

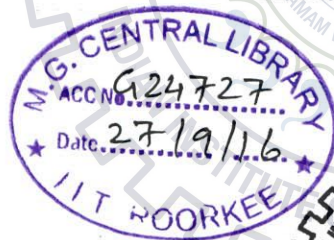
**INSTITUTIONAL CAPACITY ASSESSMENT OF
DISTRICT DISASTER MANAGEMENT AUTHORITY
OF HIMACHAL PRADESH**

A DISSERTATION

*Submitted in partial fulfilment of the
requirements for the award of the degree*

of
MASTER OF TECHNOLOGY
in
DISASTER MITIGATION AND MANAGEMENT

By
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**CENTRE OF EXCELLENCE IN DISASTER MITIGATION AND
MANAGEMENT**

INDIAN INSTITUTE OF TECHNOLOGY ROORKEE


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May, 2015

CANDIDATE DECLARATION

I hereby declare that the work that is being presented in this dissertation, entitled “**INSTITUTIONAL CAPACITY ASSESSMENT OF DISTRICT DISASTER MANAGEMENT AUTHORITY OF HIMACHAL PRADESH**” is an authentic record of my work carried out during the period of July 2014 to May 2015, under the guidance of **Dr. RAJAT AGRAWAL**, Assistant Professor, Department of Management Studies, Indian Institute of Technology Roorkee.

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CERTIFICATE

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ABSTRACT

The formulation of capacity development strategies is based on the outcomes of capacity assessment. Based upon the experiences of various experts and stakeholders, it is proposed to realistically assess the existing multi-dimensional capacities of the Disaster Management Authorities. The well-analyzed results of such assessment would provide valuable recommendations to concerned authorities to further strengthen the institutional mechanism at desired levels and would also highlight the areas which need attention on a priority basis.

The Institutional Capacity Assessment (ICA) of the Disaster Management Authorities will be a categorically organized study based on interviews, surveys, observations and analysis of the data and information available at the subsequent levels. Given in this context, appropriate methodologies in term of qualitative and quantitative methods include identifying the study domains on the basis of vulnerability of the region. After various discussions with expert in the field of disaster management relevant questionnaire would be developed. Then a series of Baseline Survey needs to be conducted in the intended regions which would involve collection of secondary and primary data.

The collected data would be analyzed and rating is assigned given to the different section of authorities followed by providing recommendations on the basis of performance. Then denomination would be done as High Concern, Moderate Concern and Lower Concern for disaster preparedness.

ACKNOWLEDGEMENT

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Acronyms

CD	Capacity Development
DDMA	District Disaster Management Authority
DDMP	District Disaster Management Plan
DEOC	District Emergency Operation Centre
DDR	Disaster Risk Reduction
DDRI	Disaster Risk Reduction Indicator
DDRM	Disaster risk Reduction and Management
EWS	Early Warning System
IAG	Inter-Agency Group
ICA	Institutional capacity assessment
IEC	Information Education and Communication
IRS	incident response system
HPSDMA	Himachal Pradesh State Disaster Management Authority
HRVA	Hazard, Risk and Vulnerability Analyses (HRVA),
NDMA	National Disaster Management Authority

1. INTRODUCTION

India's geo-climatic conditions as well as its high degree of socio-economic vulnerability make it one of the most disaster prone areas in the world. It is highly vulnerable to earthquakes, floods, landslides, cyclones, avalanches and forest fire. Out of 35 State and Union Territories, 27 of them are disaster prone. "About 58.6 percent of the landmass is prone to earthquake of moderate to severe intensity, over 12 percent (40 million hectare) is prone to floods and river erosion, close to 5700 km of coastline is prone to cyclones and tsunamis and also 68 % of the cultivated area is vulnerable to drought"(Ministry of Home Affairs GoI Disaster Management in India). Some of the hilly areas are prone to landslides and avalanches.

Before Gujarat earthquake 2001, our disaster management approach was relief centric. After Gujarat earthquake followed by tsunami in 2004 was eye opener for Government of India. This resulted in shift of relief centric approach to preparedness and mitigation approach. As a result Government of India introduced Disaster Management Act, 2005 which focused on the holistic approach in the field of disaster management.

1.1 Institutional Mechanism of Disaster Management in India

The national authority under the DM Act, 2005 has been established with the responsibilities for laying down the policies, rule and regulations, plans and guidelines for disaster management to ensure the effective response during incident. State authority of disaster management has to follow the polices and the guidelines set by National Disaster Management Authority (NDMA). Under the DM Act, National Executive committee has to prepare plans, coordinate and monitor the implementation of the National policies.



Figure 1.1: Disaster Management Hierarchy in the Country

State Authority has to prepare the state plans and implement national policies in the state for effective disaster management. District authority has to prepare plan for district level and implemented State policies for efficient disaster management.

For different Category of disaster the roles and responsibilities for state as well as district authority are prepared by NDMA. District Disaster Management Authority (DDMA) is an important stakeholder in the field of disaster management. It is the first responder after any disastrous incident.

Level of Disaster	Responsibilities
L 1	DDMA
L 2	SDMA+DDMA
L 3	NDMA

Table 1.1: Level of disasters and Responsibilities of stakeholders

For L1 type of disaster DDMA is the responsible stakeholder for response work. For L2 type of disaster SDMA and DDMA plays an important role in response activities. In L3 type of disaster the role of DDMA is limited.

1.2 Scope and Motivation

Himachal Pradesh is located in Western -Himalayas. The total geographical area of the state is 55,673 sq. kms. It consist of 12 distinct, 75 tehsil and 34 sub tehsil. The average annual rainfall is about 1111 mm. About 70 percent of precipitation is received in the monsoon season. It is prone to numerous disaster events. As evident from statistics, the frequency of disasters has increased dramatically. Natural disaster such as flash flood and landslide are very common in the state. Every year heavy loss is recorded and it readily affects the socio-economic conditions of

the natives. “In the financial year 2014-15 state recorded 600 corers loss in the monsoon season” (HPSDMA). On the basis of vulnerability matrix, out of 12 districts overall vulnerability of four districts is severely very high. These districts are Kinnaur, Kangra, Chamba and Kullu. Earthquake, Landslide and floods are the major Hazards in these districts. While other remaining districts the overall vulnerability ranges between moderate to high.

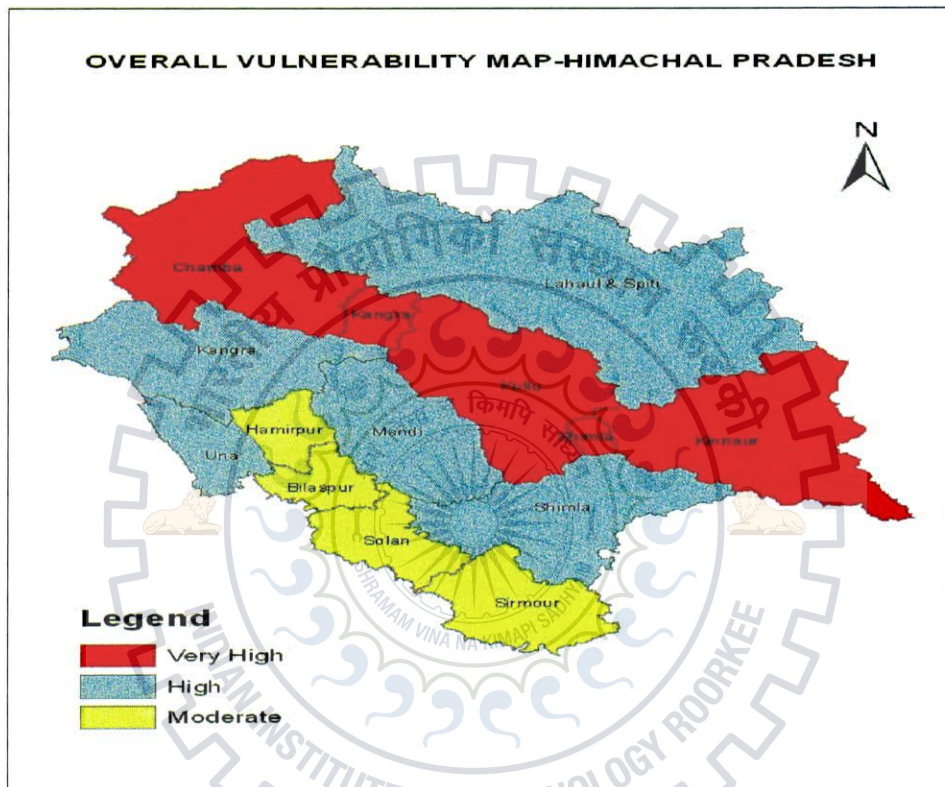


Figure 1.2: Overall vulnerability map of Himachal Pradesh (Source: HPSDMA)

According to 13th finance commission, Ministry of Finance, Government of India has allocated funds for the disaster management institutions. Around Rs. 525 crores have been allocated to the states for the building capacity in the administrative machinery. Out of total funds Himachal Pradesh has been receiving Rs. 4 crores every financial year since 2010.

In recent times the frequency of disasters has increased in Himachal Pradesh. Vulnerability of most districts varying from very high to high. Every year new technologies are introduced at National and State level. It is also crucial to strengthen our first responders i.e. district disaster management authorities and for this it is essential to draft capacity development (CD) strategies to

strengthen district authorities in state. Lack of preparedness at district level would result in more loss during an incident. Therefore it is necessary that existing capacities should be evaluated periodically so that the loopholes could be mended in accordance with scientific methodology.

1.3 Objectives

Based upon the experiences of various experts and stakeholders, it is proposed to realistically assess the existing multi-dimensional capacities of the District Disaster Management Authorities (DDMAs). The well-analyzed results of such assessment would provide valuable recommendations to the HPSDMA to further strengthen the institutional mechanism at district-level and would also highlight the areas which need attention on a priority basis. The Institutional Capacity Assessment (ICA) of all the DDMAs will be a categorically organized study which will be based on interviews, surveys, observations and analysis of the data and information available at the district-level. Keeping all aspects under consideration the overall objectives of the study can be summarized as follows:

- To map existing capacity development activities for disaster risk reduction.
- To Qualitative and Quantitative Assessment of Resources i.e. Human Resource, Technical Resource and Financial Resource.
- To identify key loop holes in capacity development.

