergency regarding arrangements of labourers and material for immediate flood precautionary measures like JCB and vehicles etc.

7.2.3.3 Response

- Police Control Room should be constituted as the headquarter for managing flood.
- Executive Engineer Electrical M & RE should provide Flood Light and will keep arrangements ready for its use as per need.

7.2.3.4 Emergency Medical Relief

- The CMO/Department of Health and Family Welfare will dispatch a team of medical specialists to the affected site with medicines etc. and prepare the nearest hospital for receiving the victims.
- The Department of Health and Family Welfare at the State Level would coordinate with its counterpart at the national level for medical assistance required for the State.
- Red Cross volunteers trained for providing emergency first aid should be deployed

7.2.3.5 Setting up and managing relief camps

- District Administration should set up relief camps or shelter for the people in distress in case the efforts of the civil authorities are considered inadequate for which Army assistance should be acknowledged.
- CA & PD should organize controlled kitchens to supply foods initially at least for 3 days and arrangements of cooked food in the relief camps.
- PHE should ensure that provision of basic amenities like drinking water, sanitation and public health care are provided in relief camps
- Cattle camps, if necessary, should be established and provision for veterinary care, fodder and cattle feed to the affected animals be made available by Agriculture department and Animal husbandry department.

7.2.3.6 Repair and Reconstruction

- Municipal Corporation should make arrangements for clearance of all drains and removal of debris from the streets and lanes.
- Department of Telecommunication should ensure that all essential telephones works un-interrupted and necessary arrangements made for timely installation of the telephone at the Flood control Room, Jammu / Srinagar, Control Room Gauge sites, Duty officer's room.
- The PWD should repair and restore damaged public infrastructure (roads, bridges, critical life line structures).
- I&FC department should restore water supply to the affected areas and should also ensure water supply through tanker until pipelines are fully restored.

7.2.4 Avalanches

7.2.4.1 Avalanche Risk Assessment

It is required that for slopes with an angle of greater than 25 degrees or if there is consistent snow cover of more than 50cm in depth, there needs to be regular and periodic avalanche risk

Assessment. It involves the determination of the characteristics of the terrain in and around a geographic area based on an analysis of topographic variables, the snow climate, the estimated return periods and magnitudes of avalanches, and the type of activity that is to be done in that area.

- SASE, PWD (R&B) and other organisation such as Border Roads Organisation (BRO), Forest Department will continuously monitor and issue warning related to impending avalanche danger.
- SASE will notify about impending avalanche to the district and state level EOCs.
- There needs to be effective coordination between SASE, IMD and GSI on correlating earthquake occurrence with chances of avalanches (earthquake induced avalanches).
- Any notification of occurrence of the avalanches will include preliminary information on location, magnitude, damage caused, etc.

7.2.4.2 Incident Commander

- The Incident Commander is vested with the responsibility for designing the search and/or rescue and/or recovery that is occurring.
- The role of the Incident Commander is filled by a representative of the police, Ambulance Service, Fire Services, and Traffic. They are responsible for the management of all incident operations at the incident site.
- The requesting agencies with authority to function in role of Incident Commander are
    - Police force of Jurisdiction
    - Ambulance Service
    - Civil Defence (SDRF)
    - Transport Department (unlikely for avalanche rescue and/or recovery)
    - Local Authorities including Fire / Rescue services providers.

7.2.4.3 Avalanche Safety Officer

- The Avalanche Safety Officer is a highly skilled and experienced command staff member responsible for assessing and monitoring avalanche hazards.

- The ASO will also coordinate the Active Avalanche Safety program which indicates the required measures for ensuring personnel safety.
- Avalanche Safety Officers frequently coordinate onsite operations as the rescue leader.
- However this function can be delegated by the Avalanche Safety Officer to the Avalanche Site Safety Officer.

- When possible, the Avalanche Safety Officer operates independently of any other duties.

7.2.4.4 Avalanche Site Safety Officers

- An Avalanche Site Safety Officer is located at the site of an avalanche.
- The ASSO is responsible for evaluating the risk of further avalanches, identifying safety hazards or unsafe situations, monitoring on-site rescue operations, conducting field assessments and gathering observations, and for implementing and supervising measures for ensuring personnel safety indicated in the Active Avalanche Safety Program.

7.2.4.5 Search and Rescue Manager

- Under the general direction of the Incident Commander, the Search and Rescue Manager will manage the volunteer Search And Rescue response during a Search And Rescue response.

7.2.4.6 Ground Safety and Rescue Team

- GSAR Team Members and OAR Team Members should be trained in avalanche risk awareness, specialized search and / or rescue techniques, navigation and survival.
- They should participate as part of multi-disciplinary team operating in Avalanche Risk Zones.
- The OAR Team Leader is responsible for organizing, leading and supervising teams during onsite operations.
- Because of the complexity of Search And Rescue operations and the nature of avalanche, key functions are staffed by a single individual. Functions can be fulfilled by volunteer personnel, agency personnel, industry representatives and contractors.

7.2.4.7 Common duties of the Safety Officer

- Identification of Avalanche Risk Areas.
- Conduct preliminary and/or detailed avalanche risk assessments.
- Asses site specific safety and identify winter related hazards.
- Contribute to the development of the Incident action Plan (IAP).
- Monitor rescuers progress and level of exposure to hazards.

- Change, postpone or terminate rescue or recovery activities that may pose imminent safety or health danger to the rescuers.
- Develop hazard and travel advisories.
- Use authority to take appropriate action to mitigate or eliminate unsafe conditions, operations or hazards.
- Document safe and unsafe acts, corrective actions taken on scene, accidents or injuries, and ways to improve safety on future incidents.
- Investigate accidents that may have occurred within the incident area.
- Coordinate with various teams.
- Maintain an activity log.

7.2.4.8 Communication

7.2.4.8.1 Onsite Operation

- Search And Rescue Command Staff are responsible for ensuring adequate communications with field teams. Typically this is accomplished through VHF radio communications or satellite telephone communication devices. Check in procedures for field teams should include a well being check every 30 minutes or as directed by the Avalanche Safety Officer .

7.2.4.8.2 Emergency Co-ordinator Centre

- Emergency Control Room should maintain a 365/24/7 operations centre to support search and rescue activities. Search And Rescue Managers are responsible to communicate with the Emergency Co-ordinator Centre on a frequent basis

    - At the start and end of each operational period
    - Two hour updates for rescue activities
    - Four hour updates for search activities.
    - Whenever the status of the subject(s) of a search changes (located, deceased, etc)

7.2.4.9 Setting up and managing relief camps

- District Administration should set up relief camps or shelter for the people in distress in case the efforts of the civil authorities are considered inadequate for which Army assistance should be acknowledged.
- CA & PD should organize controlled kitchens to supply foods initially at least for 3 days and arrangements of cooked food in the relief camps.
- PHE should ensure that provision of basic amenities like drinking water, sanitation and public health care are provided in relief camps
- Cattle camps, if necessary, should be established and provision for veterinary care, fodder and cattle feed to the affected animals be made available by Agriculture department and Animal husbandry department.

7.2.4.10 Repair and Reconstruction

- Municipal Corporation should make arrangements for clearance of all drains and removal of debris from the streets, and lanes.
- Department of Telecommunication should ensure that all essential telephones works un-interrupted and necessary arrangements made for timely installation of the telephone at the control rooms and essential lifeline structures.
- The PWD should repair and restore damaged public (critical lifeline) infrastructures.
- I&FC department should restore water supply to the affected areas and should also ensure water supply through tanker until pipelines are fully restored.

8. Partnership with other Stakeholders

Coordination amongst various stakeholders is a crucial determinant of a resilient DRR institutional framework. There are various stakeholders, organisations and authorities that constitute a core network for implementing various disaster management related functions. The UNISDR Hyogo Framework for Action 2005-2015 states that

"Collaboration and cooperation are crucial to disaster risk reduction: states, regional organizations and institutions, and international organizations all have a role to play. Civil

society, including volunteers and community-based organizations, the scientific community, the media, and the private sector, are all vital stakeholders".

Some of the key assumption underlying multi-stakeholder partnerships in DRR are given below.

- Effective disaster risk reduction requires the strengthening of partnerships and cooperation between government, civil society and the private sector.
- Multiple stakeholders have a shared responsibility in shaping disaster risk reduction as a key priority in development planning and investment.
- A culture of disaster resilience can be developed only if there is a positive nurturing of cross-disciplinary cooperation from local to global levels of practice.
- Better knowledge management of risk, vulnerability and hazards are possible through collective action.

The objectives of a multi-stakeholder partnership in disaster risk reduction could be understood as follows.

- To strengthen collaborative action for disaster risk reduction.
- To generate learning and improved practice for all stakeholders concerned in disaster risk reduction.
- To develop a shared culture of risk reduction such that diverse stakeholders work together to shape DRR as a recognized priority and correspondingly design appropriate DRR strategies and actions.

- To collectively ensure that DRR is prioritized in public policy, planning and investments.
- To develop new, innovative and sustainable approaches in dealing with risk.
- To strengthen horizontal and vertical cooperation, specifically in strengthening coordination of DRR priorities and approaches between different departments of government and the non-state actors.

The key objectives of multi-stakeholder partnership can also be understood in the context of the Hyogo Framework.

Table 8.1 Multi-stakeholder Partnership within the lens of the Hyogo Framework

HFA Goals	Purpose of Multi-Stakeholder Partnerships
Ensuring that DRR is a national and a local priority with a strong institutional basis for implementation.	• Developing the capacity of state and local disaster management agencies. • Improving coordination and implementation of DRR by establishing a legal framework. • Mainstreaming DRR into development planning process. • Create state and local disaster management plan.
Identify, assess and monitor disaster risks and enhance early warning.	• Establishing and maintaining a harmonized disaster risk information system. • Building the capacity of state and locals for responding to disaster warning. • Upgrading rapid risk assessment technologies formulated by line departments, universities and researchers. • Developing Disaster management plan of the state based on hazard, risk and vulnerability analysis (HRVA).
Use knowledge, innovation and education to build a culture of safety and resilience at all levels.	• Up-gradation and improvement of high school, secondary, graduate and post graduate level education on disaster management. • Support for research on technologies relevant to DRR. • Generating awareness through an integrated multi-stakeholder approach. • Carrying out cost benefit analysis for DRR. • Capacity development of the media to help improve public awareness.
Reduce underlying risk factors	• Public private partnership in DRR. • Integrating DRR into climate change adaptation programmes. • Introducing risk sharing mechanism. • Encouraging livelihood diversification.

	• Ensuring food resilience.
Strengthen disaster preparedness for effective response at all levels	• Environmental management. Biodiversity conservation • Capacity development for institutions involved in disaster Preparedness. • Formulation of disaster preparedness and contingency plans. • Establishment for assessing disaster preparedness capacity and mechanism for various stakeholders.

The corresponding activities and stakeholders for each of the HFA goals are identified as follows.

Table 8.2 Suggested Activities and Corresponding Stakeholders

Goals	Activities	Stakeholders
HFA 1	• Enactment of Disaster Management law. • Establishing Disaster Management Authority at all levels. • Establishing a platform for DRR at state and local level.	• NDMA • SDMA • Chief Secretary • SEC • Finance Commissioner (Revenue) • Relief Commissioner • Deputy Commissioners • PRIs
HFA 2	• Setting up information system for disaster with proper data maintenance on disaster. • Developing early warning mechanism for each of the hazard. • Participation of community in risk assessment and monitoring.	• SASE • IMD • GSI • IIT • ISR • Geology and Mining Department • Environment and Remote Sensing department • Telecommunication Department • Information and Public Relation • Irrigation and Flood Control Department
		• Fire and Emergency Service • PRIs • State Universities • Private sector Industries • Media • Community
	• Exchanging/ sharing information between stakeholders. • Mainstreaming DRR into educational	• Education department • PRIs • Universities • Private Sector • Line departments • Community

HFA 3	system. • Conducting research and maintaining a database on disaster.	• SDRF (Civil Defence) • Police • Media • IMPA • NGOs • CBOs • Academia
HFA 4	• Providing disaster risk insurance scheme pre and post disaster to community. • Linking disaster history database to information system for poverty reduction. • Enacting building codes regulations. • Encouraging community based DRR practice amongst practitioners and policy makers.	• Social Welfare • Health department • PRIs • Public Sector Industries • Public sector Industries • NGOs • CBOs • Rural department • Agriculture department • CA and PD • Forest Department • Planning Development Authority • Economics and Statistics department • Media
HFA 5	• Ensuring availability and accessibility of disaster preparedness mechanism and personnel at the state and local level. • Organizing training by conducting regular mock drills at state and local level.	• Civil defence • Police • Army • PRIs • NGOs

	• Preparing Contingency plan and ensure its strict implementation. • Providing multi-stakeholder contingency fund and mechanism for emergency response.	• CBOs • NDRF • SDRF • Community • Irrigation and Flood Control Department • Private sector • Other Line Departments • Media

The specific roles of each of the stakeholder are detailed in Table 8.3

Table 8.3 Specific roles of each of the stakeholder

Stakeholder	Roles	Intervening Phase
NDMA	• Lay down policies on disaster management. • Approve the national plan. • Lay down guidelines to be followed by the state line departments for the purpose of integrating the measures for prevention of disaster or the mitigation of its effects in their development plans and projects. • Coordinate the enforcement and implementation of the policy and plan. • Recommend provision of funds for the purpose of mitigation.	• Prevention and Mitigation • Preparedness • Response • Recovery
SDMA	• Lay down guidelines and approve the disaster management plan prepared by the line departments of the state in accordance with the National Authority and ensure its strict implementation. • Review and update measures taken for mitigation and preparedness by the departments of the state.	• Prevention and Mitigation • Preparedness • Response • Recovery
NIDM	• Strengthening disaster management at national level by developing human resource and their capacity, and policy advocacy. • Promote a culture of prevention and preparedness at all levels by organizing training, indulging in research and documentation.	• Prevention and Mitigation • Preparedness • Response • Recovery
State Executive Committee	• Assist SDMA in the performance of its functioning. • Coordinate and monitor the implementation of the	• Prevention and Mitigation • Preparedness

	National Policy, National Plan and the State Plan. • Evaluate preparedness at all governmental or non-governmental levels to respond to any threatening disaster situation or disaster and give direction for enhancing such preparedness. • Provide information to the National Authority relating to different aspects of disaster management.	• Response • Recovery
NDRF	• Inculcate a culture of preparedness amongst all stakeholders. • Carrying out mock drills and joint exercise with various stakeholders. • Ensure capacity building of state police personnel by training them in the basics of disaster management. • Respond to a situation which is beyond the capacity of the state.	• Preparedness • Response • Recovery
SDRF (Civil Defence)	• Carrying out mock drills and joint exercise with various stakeholders in the state and local level. • Ensure capacity building of police personnel by training them in the basics of disaster management. • Respond to a situation which is beyond the capacity of the districts or community.	• Prevention and Mitigation • Preparedness • Response • Recovery
IMD	• Forecast and monitor meteorological information and disseminating the information to the concern State authority. • Issuing of severe weather warnings to the Authority and Community.	• Prevention and Mitigation • Preparedness • Response
GSI	• Regular monitoring of landslide and avalanche in region prone to the hazard. • Carrying out landslide/avalanche zonation in the state.	• Mitigation and Prevention • Preparedness
Snow Avalanche Study Establishment	• Provide avalanche forecasting and alerts. • Assist the state in developing avalanche control measures .	• Prevention and Mitigation • Preparedness
Academia	• Review and suggest the up-dation of state legislation/policy guidelines as and when required. • Proper data maintenance on hazard for mapping the same. • Documentation of good/best practices (or lessons learnt) that are implemented across the state for	• Prevention and Mitigation • Preparedness • Response • Recovery

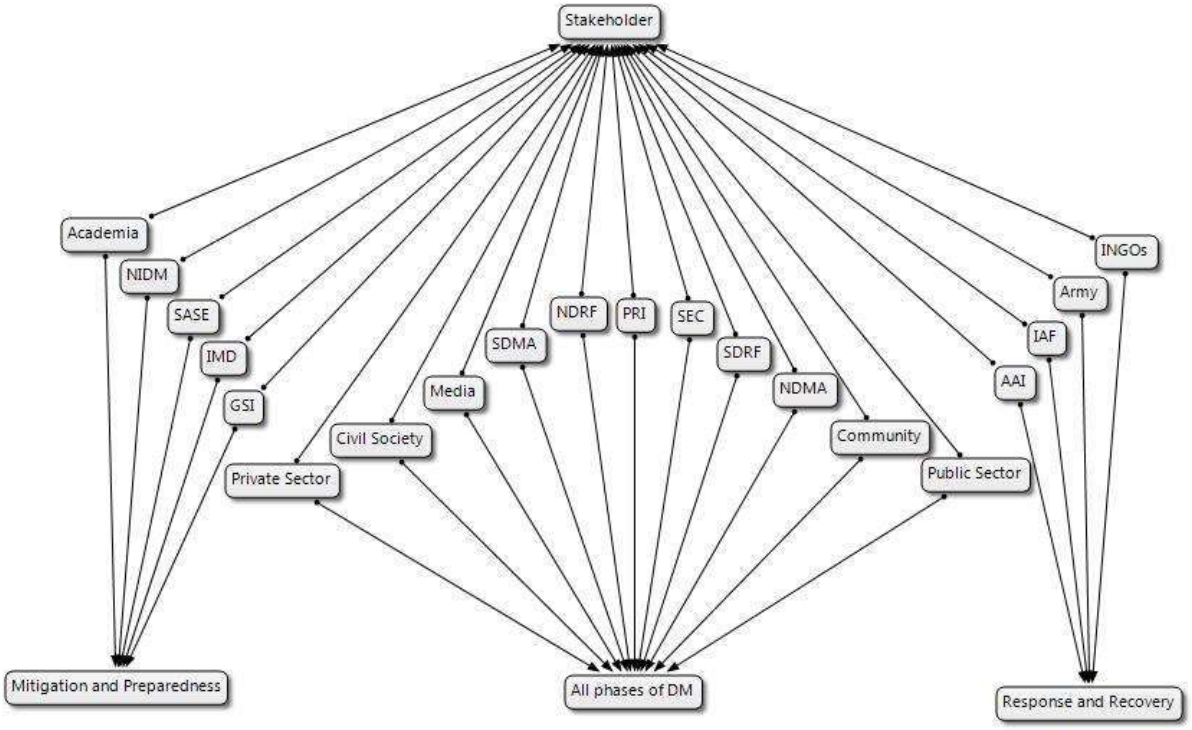
	each phase of disaster. • Technological and Process Innovation in hazard forecasting, warning and communication.	
IMPA **Agricultural universities** **Government** **Medical College (Jammu/Srinagar)** **Jammu University** **Kashmir University**	• Enhance the capacity of community by organizing awareness camps. • Educate the masses and government officials about the disaster. • Organize training programmes by conducting regular mock drills. • Prepare contingency plan and ensure its strict implementation.	• Prevention and Mitigation • Preparedness • Response • Recovery
Private sector (Insurer, Contractors, IT companies, Suppliers, Industries)	• Provide necessary equipment and services to the authority for efficient and effective disaster response. • Launch a micro insurance programme for the community pre and post disaster.	• Prevention and Mitigation • Preparedness • Response • Recovery
Civil Society (NGOs, CBOs)	• Establish community level coordination mechanisms. • Initiate appropriate mechanisms for mainstreaming DRR concerns with concern stakeholders. • Mobilize and channelize volunteers and funds for relief and rehabilitation. • Establishing network among service providers. • Promotion of alternative technology for livelihood and housing sector. • Assist the authority in identifying hazards, safe evacuation routes and Post Disaster Needs Assessment (PDNA).	• Prevention and Mitigation • Preparedness • Response • Recovery
Media	• Impart mass education / awareness about the perceived hazards and steps for its prevention. • Establish a system of early warning linkages with the community and the authority. • Sensitize the masses on possible risk during pre and post disaster. • Provide information on self-help (do's and don'ts)	• Prevention and Mitigation • Preparedness • Response • Recovery