2. LITERATURE REVIEW

This unit primarily addresses the basic elements capacity, capacity development cycle, institutional capacity assessment and district authority functioning. For understanding the aspect of institutional capacity assessment secondary data has been analysis. Firstly capacity is defined in term of disaster management and then capacity development cycle stages have been spotlighted and also element regarding District Disaster Management has been focused.

2.1 Capacity

UNDP defines capacity as “the ability of individuals, institutions and societies to perform functions, solve problems, and set and achieve objectives in a sustainable manner.”

Generally classified three parts:

- Core capacity
- Technical capacity
- Enabling Environment

2.1.1 Core capacity

It includes formulating, implementing and reviewing policies, programs and strategies. Some of the characteristics of core capacity are:

- Capacity to engage stakeholders – it includes build consensus, create partnerships and networks. It is the ability to motivate and mobilize stakeholders.
- Capacity to assess a situation and define a path –which includes the ability to access and analyses the situation {i.e. pre- disaster and post –disaster}.
- Capacity to formulate frame work and strategies – it includes relevant organizational execution strategies, sets objectives and formulates policies.
- Capacity to budget, manage and implement –including managing human and financial resources.

2.1.2 Technical capacity

It is related to the ability of technology to create resilience against disaster. Some of the characteristics of technical capacity are:

- Capacity to mitigate –It includes effective use of technology for mitigation solution of various disasters.
- Capacity to response- it refer to the various system such as EOC and EWS etc.

2.1.3 The Enabling Environment

It includes the interaction between and among organizations and government units. Capacities at the level of the enabling environment relate to such things as policies, legislation and institutional arrangements.

2.2 Capacity Development

“Capacity development (CD) is a process through which the abilities to do so are obtained, strengthened, adapted and maintained over time.”

According to DM Act, 2005, Capacity building includes

- “Identification of existing resources and resources to be acquired or created.”
- “Organisation and training of personnel and coordination of such training for effective management of disaster.”

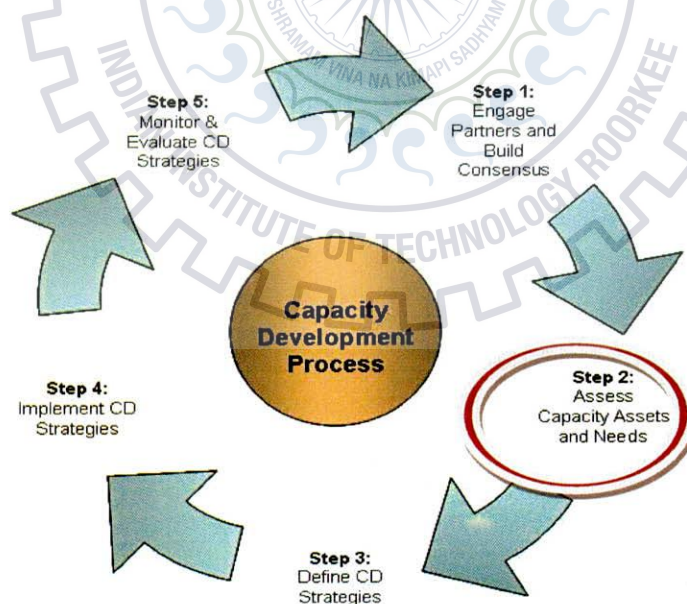


Figure 2.1: Capacity development (CD) cycle

Capacity development (CD) cycle involves the six steps. These are engage partners and build consensus, assess capacity assets and needs, define capacity development strategies, implement CD strategies and monitor and evaluate capacity development strategies.

Among them capacity assessment is important because the formulation of capacity development strategies is based on the findings of capacity assessment only. It is a continuous process of replacing existing resources and adding newer ones.

2.3 Institutional Capacity Assessments

Institutional Capacity assessment (ICA) is a process to evaluate the existing capacity within an organization. It includes evaluation of core capacities, technical capacities and enabling environment capacities. It is an important step in capacity building cycles because existing loop holes are evaluated within an organization and new capacities will be added to full fill the desired goals.

2.4 District Disaster Management Authority

District Disaster Management Authority (DDMA) is the nodal agency for disaster management at district level. As per Section 25 of the DM Act 05, it is mandatory for all the state to establish district authorities.

The District authorities ensure that the Guidelines for prevention, mitigation, preparedness and response measures lay down by NDMA and SDMA should be followed by all Departments at the District level and the Local Authorities in the District.

2.4.1 Roles and responsibilities of DDMA

1. The District Authority shall act as the district planning, coordinating and implementing body of disaster management and take all measures for the purposes of disaster management in the district.
2. Its functions shall includes:
 - i) To prepare a disaster management pan including, district response plan for the district.
 - ii) To coordinate and monitor the implementation of the National Policy, State Policy, and District Plan.

- iii) To identify the vulnerable areas of the district and prepare mitigation plans for the desired hazards in the district.
 - iv) To give directions to different stakeholders at the district level and local authorities to take measures for the prevention and mitigation.
 - v) To monitor the implementation of disaster management plans prepared by other stakeholders at the district level.
 - vi) To lay down guidelines for integration of prevention and mitigation measure in the development plans and projects and provides necessary technical assistance.
 - vii) To review the preparedness measures and give directions to the concerned departments at the district level.
 - viii) To organize and coordinate the capacity building training programs for different stakeholders.
 - ix) To facilitate community awareness programs for prevention of disaster or mitigation.
 - x) To set up, maintain, review and upgrade the mechanism for early warning systems
 - xi) To identify the shelter locations and build shelter.
 - xii) To prepare inventory of relief and rescue materials or ensure preparedness to make such materials available during emergency.
 - xiii) To encourage the involvement of voluntary sector institutions and non-governmental organizations.
3. The District Authority shall meet as and when necessary and as such time and place as the Chairperson may think fit.
 4. The District Authority may as and when it considers necessary constitute one or more advisory committees and other committees for the efficient discharges of its functions.

2.4.2 Structure of DDMA

District authority has been constituted under section 25 (1) of the Disaster Management Act 2005, under the chairmanship of District collector. The institutional structure of DDMA consists of various nodal departments working in the district.

S.No.	Designation	DDMA
1	Deputy Commissioner	Chairperson
2	Superintendent of Police	Member
3	Chief Medical Officer	Member
4	Superintending Engineer (PWD)	Member
5	Superintending Engineer (I & PH)	Member
6	Superintending Engineer (MPP & P)	Member
7	Chairperson of the Zila Parishad	Member
8	Additional District Magistrate	Member

Table 2.1: Detail of DDMA structure

2.5 Working Components of DDMA

There are various system and processes mandatory for the effective functioning of district authority. These important components are described in the DM Act, 2005 which is given as:

- District Crisis Management Group.
- District Emergency Operation Center (DEOC)
- Incident Response System
- Early warning system
- Inter agency group (IAG)

2.5.1 District Crisis Management Group

District Deputy Commissioner is the head of DCG (District Crisis Group) where as District Magistrate act as the nodal officer for control and co-ordination of emergency activities.

These core teams of senior decision-makers have administrative control over the key resources of organizations. It is a quick decision making process which will include the issues related to warning, conduct evacuation and rescue & relief operations in the event of a disaster.

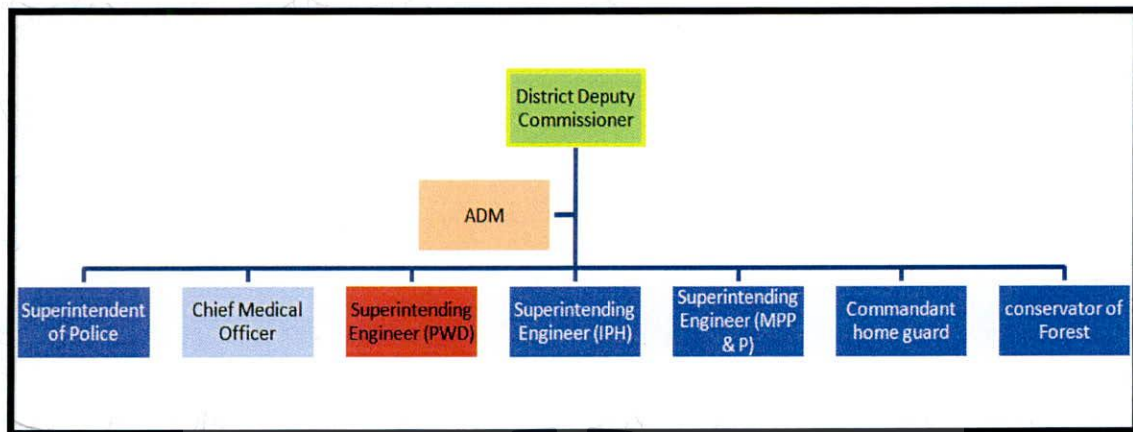


Figure2.2: Structure of DCM Group

2.5.2 District Emergency Operation Center (DEOC)

District Emergency Operation Center (DEOC) is an emergency communication system. It consists of various latest communication equipments such as HAM Radio, VSAT and satellite phones.

It works as a 24-hour running system operated by toll-free number 1077. DEOC must be connected to the nodal officers of all other departments at the district level. It is mandatory to establish DEOC in the district or strengthen the existing DEOC system.

Functioning of the Emergency Operation Centre

Additional District Magistrate (ADM) acts as will overall in charge of the DEOC and takes the role of Incident Commander in certain disasters. In particular cases the Deputy Commissioner acts as Incident Commander and ADM as Additional Incident Commander.

- All the members of the DDMA and the nodal officers of all other departments at the district level should be the members of the EOC.
- The EOC should have the communication connectivity with all the subdivisions, blocks and even the Village level may be through HAM radios, Satellite telephones etc. The EOC should have the communication equipments which can be mounted on the vehicle and the Incident place can be connected with EOC.
- EOC will have the connectivity with the other DEOC and State Emergency Operation Center (SEOC).