	during the disaster. • Provide accurate information about the disaster and unbiased coverage on response and rehabilitation.	
Community	• Acts as a source of useful ideas those based on indigenous and technical knowledge and skills. • Assimilating various innovations emanating from outside with the local knowledge. • Establish appropriate and effective local knowledge early warning mechanism and ensure that it reach the smallest unit of institution (family). • Testing new knowledge, skills, techniques that they have gained at the community level. • Participate in planning and designing of evacuation safety routes for emergency response.	• Prevention and Mitigation • Preparedness • Response • Recovery
PRI	• Setting up of a disaster management committee which will maintain network with regional and state level disaster management authority and centres. • Identify and integrate appropriate resources into governmental plans for effective disaster preparedness. • Organize awareness campaigns and promote community education on disaster preparedness • Articulation of community needfor developing preparedness plan through community involvement and Panchayat ownership. • Encouraging people to insure assets and livelihood. • Dovetailing Risk Reduction into various development programmes and state government. • Supplementing rescue and relief efforts in different coordinating agencies. • Assist in damage needs assessment in identifying victims for compensation and its distribution. • Supervise and monitor long term reconstruction and mitigation projects. • Mobilizing funds to use disaster resistant construction technology in vulnerable areas.	• Mitigation and Prevention • Preparedness • Response • Recovery
Airport Authority of India (AAI)	• Carry out airport safety audit. • Prepare airports to avoid congestion of incoming relief goods by training the staff on how to access surge capacity and logistics and cope with an	• Response • Recovery

	influx of aid. • Ensure availability of warehouse space, forklift, pallet truck, and adequate staff. • Provide accurate latitude and longitudinal details of helipads during rescue operations.	
Indian Air Force (IAF)	• Positioning of relief materials through air dropped in those areas which are not accessible by road or waterways. • Sharing of data with civil authorities on various aspects: affected areas, casualties, medical aid required, relief material required, rescue effort required. • Earmark hospitals for casevac (or casualty evacuation). • Conduct aerial search and rescue in difficult terrain.	• Response • Recovery
Army	• Assist the authority in institutionalizing Incident Command System. • Evacuation and rescue of (marooned) people. • Transportation of relief material. • Provide logistics back up. • Setting up and running of relief camps with provisions of medical aid. • Immediate restoration and maintenance of essential services. • Emergency construction and repair of roads and bridges.	• Response • Recovery
International organizations - UN Agencies, Red Cross etc.	• Assist the government in terms of equipments, expert personnel, finance and logistics when it is beyond the capacity of the state to respond.	• Response • Recovery

A summary of the above discussion on diverse stakeholders and roles within the context of disaster management in Jammu and Kashmir is given in Figure 8.1

Figure 8.1 Roles of Stakeholders in Disaster Management



9. Rehabilitation and Reconstruction

The rehabilitation and reconstruction phase will be carried out in accordance with the reconstruction and rehabilitation plans framed by State Disaster Management Authority in conjunction with implementing authorities. The guiding principles of rehabilitation and reconstruction are given below.

9.1 Key Principles Guiding Rehabilitation and Reconstruction

- In the reconstruction and rehabilitation phase, the focus has to shift from response and immediate relief to the livelihood enhancement and employment generation plans and programs with food-for work arrangements.
- Every group involved in the social, economic, and physical reconstruction of the affected region must grant and respect people's right to information and right to participate in the planning process, with full freedom of expression at every stage of planning and execution.
- There should be complete transparency and accountability on the part of the State and the donor agencies.
- Community participation must be sought through representatives of various socio economic sections within as a precondition for design, planning, site and material selection, material procurement, construction, and utilization of resources.
- The vulnerable members of the community should be given the top priority in skilled and unskilled livelihood opportunities arising during the reconstruction and rehabilitation process.
- Whether for cities, towns, or villages, relocation should as far as possible, be avoided.
- New community location should be planned with clear consent from the village commune or the Grama Panchayat.
- Where there is even partial, minimum relocation of a community, forcible, unjust land acquisition should be avoided.

- The scheduled castes, schedules and nomadic tribes, other socially and economically backward class communities, disabled population, women-headed households etc. should be especially protected against land alienation.

- Reconstruction planning should include apart from housing, community amenities [health, education, water supply, grazing ground, etc], all of which can be part of the final village resettlement plan.
- New housing and community reconstruction should have facilities for land conservation, maximum rainwater harvesting, soak pits & drainage, along with other appropriate technology measures to fill water and energy requirements.
- In reconstruction, the choice of technology should necessarily be based on multiple criteria, including self-reliance of the community, availability of the material, and specific hazard proofing technology.
- There should be no forcible, stereotype housing imposed on people, killing or rejecting their diversity of type of technology, and cultural aspects.
- Wherever possible, retrofitting should be a priority over new construction.
- Representatives of affected communities, people's organizations, NGOs, and the local government should form a body for decision making at every level of planning and execution of a project, where funds and inputs are to come from outside the community.
- All funds received from any agency, national or international, including the collection of surcharge, must be deposited into a separate fund / account related to the specific disaster and must be utilized only for the purpose for which it is assigned.
- An independent high power committee with eminent persons from various walks of life should be immediately constituted to monitor the planning and execution, including expenditure at each - national, state and local - stage.

9.2 Approaches in Rehabilitation and Reconstruction

Table 9.1 summarises the approaches that would guide the rehabilitation and reconstruction phase and in developing the implementation plan.

Table 9.1 Approaches in Rehabilitation and Reconstruction

Approach	Steps	

Strategy Formulation and Setting Standard for Reconstruction	• Development of an over-all strategic vision on reconstruction with a phased program and clear implementation time frame. • DRR mainstreaming in development planning. • Key actors needs include both State and Central government and humanitarian organizations.
Setting up the Institutional Arrangements	• Quick assessment of strengths and weakness of pre-disaster delivery mechanism. • Defining the institutional implementation model that could address the immediate and long terms goals of recovery. • Key actors needs include both State and Central government and humanitarian organizations. and Third Sector organizations.
Setting up Consultative Mechanisms	• Establishing multi-stakeholder partnership to assess the strengths, challenges/limitations and risks associated with various institutional options. • Consultation with sub – national government, civil society, private sector, technical institutions and academia etc. to foster partnership and benefit from specialized skills and capabilities • Key Actors will include community, local governing bodies, NGOs, Communiy-based organizations and the various line departments.
Preparatory Exercises, Survey and Fieldwork	• Assessment of risks • Post – Disaster Damage, Loss and Need assessment • Key Actors will include social and technical experts along with other stakeholders mentioned above.

9.3 Components of Rehabilitation and Reconstruction Processes

The key components in the rehabilitation and reconstruction phase are given below.

9.3.1 Detailed Damage Assessment

While a preliminary damage assessment is carried out during disaster response phase, a detailed assessment must be conducted before commencing reconstruction and rehabilitation activities. The relevant Government departments and local authorities shall initiate detailed assessment at their respective level for damages sustained in housing, industry/services, infrastructure,

agriculture, health/education assets in the affected regions. Detailed survey of building is required for assessment of damage and decision regarding repair, reconstruction and strengthening or demolition. It is the responsibility of the district/local administration, which covers all aspects of private as well as public properties, including loss of crops etc. An inventory of all such details is to be prepared along the estimated costs of damages and sent to the state government who may release the required funds. Certain crucial information that needs to be collected during this phase is given as follows in Table 9.2

Table 9.2 Crucial Information that needs to be collected during the Rehabilitation Phase

Information	Illustration
Number of affected people requiring assistance	• This figure will determine all other estimates and calculations, and therefore, needs to be established as precisely as possible. • Assistance for provisions of temporary accommodation, food, clothing, medical care, etc.
Water needs	• Assessment should examine whether each person is having access to minimum 15 litres of potable water per day to cover drinking, cooking and personal hygiene needs. • Assessment should check whether each hospital in the affected region is able to provide minimum 100 litres per person per day for patients and staff. • The criteria of access to water points, such that one water point per 250 people and the maximum distance from any shelter to the nearest water point should be 500 metres, has to be verified. • Assessment should check whether each family have access to two water collecting vessels of 10-20 litres, plus water storage vessels of 20 litres.
Shelter needs	• Assessment should check whether tents are available for each family comprising of 4-6 people.

	• Should explore the type of shelter requirements (roofs, walls and floors) in the context of approaching season such as summer/winter/rains. • Should assess the accessibility of locally available shelter resources. • Should access the requirement and type of shelter heating, if necessary. • Assistance sought for repair/restoration of damaged houses.
Nutritional needs	• Assessment should inquire the accessibility of individuals to food rations, in terms of access to at least a minimum of 2,100 kilocalories per person per day. • Special care is to be taken to check the accessibility of special food to treat severely malnourished individuals. • Monitoring of malnutrition using international standards (e.g. Sphere minimum standards) and methods such as weight-for-height, etc. needs to be used.
Sanitation needs	• Assessment should the check the availability/accessibility of toilets such that a maximum of 20 people per toilet have access to it. • Assess, whether use of toilets is arranged by household and/or segregated by sex. • Assess the distance of toilets from dwellings such that there should be no more than 50 metres from dwellings or no more than a one minute walk. • Assess the distance of toilets from groundwater sources such that toilets should be at least 30 metres away from any groundwater sources and the bottom of the latrine should be at least 1.5 metres above the water table. • Assess whether there exists containers or a system for disposing of solid waste. • Assess the need and methods for vector control (flies, rats, etc.).
Livelihood needs	• Calculations of assistance for agricultural input, replacement/treatment of livestock. • Calculations of assistance for repairing land and other livelihood resources/materials.
Health and Psycho-social care	• Assess the nature and type of short-term and long-term medical care and support that needs to be given the affected persons. • Assess the nature and type of psycho-social care and support that needs to be given to the affected persons.