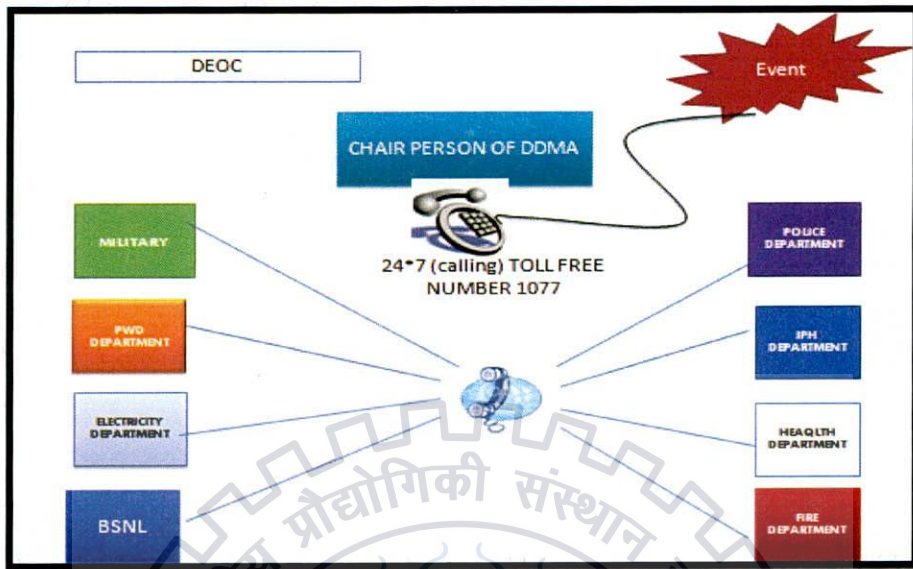


Figure 2.3: DEOC Working Structure according to State EOC Manual

2.5.3 Incident Response System

The Incident Response System (IRS) is a mechanism for effective response during an emergency situation and combination of the entire stakeholder that are involved in disaster management. IRS identifies and designates officers to perform various duties. It helps in reducing chaos and confusion during the response phase. IRS is a flexible system and includes all the Sections of disaster management.

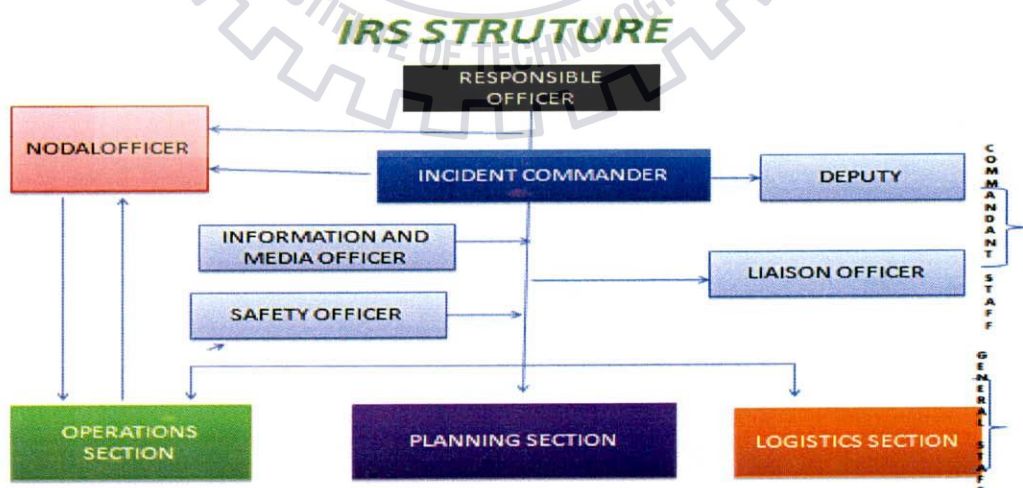


Figure 2.4: Showing IRS structure (Source: NDMA, 2012)

IRS Organization: The main purpose of guidelines is to lay down the roles and responsibilities of different functionaries and stakeholders at State and District levels and how coordination with the multi-tiered institutional mechanisms at the National, State and District level would be done.

The Incident Response System (IRS) has two main components which are given as

- Commandant staff
- General staff

Command Staff: The Command Staff consists of Incident Commander (IC), Information & Media Officer (IMO), Safety Officer (SO) and Liaison Officer (LO). They report directly to the IC and may have assistants.

General Staff: The General Staff has three components: operation section, planning section and logistics section. The operation section is responsible for directing the required tactical actions to meet incident requirements. The planning section is responsible for evaluation, maintaining and tracking resources, displaying incident information and preparing the incident action plan (IAP). The logistics section is responsible for providing facilities, material, equipment and other equipment which are required during response.

2.5.4 Early warning system

Early warning system (EWS) is an information system with a specific objective, which is to provide information on an occurring emergency incident.

It monitors the first signs of emerging hazards in order to be able to trigger early and appropriate responses to these first signs and thus reduce or mitigate disaster risk.

Flow of information: There are various authorized agencies which issue early warning signals before incidents. These early information's before an incident are shared with state authorities. Then this information is spread widely through State emergency center to local level.

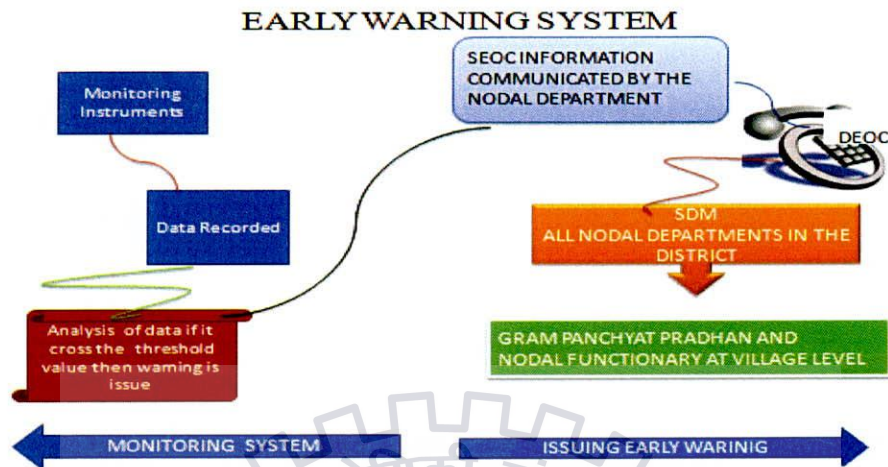


Figure2.5: Flow of information from top level to lower level

2.5.5 Inter -Agency Group

Inter-Agency Group (IAG) is a platform where Government agencies and NGO works together for better functioning of disaster management activities in the district. As NGO's are playing an important role in preparedness activities in pre-disaster period and during post-disaster time NGO' become extensive entity for response activities. IAG is a vital component of DDMA. It is mandatory in DM act, 2005 to establish an IAG at state as well as district level.

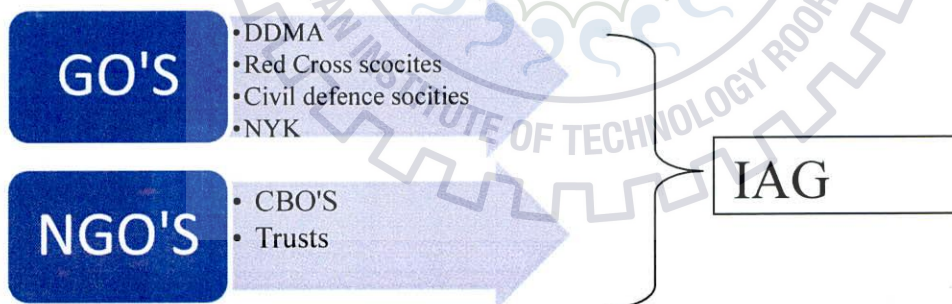


Figure2.6: Interagency group coordination

3. METHODOLOGY

Given in this context, appropriate methodologies in term of qualitative and quantitative methods were applied. Firstly districts were identified on the basis of vulnerability of the region. Then suitable model was developed for the institutional capacity assessment of District Disaster Management Authorities. After various discussions with expert personnel in the field of disaster management relevant questionnaire were developed. Then a series of Baseline Survey were conducted in the intended districts which involved collection of secondary and primary data. At the end the collected data was analyzed and rating was given to DDMA's followed by providing recommendations on the basis of performance. Methodology of the study included number of steps as follows:

- Identification of study areas and analysis of prevalent hazards.
- Development of method for capacity assessment.
- Collection of secondary data.
- Primary Data collection from interviews of DDMA employees and various consultants.
- Assignment of subsequent ratings on the basis of investigation of capacity.

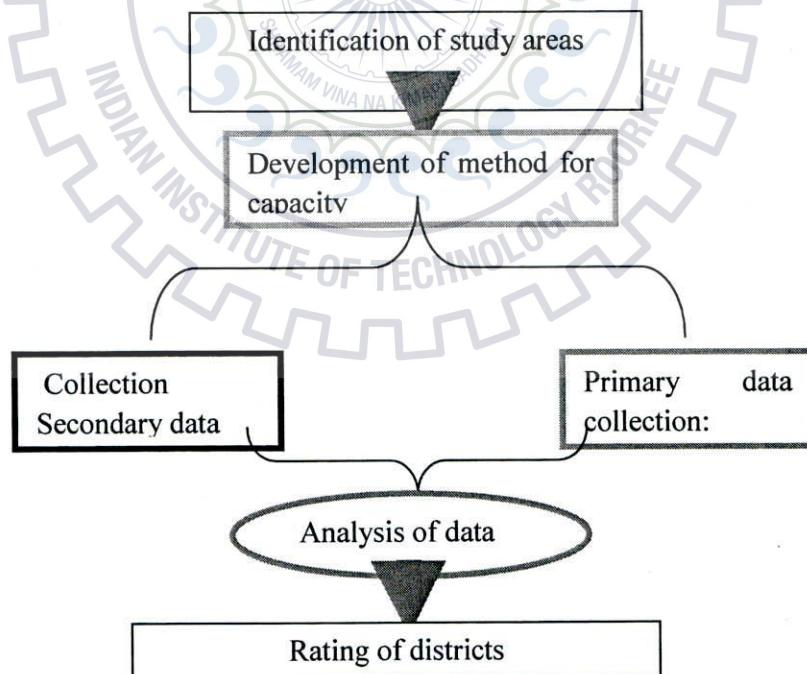


Figure 3.1: Flow chart of methodology

3.1 Study Domain

The study area included DDMA's of six districts of Himachal Pradesh. These districts were Bilaspur, Chamba, Kangra, Kullu, Mandi and Shimla. The vulnerability of these districts varied from very high to moderate to various disasters. Out of six districts, the vulnerability of four districts varied from very high to high i.e. Chamba, Kangra, Mandi and Kullu. Vulnerability of Bilaspur and Shimla varied from moderate to high.

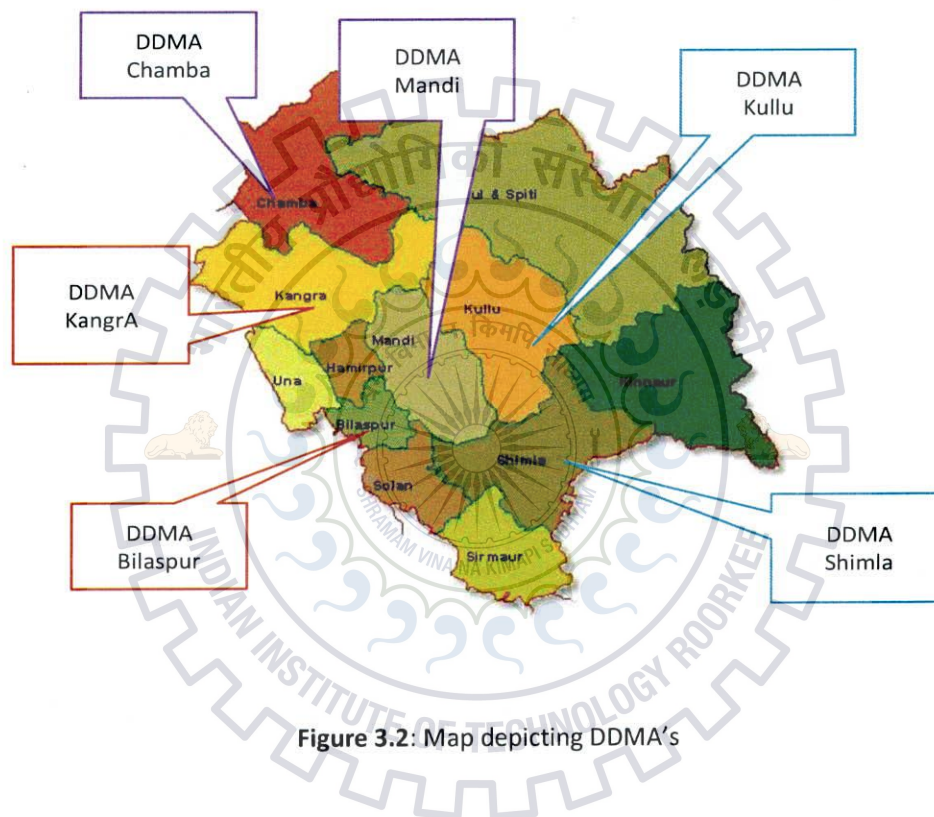


Figure 3.2: Map depicting DDMA's

3.1.1 Bilaspur:

General Profile: The total area of the Bilaspur district is 1167 square kilometers and administratively Bilaspur is divided into two subdivisions, four tehsils and three development blocks. The district is located between longitude $75^{\circ} 49' 33''$ E to $77^{\circ} 03' 30''$ E and latitude $31^{\circ} 12' 30''$ N and $31^{\circ} 35' 45''$ N and longitude $76^{\circ} 23' 45''$ E and $76^{\circ} 55' 40''$ E.

Satluj is the major river of the district. The average altitude of the district is 610 meters from the mean sea level. The total population of district Bilaspur is 3,82,556. The population density of the district is 327 per sq kms.

Hazard Profile of District: District Bilaspur is prone to different type of hazards both natural and manmade .The main hazards are earthquake, landslide, floods, forest fire and flash flood.

Earthquake	Landslide	Floods	Forest fire	Avalanche	Overall Vulnerability
High	Medium	Low	Very high	High	Moderate to High

Table3.1: Hazard profile of district (Source: H.P. State Council for Science Technology &Environment)

Earthquake : Bilaspur district is prone to earthquake hazards .Total area of the district under seismic Zone IV and under seismic zone seismic Zone V is around about 74%and 26% respectively.



Figure 3.3: Map showing area under earthquake hazard in the district Bilaspur (Source :HPSDMA)

Landslide: The hills and mountains of the District Bilaspur are vulnerable to landslides hazard during monsoon. The area around the Govind Sager Lake is marked as the landslide prone area. The areas vulnerable to very high, high and moderate landslide hazard are 216 sq.kms, 824Sq.kms and 83 sq.kms respectively.

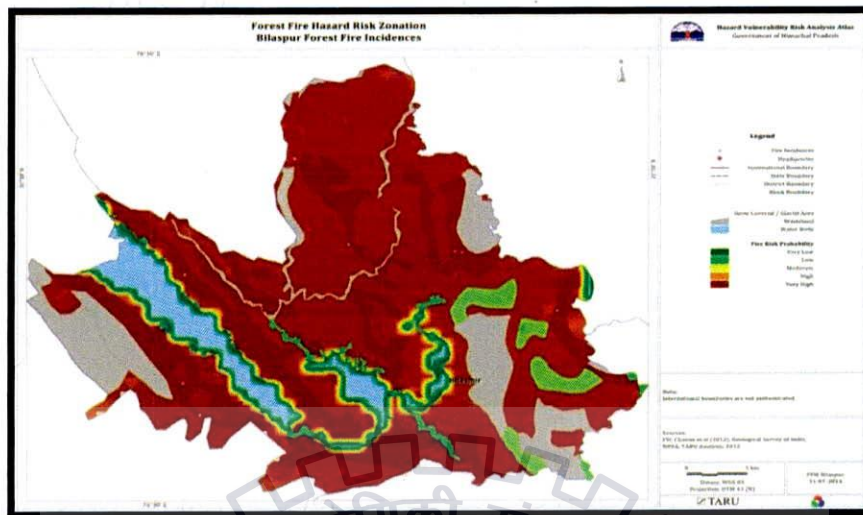


Figure 3.6: Map showing area under Forest Fire hazard in the district (Source :HPSDMA)

3.1.2 Mandi

General Profile: The total area of the Mandi district is 3,950 square kilometers and administratively Mandi is divided into 7 subdivisions, 9 tehsil and 10 development blocks. The district is located between longitude $76^{\circ}37'20''$ E and $77^{\circ}23'15''$ E and latitude $31^{\circ}13'50''$ N and $32^{\circ}04'30''$ N. Beas and Satluj rivers are the major rivers of the district. The average altitude of the district is 1100 meters from the mean sea level. The total population of the district Mandi is 9,99,518. The population density of the district is 253 per sq km.

Hazard Profile of District: District Mandi is prone to different types of hazards both natural and manmade. In this district, hazards mainly are earthquake, landslide, floods, cloud burst, and flash floods.

Earthquake	Landslide	Floods	Forest Fire	Avalanches	Overall Vulnerability
Very High	High	High	Very High	---	Very High

Table 3.2: Hazard profile of district (Source: H.P. State Council for Science Technology)

Earthquake: Mandi district is prone to earthquake hazards. It falls in the highest seismic zone i.e. Zone V and zone IV. According to the seismic zoning map of the state, 97.4% area of Mandi is liable to the severest designed intensity of MSK IX or more.

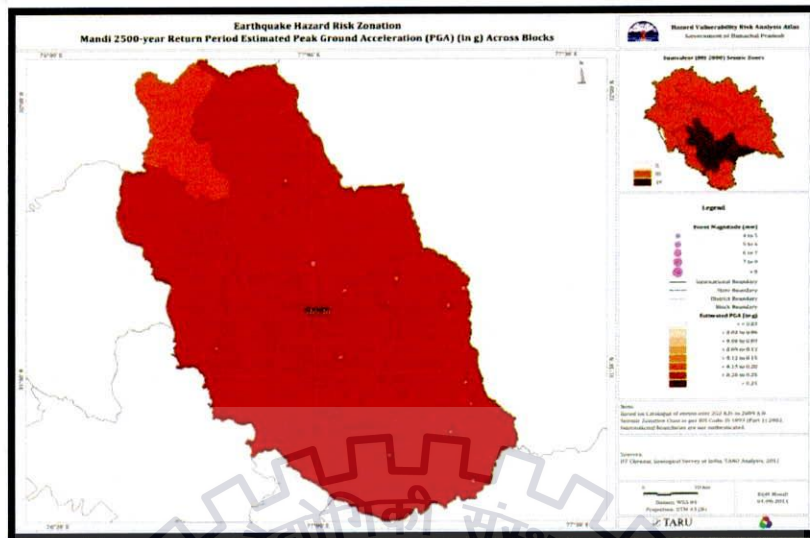


Figure 3.7: Map showing area under earthquake hazard in the district (Source: HPSDMA)

Landslide: The hills and mountains of the District Mandi are vulnerable to landslides hazard during monsoons. The area vulnerable to very high, high and moderate landslide hazard is 968 sq.kms, 1978 sq.kms and 820 sq.kms respectively.

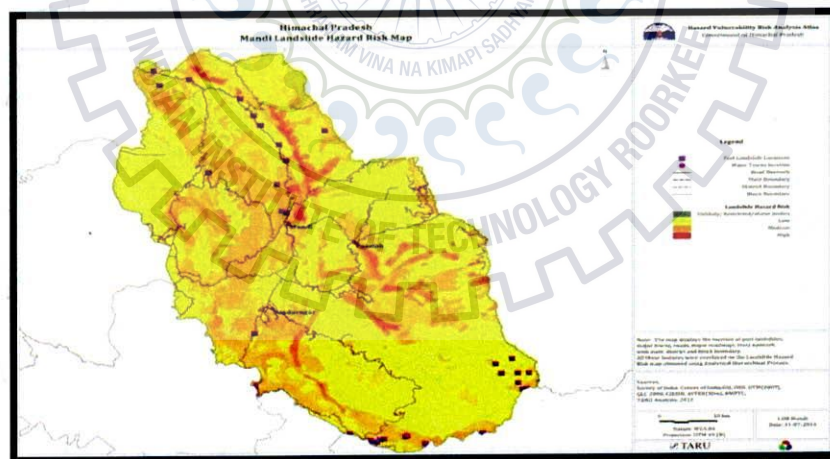


Figure 3.8: Map showing area under Landslide hazard in the district (Source :HPSDMA)

Floods/Flash Floods: Beas and Satluj rivers are the major rivers of Mandi district and large number of its tributaries flow across the Mandi district. Most of the incident takes place in the monsoon season

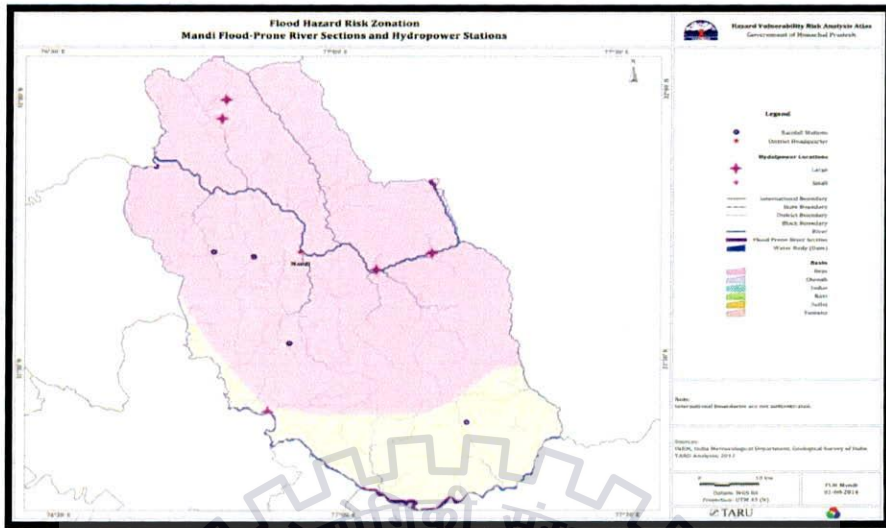


Figure 3.9: Map showing area under Flood hazard in the district (Source :HPSDMA)

Forest Fire: Forest area under Mandi district is around 1860sq.kms. The forest fire incident occurs in the summer season from April to June.