9.3.2 Assistance to restore houses and dwelling units

The government of Jammu and Kashmir may, if needed, will formulate a policy of assistance to help the affected to restore damaged houses and dwellings. Certain guidelines for the same are given below.

- Recovery support for housing reconstruction should be based on indigenous designs and adaptable to perceived/occurred hazards.
- Housing units that are repaired or replaced should account for future hazard risk in design, construction, and materials.
- Housing solution should ensure access to livelihoods, availability of food and water, access to markets, utilities, and transportation, access to religion and religious facilities and any other routines of daily life during normal times.
- Care should be taken to prevent unintended and negative effects on the natural environment, or should address any environmental impacts that are caused by the intervention.
- Housing solution should be sustainable (environment, technical, financial, organizational and social). The burden on these sustainability dimensions should never be imposed upon the affected communities.

9.3.3 Relocation (need based)

The local authorities in consultation with the people affected and under the guidance of the government of Jammu and Kashmir shall determine relocation needs taking into account the criteria relevant to the nature of the calamity and the extent of damage. Relocation efforts will include activities like:

- Gaining consent of the affected population;
- Land acquisition;
- Urban/ rural land use planning;
- Customizing relocation packages;
- Obtaining due legal clearances for relocation;
- Getting the necessary authorization for rehabilitation;
- Livelihood rehabilitation measures for relocated communities, wherever necessary.

9.3.4 Re-building Infrastructure

The government of Jammu and Kashmir will develop a people-centred infrastructure development plan that will pave way to a resilient future. Certain guidelines for the same are given below.

- Repair, replace and re-establish damaged physical and social and economic infrastructure upon which the society’s life-lines depends.

- Infrastructure development that accompanies the recovery effort should be accessible to all populations affected, respective to their physical location, and irrespective of their economic, ethnic, religious, or other background.
- Infrastructure solutions must adequately account for sustainable development of the region - the climate, geography, financial and technical capacity, and projected growth of the communities served all needs to be considered. There should be no negative effect on the natural environment, ensuring that any collateral impacts are resolved.
- Ensure sound environmental impact assessment of potential reconstruction sites in which technical, social, political and economic factors should be included to minimize/reduce the exposure of the affected populations to additional health and natural hazards.
- Incorporate climate proofing at the design stage of the upcoming infrastructure recovery projects.
- Address disaster induced challenges such as accessibility, availability, quality, and financing of health-care related infrastructure and provide better health service, benefits, and accessibility to the poor and other vulnerable population.
- Design the health system infrastructure to be prepared and responsive to all multi hazards in future.

Typical infrastructure building activities during the reconstruction phase would include:

- Disaster proofing and retrofitting of buildings.

- Creation/ retrofitting of structures such as roads, bridges, dams, canals etc. that may have been destroyed/ damaged due to the disaster.
- Restoration of basic infrastructure facilities, for example, ports, airports and power stations.
- Construction of health centres, first aid centres and hospitals.

9.3.5 Re-building Livelihoods

Livelihood recovery is an important component of the rehabilitation and reconstruction phase. Some of the essential guidelines for livelihood recovery are given below.

- Restore livelihood activities by replacing or repairing assets that have been destroyed or disrupted in disaster.
- Enhance the capacities of livelihood related line departments.
- Strengthen Community Based Organizatioins (CBOs) and communities in planning, implementing, monitoring and evaluating community livelihood rehabilitation plans.

- Diversify or transform livelihood by developing new skills and strategies based on existing knowledge and experience to improve people's resilience.
- Identify new and improved marketing methods and trade routes.
- Ensure that gender sensitive approach/methods are incorporated in the livelihood rebuilding processes.
- Enhance the resilience of communities to future climatic change events by livelihood diversification and biodiversity conservation.
- Organized comprehensive rehabilitation package for livestock-dependant livelihoods including restocking, shelter construction and income-raising activities.
- Establish community based animal health care delivery system to reduce livestock deaths in the rehabilitated area.

9.3.6 Psycho-social Care and Support

Psycho-social care and support is an important component of disaster rehabilitation and reconstruction. Some of the essential aspects that needs to be maintained for the same are given below.

- Impart essential skills of psychosocial care to community level workers engaged in relief, rehabilitation and reconstruction as part of the overall rebuilding process.
- All medical personnel should be trained in the essentials of mental health care so that they recognise these conditions and treat the affected population with specific interventions and thus avoid dependence on non-specific interventions like the use of pain relievers, sleeping tablets, vitamins and injections.
- Providers of psychosocial care should be sensitive to culture, ethnic, religion, racial and language diversities.
- Administrators should integrate psychosocial care as part of the overall care programmes.
- Ensure that Standard Operating Procedure is developed for proper rapport building between care givers and survivors (follow up).
- Carry out psycho social needs assessment at individual, family and community level.
- Conduct periodic assessment on mental health and psycho social needs keeping in mind the physical, social and economic factors that perpetuate mental health.
- Monitor and evaluate PSSMHS intervention.

9.4 Finalizing Reconstruction and Rehabilitation Plan

The effectiveness of any reconstruction and rehabilitation is based on detailed planning and careful monitoring of the relevant projects. The Financial Commissioner (Revenue) / SDMA will oversee reconstruction and rehabilitation work and ensure that it takes into account the overall development plans for the state. The SDMA will approve reconstruction and rehabilitation projects based on (i) identification of suitable projects by relevant departments and (ii) project detailing and approval by the relevant technical authority.

9.5 Funds Generation

The government of Jammu and Kashmir shall finalise the fund generation mechanism, which includes:

- Estimation of funds required based on detailed damage assessment reports and consolidation of the same under sectoral and regional heads;
- Contracting with funding agencies and evolving detailed operating procedures for fund flow and corresponding agreements and activities.

9.6 Funds Disbursement and Audit

The Financial Commissioner (Revenue), in conjunction with relevant agencies, shall monitor disbursal of funds by:

- Prioritizing resource allocation across approved projects;
- Establishing mechanisms (like a chain of banks, collection centres, nature of accounts, spread etc) for collection of funds;
- Ongoing monitoring and control of fund usage throughout actual project implementation.

9.7 Project Management

The rehabilitation and reconstruction effort requires the co-ordinated efforts of several stakeholders. The project management capabilities of diverse stakeholders need to be synergized efficiently such that the

project is executed on time, in accordance with the technical specifications and to the satisfaction of the beneficiaries.

9.8 Information, Education and Communication

Communication activities are necessary to convey to the larger community the scope and nature of the proposed reconstruction and rehabilitation effort so as to increase the stakeholder
Awareness and buy-in for the ongoing activities. Hence, the relevant government departments, district administration and local authorities shall undertake:

- Ongoing media management/ Public Relations: To ensure accurate communication of the reconstruction and rehabilitation measures being taken to various stakeholders;
- Community management: This includes communicating to the affected communities with a view to appraising them of efforts being made for their relocation/ rehabilitation/ reconstruction;
- Feedback mechanisms: Using the communication network to get feedback on reconstruction and rehabilitation measures.

9.9 Dispute Resolution Mechanisms

The Financial Commissioner (Revenue) / SDMA, in conjunction with relevant agencies, shall institutionalize mechanisms to address beneficiary grievances at various levels, as well as explore innovative ways of dispute minimisation like involving the community in reconstruction initiatives. Appropriate mechanism with penalties for dealing with false claims will be evolved to prevent misuse of assistance.

9.10 Implementing Initiatives for Recovery of Reconstruction Costs

The Jammu and Kashmir government shall finalize and implement select recovery measures such as:

- Imposing tax surcharge levies (central)
- Imposing local taxes
- Facilitation of funding responsibility sharing by beneficiaries etc

10. Plan Maintenance

Plan maintenance is a dynamic process of updating the plan on a periodic basis. The back-bone of maintaining the plan is carrying out mock drills, undertaking periodic vulnerability and risk assessment,

improvising in the context of new development programmes/projects and updating the plan accordingly. The Finance Commissioner (Revenue), Commissioner of Relief, Revenue Department shall prepare, review and update State Disaster Management Plan. The concerned officer shall also ensure that disaster management drills and rehearsals are carried out periodically.

While updating the plan the following aspects need to be considered by the COR every year:

i) Critical analysis of the outcome of exercises and mock drills as part of plan testing.
ii) Risk and Vulnerability Assessments and the incorporation of the same in the plan.
iii) Incorporation of lessons learnt in the updated plan as an outcome of mock exercises through identification of gaps and measures to fill them.

The plan must be thoroughly tested and evaluated on a regular basis once in a year. The plan testing should preferably be organized on the first Monday in the months of March every year. After plan testing and incorporation of lesson learnt, the Commissioner of Relief should send a copy of the revised and updated plan to the following officials:

(a) Chief Secretary, Government of Jammu and Kashmir
(b) Chief Executive Officer, State Disaster Management Authority, J&K
(c) Principal Secretary, Revenue Dept
(d) Finance Commissioner (Revenue)
(e) Head of all line Depts.
(f) State EOC
(g) District EOCs
(h) ERCs
(i) IMD

The main objectives of plan testing are to:

(i) Determine the feasibility and compatibility of back up facilities and procedures.
(ii) Identity areas in the plan that need modification.
(iii) Identify training needs of key stakeholders.
(iv) Assess the ability of the organization/department to respond to disasters.