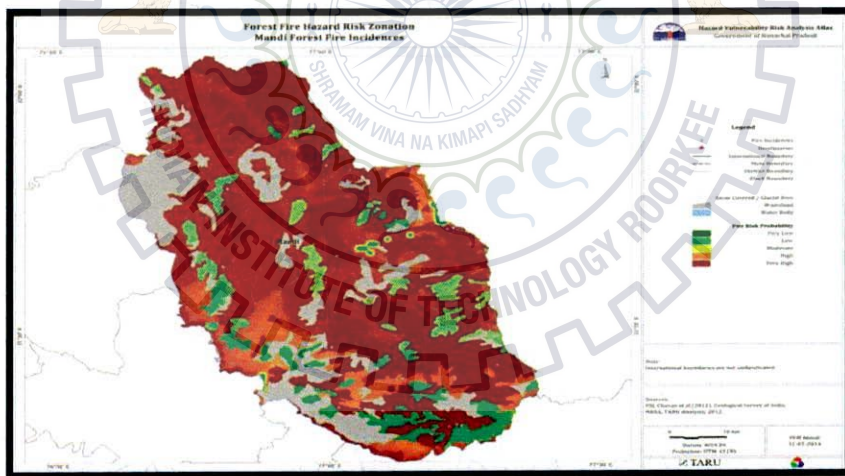


Figure 3.10: Map showing area under Forest Fire hazard in the district (Source :HPSDMA)

3.1.3 Kangra

Kangra district is the largest district of Himachal Pradesh in terms of population. The total area of the Kangra district is 5,739 square kilometers and administratively Kangra is divided into 8 subdivisions, 18 tehsil and 15 development blocks. The district is located between latitude 31° 21'

to 32° 59' N and longitude 75° 47'E to 77° 45' E. Beas is the major river of the district. The altitude varies from 427 m to 6000 m from the mean sea level. The total population of district mandi is 15, 07,223. The population density is 263per sq. km.

Hazard Profile of District: District: Kangra is prone to different type of hazards both natural and manmade .The main hazards are earthquake, landslide, floods, forest fire and flash flood.

Earthquake	Landslide	Floods	Forest Fire	Avalanches	Overall Vulnerability
Very High	Low	Medium	High	Medium	Very High

Table3.3: Hazard profile of district (Source: H.P. State Council for Science Technology)

Earthquake: Kangra is most prone district for earthquake hazard in the state Himachal Pradesh. District faced the great earthquake in the year 1905. Total area of the district under seismic Zone IV and under seismic zone seismic Zone V is around about 1.20%and 98.80% respectively.

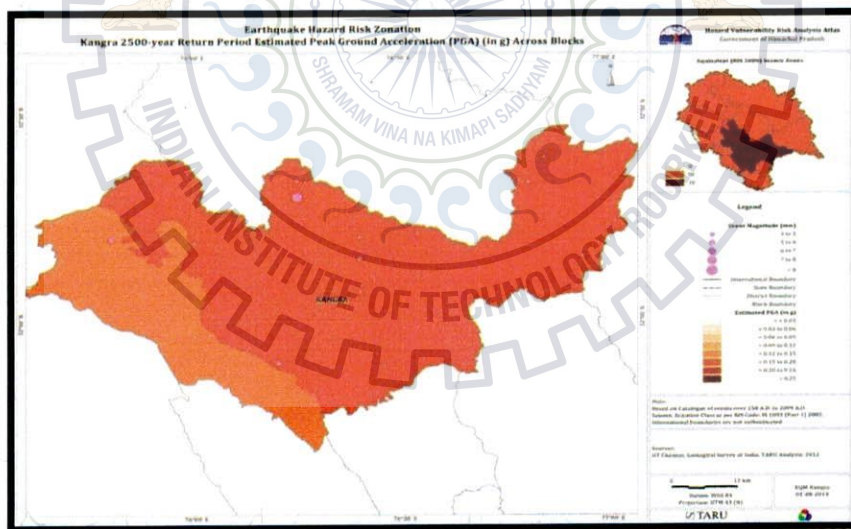


Figure 3.11: Map showing area under Earthquake hazard in the district (Source: HPSDMA)

Landslide: The hills and mountains of the District Kangra are vulnerable to landslides hazard during monsoons.

Chamba Dhar ranges, Dholadhar regions are very prone. The area vulnerable to very high, high and moderate landslide hazard is 125 sq.kms, 3698 sq.kms and 1232 sq.kms respectively.

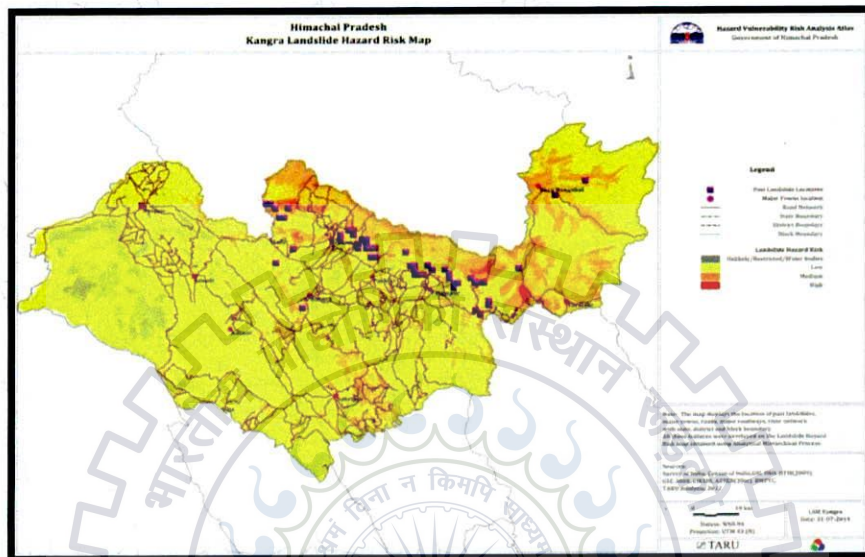


Figure 3.12: Map showing area under Landslide hazard in the district (Source :HPSDMA)

Floods/Flash Floods: Flood incidents are very common in the Kangra district. Beas is the main river of Kangra which flows from east to west and Neugal, Bangana, Nand and Bhol are the tributaries of river Beas.

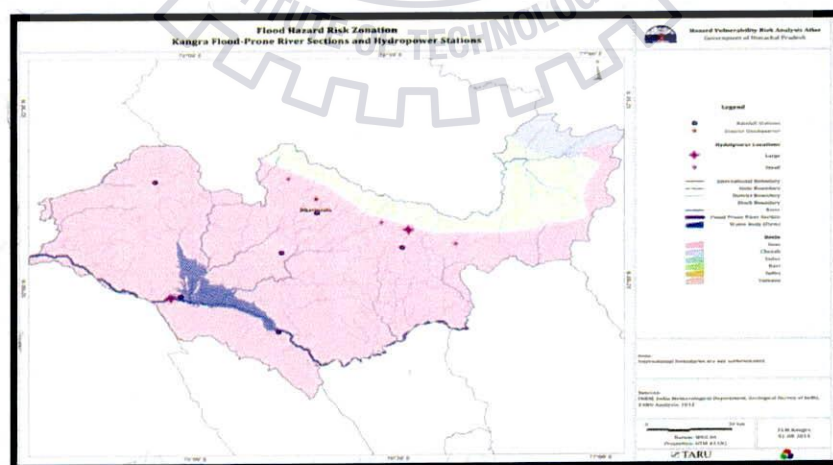


Figure 3.13: Map showing area under Flood hazard in the district (Source: HPSDMA)

Forest Fire: Forest area under Kangra district is around 2842sq.kms .The forest fire incident occurs in the summer season from April to June.

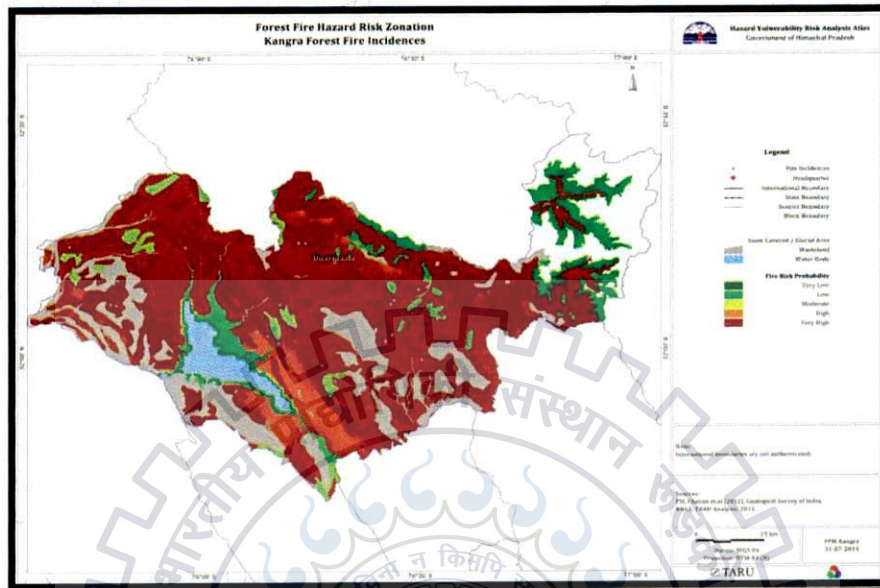


Figure 3.14: Map showing area under Forest Fire hazard in the district (Source :HPSDMA)

3.1.4 Kullu

Kullu The total area of the Kullu district is 5,503 sq. kms and administratively Kullu is divided into 4 subdivisions, 4 tehsil and 5 development blocks. The district is located between longitude 75°49'33''E to 77°03'30'' E and latitude 32°11'30''N to 33° 13'6'' N. Beas is the major river of the district. The altitude varies from 850 m to 4853 m from the mean sea level. The total population of district is 3, 8,571. The population density of the district is 79 per sq km.

Hazard Profile of District: District Kullu is prone to different type of hazards both natural and manmade .The main hazards are earthquake, landslide, floods, forest fire and flash flood.

Earthquake	Landslide	Floods	Forest Fire	Avalanches	Overall Vulnerability
Very High	Very High	High	High	High	Very High

Table 3.4: Hazard profile of district (Source: H.P. State Council for Science Technology)

Earthquake: Kullu district is prone to earthquake hazards. Total area of the district under seismic Zone IV and under seismic zone seismic Zone V is around about 46.20% and 53.80% respectively.

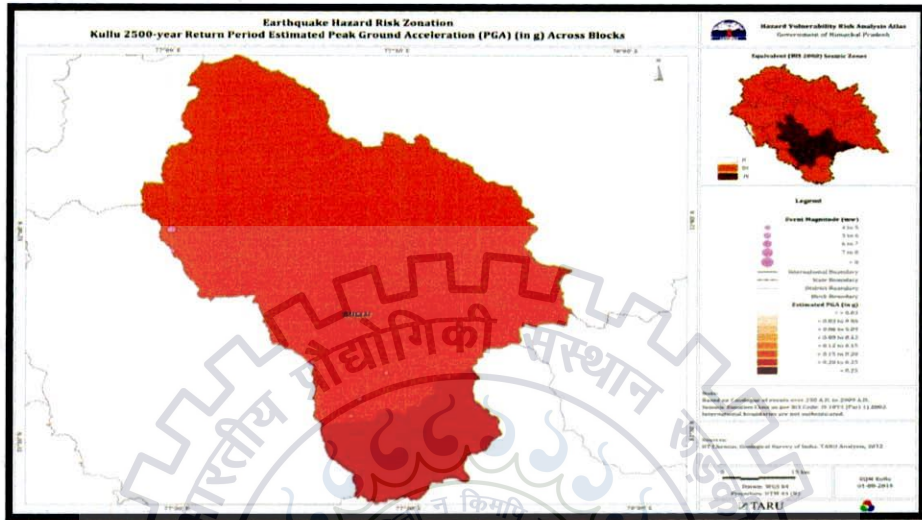


Figure 3.15: Map showing area under Earthquake hazard in the district (Source :HPSDMA)

Landslide: The fragile nature of newly formed mountains increases the vulnerability of landslide. The area vulnerable to very high, high and moderate landslide hazard is 1830 sq.kms, 3514 sq.kms and 65 sq.kms respectively.

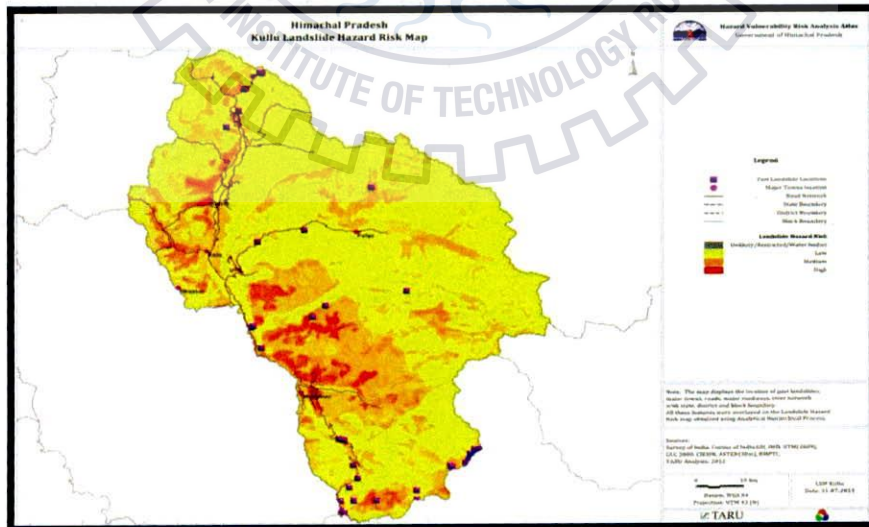


Figure 3.16: Map showing area under Flood hazard in the district (Source :HPSDMA)

Floods /Flash Floods: The Beas River is the major river of Kullu district and large number of its tributaries flow across the Kullu district. Floods and flash floods are the common hazard in the district. Most of the incident takes place in the monsoon season.

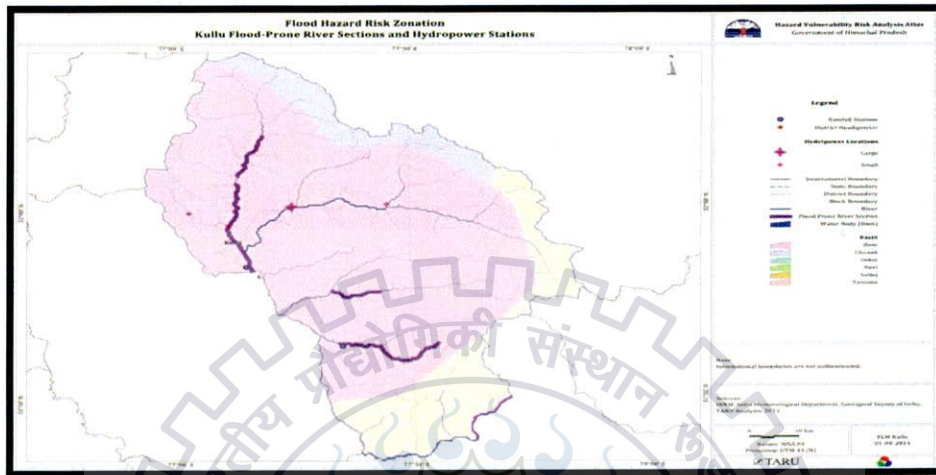


Figure 3.17: Map showing area under Flood hazard in the district(Source :HPSDMA)

Forest Fire: Forest area under Kullu district is around 4950 sq kms .The forest fire incident occurs in the summer season from April to June.

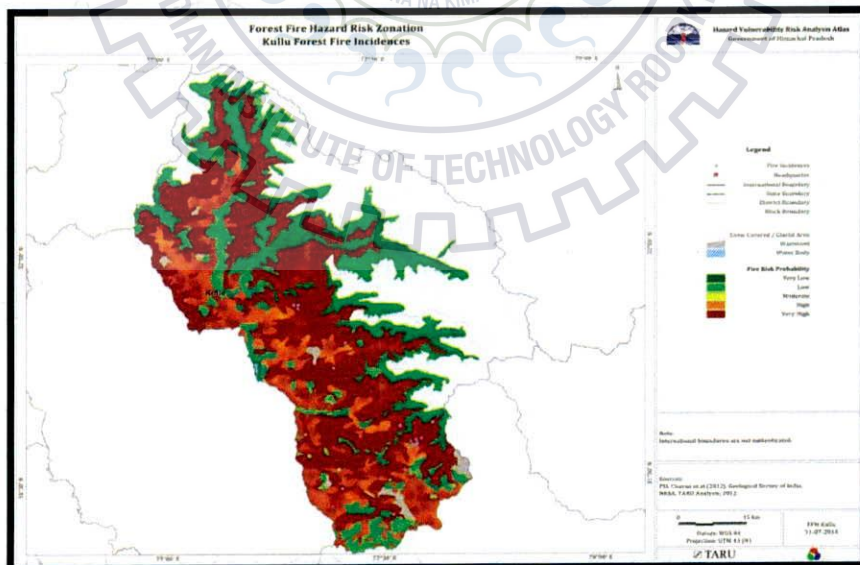


Figure 3.18: Map showing area under Forest Fire hazard in the district(Source :HPSDM)

Avalanches: This area is also vulnerable to avalanches. The villages at high altitudes and army and Para-military camps are frequently hit by this form of natural calamity.

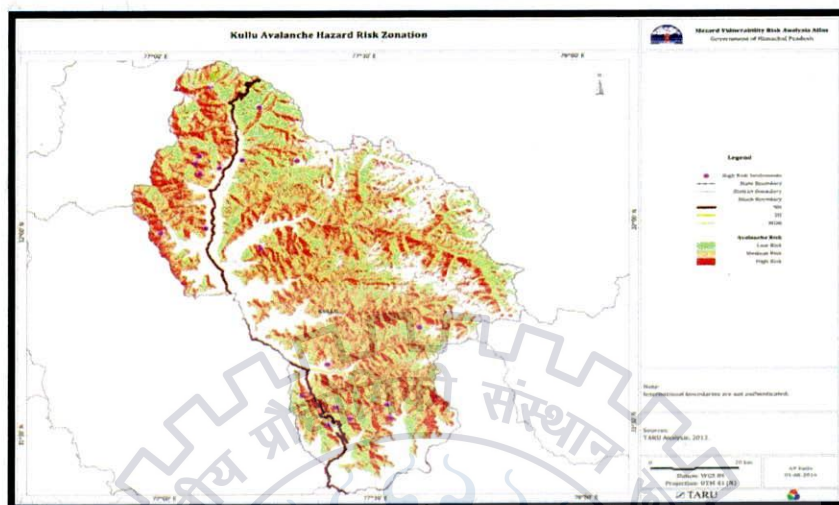


Figure 3.19: Map showing area under Avalanches hazard in the district (Source :HPSDMA)

3.1.5 Chamba

The total area of the Chamba district is 65,528 square kilometers and administratively district is divided in to 6 subdivisions, 7 tehsil and 5 development blocks. The district located between longitude 75°49'05" E and 77° 3' 30 E and latitude 32° 11' 30"N and 33° 13' 6"N. Ravi is the major river of the district. The altitude varies from 750 m to 4560 m from the mean sea level. The total population of district mandi is 4, 5, and 18,844. The population density of the district is 80 per sq km.