All the departments, which have specific roles and responsibilities in State Disaster Management Plan, must have a system to ensure that all Officers of their departments who have a specific role to play are fully conversant with their responsibilities/tasks.

10.1 Debrief and Evaluation-Mock Drills

- After the mock exercise debriefing and evaluation is very important. It is of critical importance that these insights are collected from participants (who participated in the exercise) and used to modify the plan.
- Hot debriefing is very effective as it is carried out immediately after the exercise. It also includes documentation in terms of recommendations and improvements of the plan.
- The lessons learned from the mock exercise are likely to be similar to those from real events. The only major difference is that exercises are controlled events, specifically designed to test procedures and they can be repeated again and again until sound/workable arrangements are in place.

10.2 Review / Updation of Plan

The State Disaster Management Plan should be reviewed and updated regularly by month of April, based on inputs as under:

(a) Drills and Rehearsals;
(b) Recommendations from all Departments in their Annual Disaster Management Report;
(c) Lessons learnt from any disaster event in oth er states and countries;
(d) Directions from Ministry of Home Affairs, National Disaster Management Authority, Government of India, etc. The SDMA and all other concerned agencies will interact with various stakeholders at different levels to learn and document their experiences, and there by improvising the State Disaster Management Plan.

A- 1. Sector-wise Damage Assessment Format

Dated:
Name of the District / Village:
Type of Hazard:

a. Damage assistance for housing sector

Sl. No.	Items	Particulars	Total
1	Fully damaged pucca houses	No. of houses	
		Estimated Loss (Rs. In Lacs)	
2	Fully damaged kutcha houses	No. of houses	
		Estimated Loss (Rs. In Lacs)	
3	Severely damaged pucca houses	No. of houses	
		Estimated Loss (Rs. In Lacs)	
4	Severely damaged kutcha houses	No. of houses	
		Estimated Loss (Rs. In Lacs)	
5	Partly damaged houses (Pucca/kuthca)	No. of houses	
		Estimated Loss (Rs. In Lacs)	
6	No. of huts damaged	No. of houses	
		Estimated Loss (Rs. In Lacs)	

b. Damage assessment format for agriculture sector

Sl. No	Item	Total
1	Total cropped area affected (in Acres)	
2	Estimated Loss to Crops (Rs. In Lacs)	

c. Damage Assessment Format for livestock

Sl. No	Item	Particulars	Total
1	Milch animal lost (Buffalo / Cow/ Camel/ Yak)	No.	
		Estimated loss (Rs. In Lacs)	
2	Milch animal lost (Sheep / Goat)	No.	
		Estimated loss (Rs. In Lacs)	
3	Draught animal lost (Camel / Horse/ Bullock)	No.	
		Estimated loss (Rs. In Lacs)	
4	Draught animal lost (Calf/Donkey/Pony/Mule)	No.	
		Estimated loss (Rs. In Lacs)	

1. Education Sector

Damage Assessment format for education sector

Sl. No.	Items	Particulars	Total
1	Primary Schools (Damaged / Destroyed)	No. of buildings	
		Estimated Loss (Rs. In Lacs)	
2	Middle School (Damaged or Destroyed)	No.	
		Estimated Loss (Rs. In Lacs)	
3	Higher Secondary School	No.	

	(Damaged / Destroyed)	Estimated Loss (Rs. In Lacs)	
4	Other Educational Institutes (Damaged / Destroyed)	No.	
		Estimated Loss (Rs. In Lacs)	

2. Health Sector

Damage Assessment format for health sector

Sl. No.	Items	Particulars	Total
1	PHCs(Damaged / Destroyed)	No. of buildings	
		Estimated Loss (Rs. In Lacs)	
2	CHC's (Damaged / Destroyed)	No. of buildings	
		Estimated Loss (Rs. In Lacs)	
3	Other Buildings (Damaged / Destroyed)	No. of buildings	
		Estimated Loss (Rs. In Lacs)	
4	Human lives lost	No.	
		Estimated Loss (Rs. In Lacs)	
5	Person who suffered grievous injurious	No.	
		Estimated Loss (Rs. In Lacs)	
6	Person who suffered minor injuries	No.	
		Estimated Loss (Rs. In Lacs)	

3. Public Properties

Damage assessment format for public properties

Sl. No	Item	Particulars	Total
1	Roads (All)	Length	
		Estimated Loss (Rs. In Lac)	
2	State Roads	Length	
		Estimated Loss (Rs. In Lac)	
3	District Roads	Length	
		Estimated Loss (Rs. In Lac)	
4	Village Roads	Length	
		Estimated Loss (Rs. In Lac)	
5	Bridges and Cutlers	No.	
		Estimated Loss (Rs. In Lac)	
6	Bridges	No.	

		Estimated Loss (Rs. In Lac)	
7	Culvert	No.	
		Estimated Loss (Rs. In Lac)	
8	Drinking water supply	No.	
		Estimated Loss (Rs. In Lac)	
9	Irrigation Sector	No.	
		Estimated Loss (Rs. In Lac)	
10	Power Sector	No.	
		Estimated Loss (Rs. In Lac)	

A- 2. Relief Codes

ITEMS AND NORMS OF ASSISTANCE

1. Norms of Assistance for damaged houses

a) Fully damaged / destroyed houses	
i. Pucca house	Rs. 70, 00/-0 per house
ii. Kutcha house	Rs. 15, 000/- per house
b) Severely damaged house	
i. Pucca house	Rs. 6, 300/- per house
ii. Kutcha house	Rs. 3, 200/- per house
c) **Partially Damaged Houses** – both Pucca / kutcha (other than huts) where the damage is at least 15%	Rs. 1, 900/- per house (Hut means temporary, make shift unit, inferior to Kutcha house, made of thatch, mud, plastic sheets, etc. traditionally recognized as hut by the State / District Authorities) Note: The damaged house should be an authorized construction duly certified by the competent authority of the State Government.
d) Damaged or Destroyed huts	Rs. 2, 500/- per huts
e) Cattle shed attached with house	Rs. 1, 250/- per shed

2. Norms of Assistance for Agricultural losses

i	**Assistance to small and marginal farmers**	
A	**Assistance for land and other loss**	
	a.) De-silting of agricultural land (where thickness of sand/silt deposit is more than 3", to be certified by the competent authority of the State Government	Rs. 8, 100/- per hectare for each item
	b.) Removal of debris on agricultural land in hilly areas	(Subject to the condition that no other assistance/ subsidy has been availed of by/is eligible to the beneficiary under any other Government Scheme)
	c.) De-silting / Restoration/ Repair of fish farms	
	d.) Loss of substantial portion of land caused by landslide, avalanche, change of course of rivers	Rs. 25, 000/- per ha. to only those small and marginal farmers whose ownership of the land is legitimate as per the revenue records
B	**Input subsidy (where crop loss is 50% and above)**	
	a.) For agriculture crops, horticulture crops and annual plantation crops	Rs. 4, 500/- per ha. in rainfed areas and restricted to sown areas. Rs. 9, 000/- per ha. in assured irrigated areas, subject to minimum assistance not less than Rs.750 and restricted to sown areas
	b.) Perennial crops	Rs. 12, 000/- for all types of perennial crops subject to minimum assistance not less than Rs. 1,500/- and restricted to sown areas
	c.) Sericulture	Rs. 3, 200/- per ha for Eri, Mulberry, Tussar Rs. 4, 000/- per ha. for Muga
ii	**Input subsidy to farmers other than small and marginal farmers**	Rs.4, 500/- per ha. in rainfed areas and restricted to sown areas Rs. 9, 000/- per ha. for areas under irrigation and restricted to sown areas

		Rs. 12, 000/- per ha. for all types of perennial crops and restricted to sown areas

- Assistance may be provided where crop loss is 50% and above, subject to a ceiling of 1 ha. per farmer and upto 2 ha. per farmer in case of successive calamities irrespective of the size of holding being large

3. Norms of Assistance for livestock losses

Replacement of milch animals, draught animals or animals used for haulage	Milch animals – Rs. 16, 400/- Buffalo/Cow/Camel/Yak, etc Rs. 1650/- Sheep/Goat Draught animal – Rs. 15, 000/- Camel/Horse/Bullock, etc Rs. 10, 000/- Calf/Donkey/Pony/Mile - Assistance may be provided where crop loss is 50% and above, subject to a ceiling of 1 ha. per farmer and upto 2 ha. per farmer in case of successive calamities irrespective of the size of holding being large Poultry Rs. 37/- per bird subject to a ceiling of assistance of Rs. 400/- per beneficiary household. The death of the poultry birds should be on account of a natural calamity. Note: Relief under these norms is not eligible if the assistance is available from any other Government Scheme e.g loss of birds due to avian Influenza or any other disease for which the Department of Animal Husbandary has a separate scheme for compensating the poultry owners
Provision of fodder / feed concentrate including water supply and medicines in cattle camps	Large animals – Rs. 50/- per day Small animals – Rs. 25/- per day Period for providing relief will be as per assessment of the SEC and the Central Team (in case of NDRF). The default period of assistance will be upto 30 days, which may be extended upto 60 days in the first instance and in case of severe drought up to 90 days. Based on assessment of need by SEC and recommendation of the Central Team, (in case of NDRF) consistent with estimates of cattle as per Livestock Census and subject to the certificate by the competent authority about the requirement of medicine and vaccine being calamity related
Transport of fodder to cattle outside cattle camps	As per cattle cost of transport, based on assessment of need by SEC and recommendation of the Central Team (in case of NDRF) consistent with estimates of cattle as per Livestock Census

4. Norms of Assistance for Artisans

For replacement of damaged tools / equipment	Rs. 3, 000/- per artisan for equipments - Subject to certification by the competent authority designated by the Government about damage and its replacement
For loss of raw material / goods in process / finished goods	Rs. 3, 000/- per artisans for raw material - Subject to certification by competent authority designated by the State Government about loss and its replacement.