Hazard Profile of District: District Chamba is prone to different type of hazards both natural and manmade. The main hazards are earthquake, landslide, floods, forest fire and flash flood.

Earthquake	Landslide	Floods	Forest Fire	Avalanches	Overall Vulnerability
Very High	Very High	High	High	Medium	Very High

Table 3.5: Hazard profile of district (Source: H.P. State Council for Science Technology)

Earthquake: Chamba district is prone to earthquake hazards. Total area of the district under seismic Zone IV and under seismic zone seismic Zone V is around about 46.10% and 53.90% respectively.

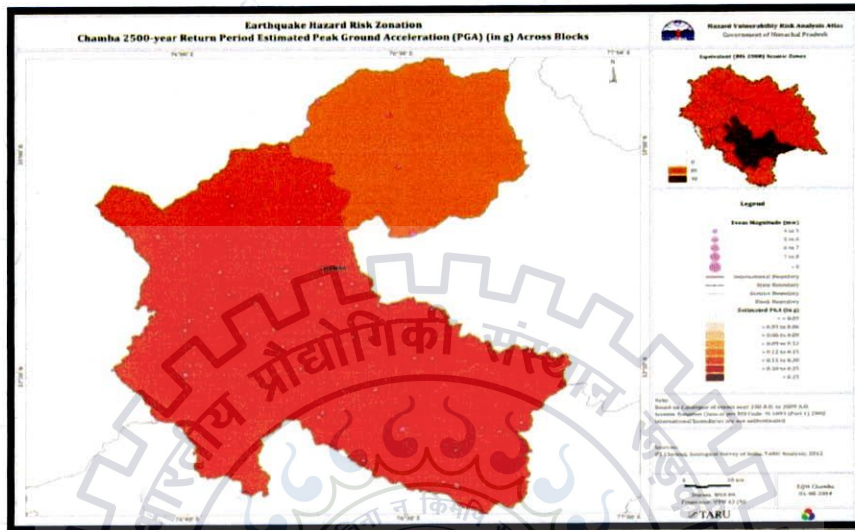


Figure 3.20: Map showing area under Earthquake hazard in the district (Source :HPSDMA)

Landslide: The hills and mountains of the District Chamba are vulnerable to landslides hazard during monsoons. The area vulnerable to very high, high and moderate landslide hazard is 2830 sq kms, 3839 sq kms and 350 sq.kms respectively.

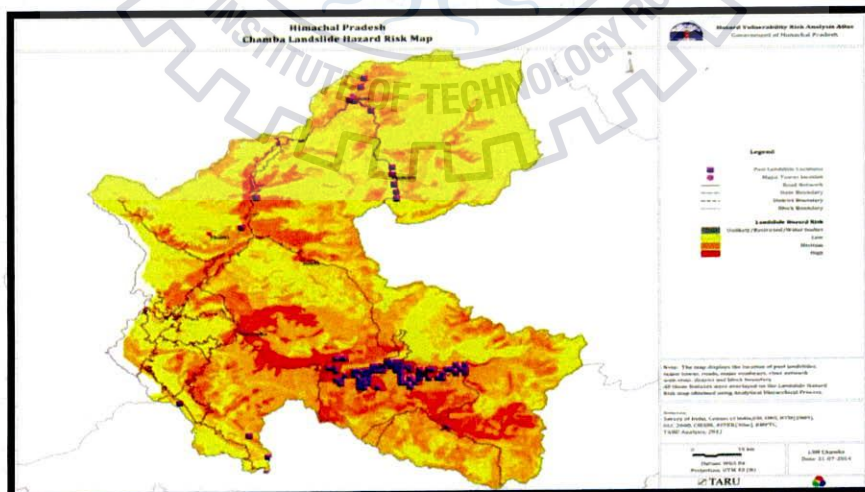


Figure 3.21: Map showing area under landslide hazard in the district (Source :HPSDMA)

Floods /Flash Floods: Ravi is the major rivers of Chamba district and large number of its tributaries flow across the district. There are large number hydro power station are working frequently stored water in the dams is released caused flash flood in the downstream areas.

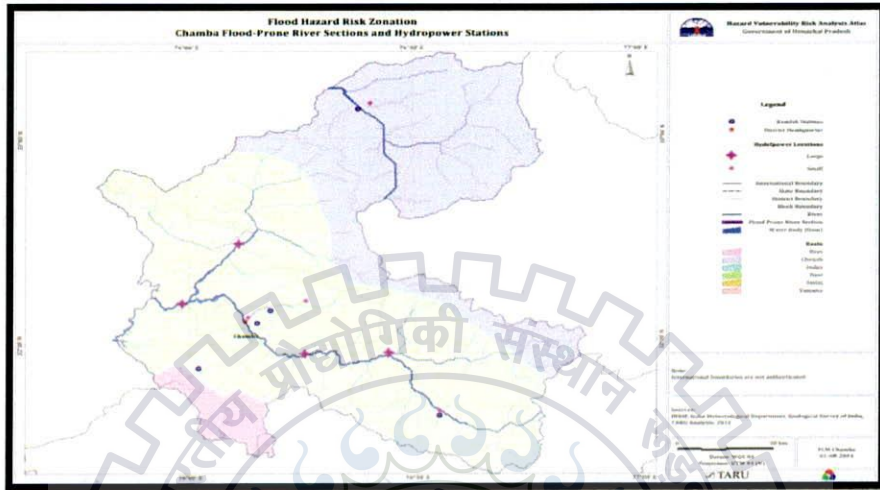


Figure 3.22: Map showing area under Flood hazard in the district(Source :HPSDMA)

Forest Fire: Forest area under Chamba district is around 5030 sq.km .The forest fire incident occurring the summer season from April to June

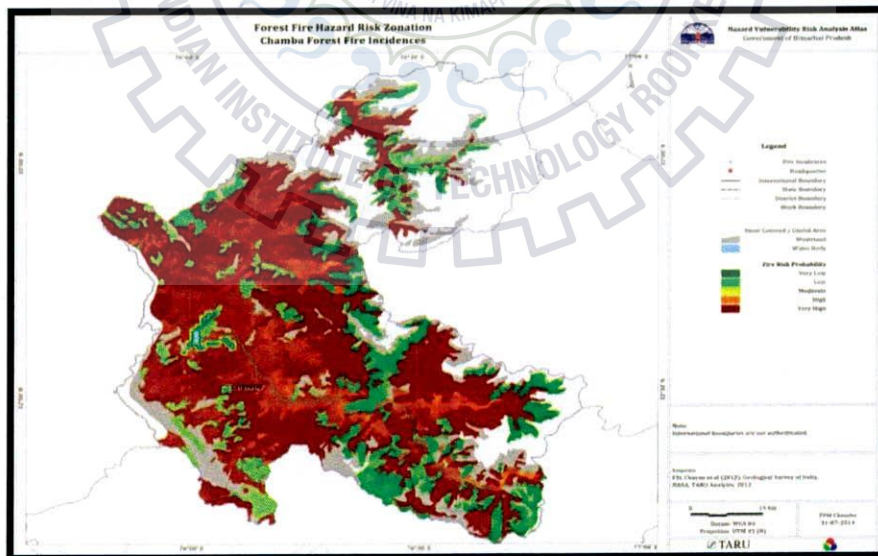


Figure 3.23: Map showing area under Forest Fire hazard in the district(Source :HPSDMA)

Avalanches: This area is also vulnerable to avalanches. The villages at high altitudes and army and Para-military camps are frequently hit by this form of natural calamity.

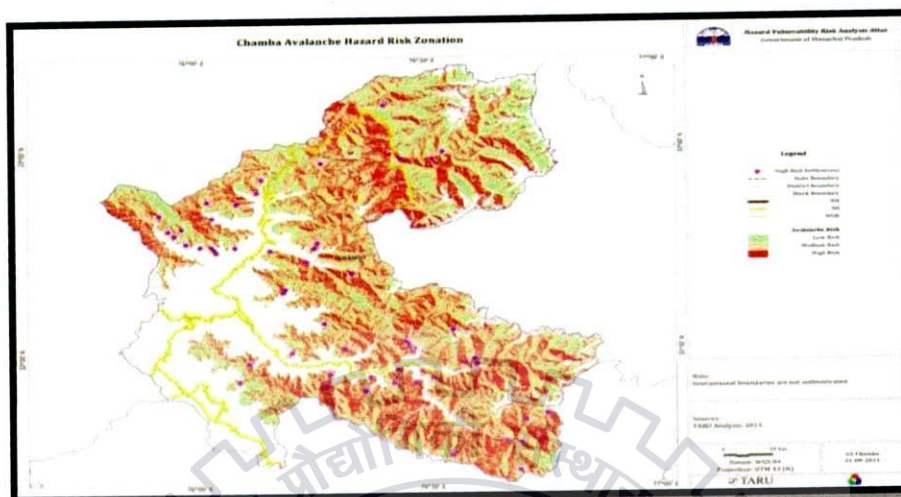


Figure 3.24: Map showing area under avalanche hazard in the district (Source: HPSDMA)

3.1.6 Shimla

General Profile: The total area of the Shimla district is 5,131 square kilometers and administratively Shimla is divided into 6 subdivisions, 21 tehsil and 10 development blocks. The district is located between latitude 30°45'10" and 31°4'40" North and longitude 77°10'E and 78°-19'E. Satluj is the major river of the district. The altitude varies from 1105 m to 3525 m from the mean sea level. The total population of district Shimla is 8,13,384. The population density of the district is 59 per sq km.

Hazard Profile of District: District Shimla is prone to different types of hazards both natural and manmade. The main hazards are earthquake, landslide, floods, forest fire and flash flood.

Earthquake	Landslide	Floods	Forest Fire	Avalanches	Overall Vulnerability
Very High	High	High	High	Medium	Moderate to high

Table 3.6: Hazard profile of district (Source: H.P. State Council for Science Technology)

Earthquake: Shimla district is prone to earthquake hazards. Total area of the district under seismic Zone IV and under seismic zone seismic Zone V is around about 99.10% and 0.90% respectively.