5. Norms of assistance for fishery losses

Assistance to Fisherman for repair / replacement of boats, nets-damaged or lost – Boats, Dugout-Canoe, Catamaran, Net (This assistance will not be provided if the beneficiary is eligible or has availed of any subsidy/assistance, for the instant calamity, under any other Government Scheme.)	Rs. 3, 000/- for repair of partially damaged boats only Rs. 1, 500/- for repair of partially damaged net Rs. 7, 000/- for replacement of fully damaged boats Rs. 1, 850/- for replacement of fully damaged net

A- 3. List of Acts & Guidelines

LIST OF ACTS / GUIDELINES

Department	Acts adhere to	Purpose
Geology and Mining Department	Mines and Minerals Concession Rules 1960	Norms and guidelines for extracting minor minerals
	Mines and Minerals Regulation Development 1957	Norms and guidelines for extracting minor minerals
State Pollution Control Board	National Environment Policy, 2006	Biodiversity conservation
	Environment (Protection) Act, 1986	Environment conservation
	E-Waste (Management and Handling) Act, 2011	Managing and handling E Waste
	Central Pollution Control Guidelines, 2008	Guidelines with permissible limits of pollution for issuing NOC
	Water (Prevention and Control of Pollution) Act, 1974	Grant consent to establish / operate industries
	Air (Prevention and Control Pollution) Act, 1981	Grant consent to establish / operate industries
School Education	Jammu and Kashmir School Education Rules, 2010	School safety
	Supreme Court direction of school safety dated 13 April 2009	
Social Welfare	Infant Milk Substitute Act, 1992	
Irrigation and Flood Control	Water Resource (Regulation and Management) Act 2010	Consolidate the law relating to use of water and its management
Rural Development	Mahatma Gandhi National Rural Employment Guarantee Act, 2005	Provide livelihood to rural population
Civil Defence	Disaster Management Act, 2005	Consolidate SDRF
	Civil Defence Act/Rules	Defining the function of civil defence
Transport department	Motor Vehicle Act and Regulation	
PDD	Indian Electricity Act and Rules	
	Explosive Act and Rules	
	Petroleum Act and Rules	
PWD (R&B)	BIS Codes	

A- 4. List of Emergency Contact

1. Government of India (Home Ministry)

No.	Name	Designation	Office	Residence
1		Home Minister		
2		Home Secretary		
3		Secretary (BM)		
4		Joint Secretary (DM)		
5		Director (DM-1)		
6		Dy. Secretary (NDM-III)		
7		Director (NDM-IV)		
8		Under Secretary (NDM-III)		
9		Under Secretary (NDM-IV)		
10		T.O.		
11		National Seismic Advisor		
12		Consultant NDM		

2. Control Rooms (State and Govt. of India)

No.	Department	Phone	Fax
1	Ministry of Home Affairs, New Delhi		
2	State Emergency Operation Center (SEOC)		
3	PS, RD- COR & Secy (SEOC)		
4	Irrigation Deptt.		
5	R & B Deptt.		
6	Health Commissioner		
7	Home Deptt. (State Control)		
8	DGP, Police		
9	Police Commissioner		
10	IMD (Seismo), New Delhi		
11	SRTC		

3. District Collectors

a. Jammu Province

No.	District Name	Name	Office	Residence	Mobile	Fax
1	Jammu					
2	Poonch					
3	Reasi					
4	Samba					
5	Kathua					
6	Rajouri					
7	Udhampur					
8	Kishtwar					
9	Doda					
10	Ramban					

b. Kashmir Province

No.	District Name	Name	Office	Residence	Mobile	Fax
1	**Srinagar**					
2	**Pulwama**					
3	**Leh Ladakh**					
4	**Kupwara**					
5	**Baramulla**					
6	**Ananthnag**					
7	**Kargil**					
8	**Bandipora**					
9	**Budgam**					
10	**Ganderbal**					
11	**Shopian**					
12	**Kulgam**					

4. Municipal Commissioner of the State

No.	City	Name	Office	Residence	Mobile
1					
2					
3					
4					
5					
6					
7					

5. Police Commissioner and DIG's

No.	City	Name	Designation	Office	Residence	Mobile
1			DIG, General of Police			
2			Commissioner of Police			
3						
4						
5						
6						
7						

6. Air Force

No.	Name	Designation	Office
1		Wing Commanderr, Air Commander in Chief	
2			
3			
4			

7. India Meteorological Department and Observatories

No.	Name	Designation	Office	Residence	Fax
1		DGM, New Delhi			
2		DDGM (CW) , New Delhi			
3		Director (Seismo)			
4		DDGM (Seismo),			

		New Delhi-3			
5		Director (EREC),, New Delhi-3			
6		Director (NHAC), Delhi			
7		DDGM (SI) Pune			
8		DDGM (Ag.) Pune			
9		DDGM (RMC Mumbai-5)			
10		Dir, Meterology Centre, Ahmedabad			
11		Meteorologist Weather Forecasting Ahmadabad			
12	IMD (Seismo) New Delhi				
13	IMD, Ahmedabad (MET)				

8. IMD Regional Offices

No.	Location	Phone
1	Srinagar	
2		
3		
4		
5		
6		
7		

9. Telecommunication

No.	Name	Designation	Office
1			
2			
3			
4			
5			

10. Jammu and Kashmir State Management Authority (J&KSDMA)

No.	Name	Designation	Office	Residence	Mobile
1		CEO			
2		Addl. CEO			
3		Chief Executive Officer			
4		Director			
5		Director (Finance)			
6		Ex. Engineer			

11. Information Department

No.	Name	Designation	Office	Residence	Mobile
1		Commissioner, Commissionerate of Information			
2		Jt. Dr. of Info., Commissionerate of Information			
3		Dy. Dr. of Info. (Charge), Commissionerate of Information			
4		Liason Officer, office of the Liason officer			
5		Dy. Dr. of Info. Information Centre			
6		Dy. Dr of Info. ,Regional Information Centre			

12. Nodal officers of Deaprtments of Jammu and Kashmir

No.	Name of the department	Designation of Nodal Officer	Name	Mobile No.	Telephone	email ID
1	Agriculture dept					
2	Air Force					
3	Army					

4	BISAG					
5	BSNL, Gujarat					
6	CA & PD					
7	Central Water Commission					
8	Civil Defence (SDRF)					
9	Forests					
10	Fisheries Commissioner					
11	Health					
12	Industries & Commerce					
13	Information department					
14	PHE					
15	Police					
16	Science & Technology					
17	SDMA					
18	SRTC					
19	State Pollution Control Board,					
20	Transport					
21	Urban Development					

A- 5 Do's & Don't

DO'S AND DON'TS OF VARIOUS HAZARDS

1. **Earthquake safety**

Do's and don'ts before Earthquake

- Tell the facts about earthquake to your family members
    - Construct new buildings with earthquake resistant method and strengthen the old buildings
    - Insure your house and family members
    - Take the training for first aid and fire fighting
    - Do not keep cots near the glass window
- Do not keep heavy and fragile things in the selves
- Do don't hang photo frames, mirrors, or glasses up your bed
- Keep your important documents, some cash and necessary articles ready in a bag
- Get your house insured before the earthquake
- Identify special skills of neighbor (medical, technical) so that it can be utilized in emergency

Do's and don'ts during Earthquake

- Do not panic
    - If already inside, than Stay indoors! Get under a heavy desk or table and hang on to it. If fire breaks out, drop on the floor and crawl towards the exist
    - If you are out doors during the quake, keep away from buildings, trees and electricity lines. Walk towards open places, in a calm and composed manner.
    - If you are driving, quickly but carefully move your car as far out of traffic as possible and stop. Do not stop on or under a bridge or overpass or under trees, light posts, power lines, or signs. Stay inside the car until shaking stops
    - If you are in a school, get under a desk or table and hold on

Do's and don'ts after the Earthquake

- Do not be afraid of the aftershocks
- Listen to radio-TV and other media for Government Announcement
- Check for injuries to yourself and those around you. Take first aid where you can Extinguish fire, if any
- Examine walls, floors, doors, staircases and windows to make sure that the building is not in danger of collapsing
- Do not enter into the unsafe or risky houses or buildings
- Inspect for Gas leaks-If you smell gas or hear blowing or hissing noises, open a window and quickly leave the building.
- Don't light your kitchen stove if you suspect a gas leak.
- Do not keep telephone lines busy unnecessarily Switch off electric lines

2. Fire safety

Do's

- Buy Fireworks from the licensed shop. Keep fireworks in a closed box
- Store crackers away from source of fire or inflammation Follow all safety precautions issued with the fire works Go to open spaces like playgrounds, fields
- Light them at arm's length using a taper. Stand back while lighting the crackers
- Discard used fireworks in a bucket of water
    - Keep buckets of water and blankets ready, in case a firebreaks out. Wear thick cotton clothes for maximum safety from fire.
- If clothes catch fire, Stop, Drop and Roll

In case of uncontrolled fire wrap the victim in a blanket, till it stops

In case of burns splash tap water (not ice water), the process may be repeated till the burning sensation reduces.

If fingers or toes are burned, separate them with dry, sterile, non-adhesive dressings.

Make sure the burn victim is breathing, if breathing has stopped or if the victim's airway is blocked then open the airway and if necessary begin rescue breathing.

Elevate the burned area and protect it from pressure and friction.

Cover the area of the burn with a moist sterile bandage, of clean cloth (do not use blanket or towel for healing burns).

Consult the doctor as soon as possible for the proper medication

Consult an ophthalmologist immediately in case of eye injuries.

Do contact at the Fire Brigade (Tel. No. 101), for getting the details of the doctors on duty during the festival.

Don’ts

- Don’t burn crackers in crowded, congested places, narrow lanes or inside the house. Don’t let children burst crackers unaccompanied by an adult
- Don’t put fireworks in your pocket or throw them
- Don’t cover crackers with tin containers or glass bottles for extra sound effect Don’t dare to examine unburst crackers…leave it!! Light a new cracker
- Don’t show the Dare-devilry of lighting crackers on own hands. Don’t use fireworks inside a vehicle
- Avoid long loose clothes, as they are fast in catching fire
- Don’t remove burnt clothing (unless it comes off easily), but do ensure that the victim is not still in contact with smoldering materials.
- Don’t apply adhesive dressing on the burnt area. Don’t break the burst blister

3. Flood Safety

Do's and Don'ts after flood

There is a possibility of spread of water borne diseases after flood, and hence medical treatment should be taken immediately.

Do not enter deep, unknown waters.

Do not go near the riverbank even after the floodwater has receded.

Sprinkle medicines in the stagnant dirty water.

Inspect your house for any cracks or other damage. Check all the walls, floor, ceiling, doors and windows, so that any chance of house falling down can be known and you can be aware about the immediate danger.

If the floodwater has entered the house or has surrounded the house, then it is advisable not to enter such house.

Keep listening to weather forecast on radio and television. Move to your residence only when instructed by the competent authority. It is not safe to believe that the problems have ended after the flood water have receded

Inform the competent authority/officer for restoration of the necessary connections like gas, electricity, telephone, drainage, etc.

Beware of the various insects or poisonous snakes that may have been dragged inside the house along with the floodwater.

Destroy the food commodities that have been affected by floodwater.

Check properly all the electric circuits, floor level furnace, boilers, gas cylinders, or electric equipments like motor pump etc. Check whether any inflammable or explosive item has not entered along with the floodwater

Switch off the main electric supply, if any damage is noticed to the electric equipments. If you find any breakage in the drainage system stop using latrines and do not use tap water.

Do not use polluted water.

Sewerage system should be checked and any damage should be repaired immediately so as to curtail spread of diseases.

Empty the water clogged in the basement slowly with help of water pump so that damage to infrastructure can be minimized

Check gas leakage which can be known by smell of gas or by hearing the sound of leakage; immediately open all windows and leave the house.

Boil drinking water before usage and drink chlorinated water.

Eat safe food.

Rescue work should be undertaken immediately after flood situation as per the instruction. Do not follow any shortcut for rescue work.

Do not try to leave the safe shelter to go back home until the local officials declare normalcy after flood and instruction to return home are not given.

4. Landslide Safety

Do's and Don'ts before Landslide

- Assess the areas where one resides and placed
- Learn about local emergency response and evacuation plan if present / resides in landslide prone areas
- Discuss landslides and debris flow with your family so that everyone should know what to do in case if the family are not together at the time of occurrence
- Discussing disaster ahead of time helps reduce fear and lets everyone know how to respond during a landslide or debris flow
- Assemble and maintain an emergency preparedness kit
- Familiarize with the land aound where one lives and work so that one understand the risk in different situations

Do's and Don'ts during Landslide

- Stay alert and awake
- Listen for any unusual sounds that might indicate moving debris, such as trees cracking or boulders knocking together
- If inside a building:
    - Stay inside
    - Take cover under a desk, table, or other piece of sturdy furniture.

- If outdoors:
    - Try and get out of the path of the landslide or mudflow.

- Run to the nearest high ground in a direction away from the path.

- If rocks and other debris are approaching, run for the nearest shelter such as a group of trees or a building
- If escape is not possible, curl into a tight ball and protect your head

Do's and Don'ts after Landslide

- Stay away from the slide area. There may be danger of additional slides.
- Check for injured and trapped persons near the slide area. Give first aid if trained.
- Remember to help your neighbours who may require special assistance--infants, elderly people, and people with disabilities.
- Listen to a radio or television for the latest emergency information
- Stay away from the slide area. There may be danger of additional slides.
- Check for damaged utility lines. Report any damage to the utility company
- Check the building foundation, chimney, and surrounding land for damage
- Replant damaged ground as soon as possible since erosion caused by loss of ground cover can lead to flash flooding

A-6. List of Training/Technical Institutes/NGOS

To be decided by the State Authority

A-7. FORMAT FOR FIRST INFORMATION REPORT ON OCCURANCE OF NATURAL CALAMITY.

(To be sent to SEOC and NEOC, Government of India within maximum of 24 hours of occurrence of calamity)

From: District/State: Date of Report:

To

i) The Relief Commissioner cum Principal Secretary Revenue (Fax: Email:)
ii) JS (DM), MHA (fax: email:)
iii) I/C National Integrated Operations Centre, MHA(fax: ; email)

a) Nature of Calamity
a) Date and time of occurrence
c) Affected Area (Number and names of affected districts)
d) Population affected (approx.)
e) Number of Persons
    i) Dead
    ii) Missing
    iii) Injured
f) Animals
g) Affected
h) Lost
i) Crops affected and area (approx.)
j) Number of house damaged
k) Damage to public property
l) Relief measures undertaken in brief
m) Immediate response and relief assistance required and the best logistical means of delivering that relief from State/National
n) Forecast of possible future developments including new risks.
o) Any other relevant information.

A-8 Situation Report

Sl No.	Category	Report of happenings during the last 24 hours.	Cumulative damage/loss
I Rainfall and Damage/Loss Position			
1	Indicate Place and rainfall (in CMs)		
2	Details of rainfall		
3	Brief details and cause (s) of flash/riverine floods, landslides, road blocked etc.		
4	Population affected if any		
5	Number of human lives lost-district wise (specify the cause of death)		
6	Number of Cattle/livestock lost/perished		
7	Area affected(in hectares)		
8	Estimated value of damaged crop (Rs.in lakh)		
9	Number of houses damaged		
10	i) Fully ii) Partially		
11	Impact of flood on infrastructure (sector-wise i.e. power supply , water supply, road transportation, health sector and telecommunication etc –in physical term)		

12	Estimated value of damage to public properties sector wise in monitoring terms (Rs in lakh)		
13	Estimated value of total damage (8+10+2)		
ii Fire incidents			
1	No.of Domestic fire incidents, cause ,with brief details		
2	Loss of life		
3	Loss of cattle		
4	Total loss of property in lakhs		
5	No. of wild fire incidents		
6	Area involved (in hectares)		
7	Estimated loss of forest wealth (in lakhs)		
8	Estimated value of loss/damage		
Iii Accidents			
1	No.of accidents –roads and other (please specify the category)		
2	Loss of life		
3	No.of injured		
4	Cause of accidents		
Iv Snow fall			
1	Indicate place and Snowfall (in Cms)		
2	Details of loss/damage (if any)		
3	Estimated value of loss (in lakh)		
V Hailstorm			

1	Indicate the place and area of hailstorm (in hectares)		
2	Estimated value of loss(in lakh)		
Vi Other incidents of loss of life and property			
1	Details of loss/damage with estimated value		
Vii Any other relevant information			
1	Number of persons evacuated (district wise)		
2	Number of relief camps opened (district wise)		
3	Number of persons accommodated in the relief camps (district wise)		
4	Details of distribution of essential commodities		
5	GR paid, if any specific items and amount		
6	Steps taken to prevent outbreak of epidemics including the deployment of medical terms (district wise .Whether outbreak of any epidemic occurred?		
7	Whether assistance of or from Army , Airforce is sought (specify details of no.of column/helicopters provided and their place of deployment as well as no. of days,etc		
8	Whether assistance of NDRF battalions is sought, if so details of deployment		
9	Number of cattle camps opned and details of cattle accommodation therein		
10	Any other relief measures undertaken (give details)		

Note: Kindly attached annexure for details wherever required.

Signature of officer with Name and Date
Telephone No./Fax No.
Mobile No.

A-9 Rapid Assessment Format (For big Disasters)

Aim to determine immediate response of the locality

Type of Disaster _____Date_____Time_____

1 Name of the location	
2 Administrative unit and division	
3 Geographical location	
4 Local authority interview (with name, address, designation)	
5 Estimated total population	
6 Worst affected areas /population	
-No of Blocks - G.P - Village	
7 Areas currently inaccessible	
8 Types of areas affected	
9 Distance from the district headquarter	

10. Effect on population (a) Primary affected population -Children below 1 year -Children between 1 and 5 years old - Women - Pregnant and lactating women - Elderly (above 60) - Disabled (b) Death/Reports of starvation (c) Orphans (d) Injured (e) Missing (f) Homeless -Number of people - Number of families (g) Displaced/Migrated (h) Evacuated (i) Destitute (j) Need of counselling for traumatized population	 Number Yes/No
11. Buildings a. Buildings collapsed/wasted away b. Buildings partially collapsed/wasted away c. Buildings with minor damage (buildings that can be retrofitted) d. Number of schools affected -Gravity of the damages e. Number of hospitals and health centres affected -Gravity of the Damage f. Number of Governmental buildings affected -Gravity of the Damage g. Any other building affected - Gravity of the Damage	 Number Scale 1 to 5 where 1 is no damage and 5 is completely destroyed
12. Infrastructure (a) Road damaged /Destroyed -Scale - location - Km (b) Railway damage /Destroyed - Location - Km - is the railway still working (c) Bridges damaged / collapsed - locality - village isolated (d) Damages to the Electricity Network (e) Damages to the communication Network (f) Damages to the telecommunication	 Scale 1 to 5 where 1 is normal and 5 is completely destroyed/wasted away Yes/No Yes/No Yes/No is damage and 1 to 5 is damage scale where 1 is no damage and 5 is completely destroyed
13. Health Facilities (a) Infrastructure damaged	Number Scale 1 to 5 where 1 is no damage and 5 is

-Hospitals -Health centres - Vaccination centres (b) Availability of Doctors - in the area - in the District (c) Availability of Paramedical staff - in the area - in the district (d) Local staffs affected - Doctors - Paramedical staff (e) Conditions of equipment's specify which equipment's (f)Availability of medicines /drugs -Typology (h) Any immunization campaign was undertaken before the disaster (i)Possibilities of the disease outbreak (j)Other health problems	completely destroyed Number Number Number Scale 1 to 5 where 1 is no damage and 5 is completely destroyed Yes/No Yes/No Yes/No List
14. Water Sanitation (a) Availability of safe drinking water (b) Availability of sanitation facilities (c) Availability of Disinfectant -Typology (d)Damage to water /Sewage systems (e)Availability to water supply system (f) Availability of portable water system (g) Agencies participating in WATSAN	 Yes/No Yes/No Yes/No Scale 1 to 5 where 1 is no damage and 5 is completely destroyed Yes/No List
15. Crop/ Agricultural Damage (a) Crop Damaged -Typology - % of hectare damaged - in upland/medium/low - Paddy or Non Paddy - irrigated or non-irrigated (b) Normal and actual rainfall assessment (c) livestock loss (d) Availability of health services for livestock (e) Cattle feed/ fodder availability (f) Damage to agricultural infrastructure	 Mm Number Yes/No Tonnes Scale 1 to 5 where 1 is no damage and 5 is completely destroyed
16. Food/Nutrition (a) Availability of food/stocks (1) Family (2) Relief (3) PDS (4) Community kitchen (b) Expected duration of the food stock (c) Most affected groups - infant - children - pregnant and lactating mothers	 Yes/No Kg Tonnes Tonnes Kg Days To be ticked

- Elderly (d) Where are the different groups located? (e) Levels of food required (f) Total quantity / ration levels required (g) How is the food supply and nutrition situation Likely to evolve in coming weeks/months?	 Days To be ticked
17. Secondary Threats (a) Potentially Hazardous sites (b) Existence of Epidemics (c) Scarcity of Food (d) Scarcity of Water (e) Scarcity of Shelter (f) Scarcity of Clothes (g) Any other problem	 List
18. Response (a) Locals -Govt./NGOs/CSOs/Individuals - Type of assistance (b) National - Govt./NGOs/CSCOs/Individuals (c) International - Govt./NGOs/CSCOs/Individuals - Type of assistance	 To be ticked Description To be ticked Description To be ticked Description
19. Logistics and distribution system (a) Availability of storage facilities (b) Means of transport available (c) Availability of fuel (d) Are there any distribution criteria already in place (e) Availability of manpower	 Yes/No List Yes/No Yes/No Yes/No
20. Priority of Needs Search and rescue (a) Need of search and rescue -Locally available - Needed for Neighbouring districts - Needed for Neighbouring state (indicate from where) (b) Need of transportation and equipment - Boats - Any other transportation (specify) - Special equipment (specify) - Heavy equipment (specify) (c) Need and shelter - Temporary - Permeant (d) Clothing - children clothing - Adult clothing - Winter clothing - Blankets - Bed sheets **1.1 Food Items** (a) Pulses (b) Grain	 Yes/No Estimated Quantity

(c) Baby Food	
(d) specialized Food	
(e) Cattle feeds/fodder	
1.2 Water/sanitation	
(a) portable water	
(b) chlorine water and disinfectant	
(c) Latrine	
(d) soap	
(e) Detergent	
(f) insecticides	
(g) Disinfestations of water body	
(h) Manpower for carcass disposal	
1.3 Health	
(a) Medical Staff	
(b) Medicines (specify)	
(c) IV fluid	
(d) ORS	
(e) Vitamin A	
(f) Vaccines	
(g) Mobile units (quantity to be specified)	
(h) Cold chain system	
1.4 Education	
(a) Infrastructure temporary/permanent	
(b) Teachers	
(c) Teachers Kits	
(d) Reading materials	List
(e) Availability of mid-day meals	
1.5 Crop/Agriculture	
(a) Need of seeds	
(b) Fertilizers, Pesticides	Yes/No and specify location
(c) Types of seed required	
(d) Availability of local variety	Yes/No and specify location
(e) Availability of resources	
1.6 Infrastructure	
(a) Repair of roads	
(b) Repair of railways and bridges	
(c) Power supply	
(d) Telecommunication	List
(e) Equipment required for restoration	Number of Man days
(f) Manpower Required	

- Observation:
- Source of information:
- Site visit:
- Interaction with affected population;
- Assessment carried by:

A-10 FLOW CHART FOR DISPOSAL OF DEAD BODIES AT DISTRICT LEVEL

1. Activate the DM Plan.

2. Nodal officers in the incident response system will activate all other stakeholders associated with disposal of dead

3. Establish an information centre at the site of Disasters/District HQ

4. Inform all other stakeholders ,both in governmental and non-governmental sector , including the elected ,panchayat Raj functionaries and the community

5. Activate search and rescue teams of Fire 7 Emergency services, police ,SDRF,civil Defence,NDRF,and NGOs for the retrieval of injured and the dead.

6. The injured will get the priority for First Aid and evacuation to hospital.

7. Prepare a record of details of the bodies retrieved in the Dead Body inventory Record Register, allocated individual identification, Number, photographed and then Dead Body identification Form initiated.

8. Associate relatives and community members for identification of bodies.

9. Handover the identified bodies to the relatives or the community , and if necessary after cross-matching Dead Body Identification Form with that of missing persons Form ,for the last rites as per local ,cultural and religious denomination.

10. Unidentified or unclaimed dead bodies /body parts shall be transported to the mortuaries for the proper preservation and storage at the designated sites.

11. Consult relatives, legal and forensic experts for positive identification.

12. Final disposal of unidentified bodies/body parts shall be done by district authorities after applying all the possible means of identification as per the legal provisions.

13. The bodies of Foreign Nationals shall be properly preserved either by embalming or chemical methods and then placed in body bags or in coffins with proper labelling .Handing over and transportation of such bodies shall take place through The Ministry of External Affairs, in consultation with the Consular Offices of the concerned countries and other actors such as International Committee of The Red Cross, if necessary and possible.

A-11 GUIDELINES FOR DISPOSAL FOR ANIMAL CARCASSES

1. Guidelines for Burial

1.1 Burial should be performed in most remote areas possible.

1.2 Burial areas shall be located a minimum of 300 feet down gradient from wells, springs and other water sources.

1.3 Burial shall not be made within 300 feet of streams or ponds or in soils identified in the country by soil survey as being frequently flooded.

1.4 The bottom of the pit or trench should be minimum 4 to 6 feet above the water table.

1.5 Pits or trenches shall approximately be 4 to 6 feet deep. They should have stable slopes not steeper than 1 foot vertical to 1 foot horizontal.

1.6 Animal carcasses shall be uniformly placed in the pit or trench so that they do not exceed a maximum thickness of 2 feet. The cover over and surrounding shall be minimum of 3 feet. The cover shall be shaped so as to drain the runoff away from the pit or trench.

1.7 The bottom of the trenches left open shall be sloped to drain and shall have an outlet. All surface runoff shall be diverted from entering the trench.

1.8 Burial areas shall be inspected regularly and any substance or cavities filled.

2. Guidelines for Compositing

2.1 Select site that is well drained, at least 300 feet from water sources, sinkholes, seasonal seeps or other landscape features that indicate hydrological sensitivity in the area.

2.2 Lay 24-inch bed of bulky, absorbent organic material containing sizeable pieces 4 to 6 inches long. Wood chips or hay straw work well. Ensure the base is large enough to allow 2-foot clearance around the carcass.

2.3 Lay animal in centre of the bed. Lance the rumen to avoid bloating and possible explosion .Explosive release of gases can result in odour problems and it will blow the cover material off the compositing carcass.

2.4 When disposing large amounts of blood or body fluid, make sure there is plenty of material to absorb the liquid. Make a depression so blood can be absorbed and then cover, if a blood spill occurs, scrape it up and put back in pile.

2.5 Cover carcass with dry, high –carbon material, old silage, sawdust or dry stall bedding (some semi –solid manure will expedite the process) .Make sure all the residuals are well covered to keep odours down, generate heat or keep vermin or other unwanted animals out of the window.

2.6 Let it sit for 4 to 6 months .then check to see if the carcass is fully degraded.

2.7 Reuse the composted material for carcass compost pile, or remove large bones and land apply.

2.8 Site cleanliness is the most important aspect of compositing: it deters scavengers, and helps control odour and keeps good neighbourly relations.

NOTE: Animals that show signs of a neurological disease, animals that die under quarantine and those with anthrax should not be composted

Reference: USDA Natural Resource Conservation Service, Arkansas livestock and poultry commission, university of Arkansas.

Flow chart for Disposal of Animal Carcasses at District level

a. Activate the DM Plan.

b. Nodal officers in the incident response system will activate all other stake holders' associated with disposal of animal carcasses.

c. Establish the information centre at the site of Disaster/District HQ.

d. Inform all other stakeholders, both in governmental and non-governmental sector, the elected, panchayat Raj functionaries and the community.

e. Activate Animal Carcasses Retrieval teams for the recovery and retrieval of the injured livestock and the animal carcasses.

f. Injured live stock will get the priority for first Aid and evacuation to the hospital.

g. Prepare a record of details of animal carcasses retrieved.

h. Associate owners of the livestock, or their relatives and the community members for the identification of animal carcasses.

i. Handover the animal carcasses to the owners for disposal at selected sites.

j. All unidentified animal carcasses will be photographed preferably before transportation for disposal.

k. Unidentified or unclaimed animal carcasses shall be transported to the designated sites for disposal by district authorities as per the District plan