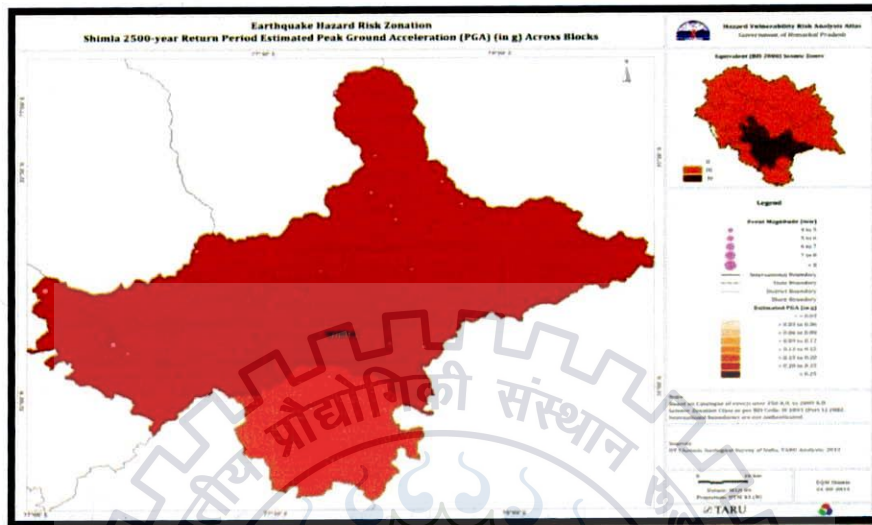


Figure 3.25: Map showing area under Earthquake hazard in the district (Source :HPSDMA)

Landslides: Landslide is most risk oriented hazard in district Shimla affecting the human life and property in many ways like damages to the houses, roads, communication network and agriculture. The areas vulnerable to very high, high and moderate landslide hazard are 890 sq kms, 3,439 sq kms and 767 sq kms respectively.

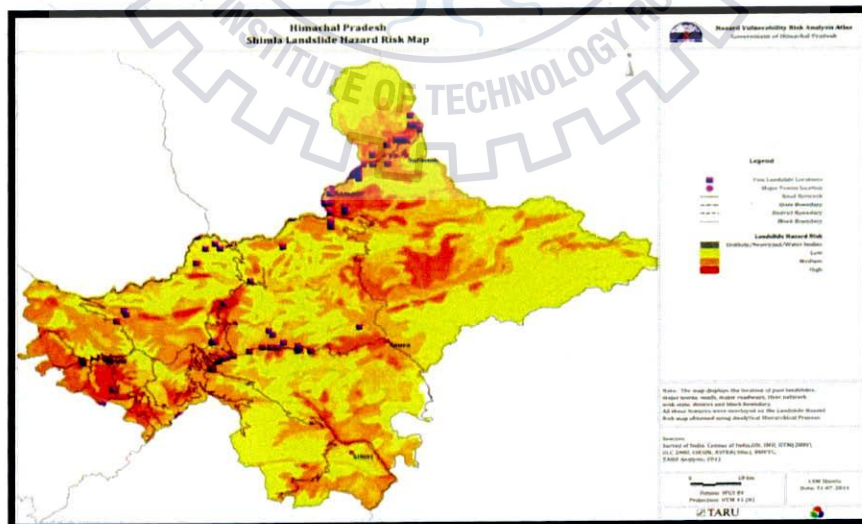


Figure 3.26: Map showing area under Landslide hazard in the district (Source :HPSDMA)

Floods/Flash Floods: Shimla district is very prone to flash floods. Satluj is the major river flowing in the district while Andhra, Pavvar, Nogali, Ganaviand other many are the tributaries of Satluj. Due to heavy rainfall results in flood in Shimla district

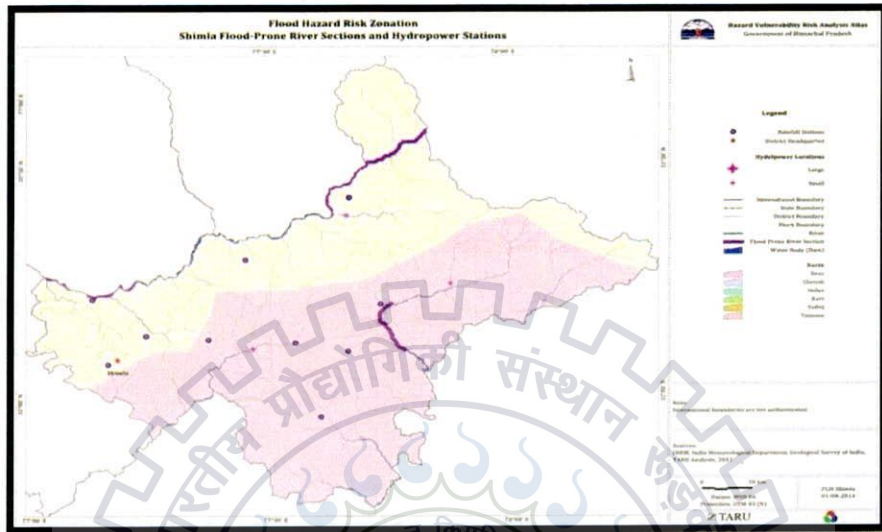


Figure 3.27: Map showing area under Flood hazard in the district(Source :HPSDMA)

Forest Fire: Forest area under Shimla district is around 3410sq kms.The forest fire incident occurs in the summer season from April to June. These incidents recorded heavy loss to eco system of the district.

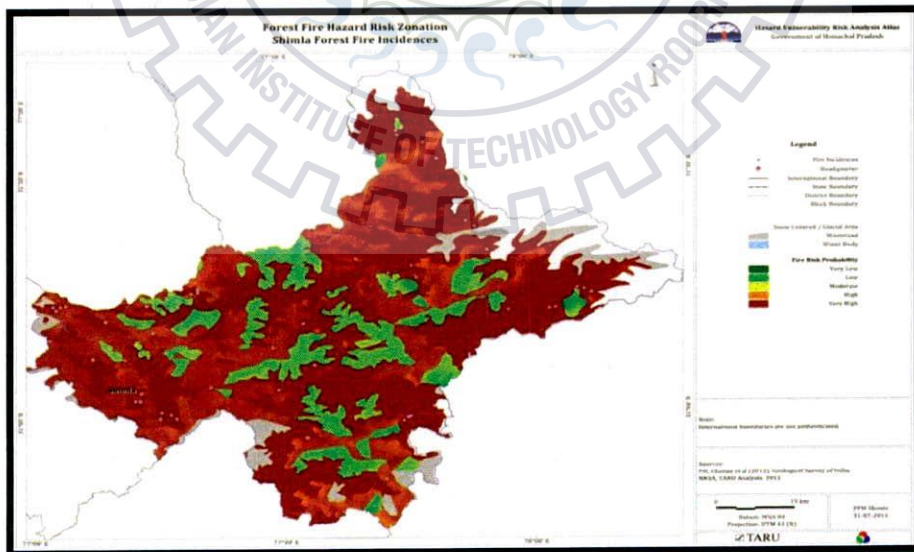


Figure 3.28: Map showing area under Forest Fire hazard in the district(Source :HPSDMP)

3.2 Assessment Model

Institutional capacity assessment (ICA) was based on six indicators that were used to establish initial benchmarks to measure the organizational, functional, and operational and development systems and processes of District Authority. These indicators were driven from Disaster Risk Reduction (DRR) mainstreaming areas. “The DRR areas are: 1) Legal and Institutional Processes and Policies (2) Public Awareness and Capacity Building (3) Critical Services and Infrastructure Resiliency (4) Emergency Preparedness, Response, and Recovery Planning and (5) Development Planning, Regulation, and Risk Mitigation.” Taking in account of these five core areas six indicators were set accordingly. The six indicators are Emergency Management, Technical Resources, Human Resources, Financial Resources, Legal Framework and Training and capacity building Programs.

These six indicators include all the aspects of Disaster Risk Reductions. The indicators are termed as Disaster Risk Reduction Indicators (DDRI) and explained as:

Human Resource: The indicator shows the human strength present and skills of employees working in the organizations.

Financial Resource: This indicator deals with funding system in the organization and how budgeting is done. It also includes the expenditure details.

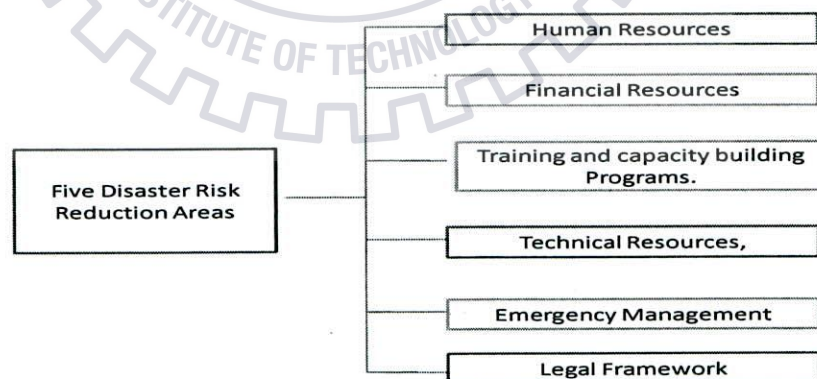


Figure 3.29: Detail of Institutional capacity assessment (ICA)

Training and capacity building Programs: It includes the Capacity building trainings, mock drills as well as the awareness activities conducted by organization.

Technical Resource: This indicator stands for the hardware and software capacity that required for the effective functioning of DDMA. It involves the various technical elements like Hazard, Risk and Vulnerability Analyses (HRVA) and various rescue equipments.

Emergency Management: This indicator involves the various processes that are required during emergency situation for the effective functioning of organizations.

Legal framework: It stands for the Policies and rule that are required for the functioning of organization. It also includes mainstreaming in disaster management field and various codes for making resilience environments.

3.2.1 Rank Assignment

Considering Disaster Risk Reduction Indicator (DRRI), a set of questionnaires was developed for each indicator and conditions were drafted for individual indicator. Each one conditions is scaled 0 to 5. After scrutiny set of baseline survey questions indicator was assigned some numerical value.

Indicators rating	Rating
Legal Farm work	a
Emergency Management	b
Training and Capacity Building Programs	c
Human Resource	d
Technical Resource	e
Financial Resource	f

Table3.7: Details of rank Assignment

Where,

a= Aggregate of evaluated questionnaire value for legal framework indicator.

b= Aggregate of evaluated questionnaire value for emergency management indicator.

c = Aggregate of evaluated questionnaire value for Training and capacity building Programs indicator.

d = Aggregate of evaluated questionnaire value for Technical resource indicator.

e =Aggregate of evaluated questionnaire value for Financial resource indicator.

Then numerical value of individual indicator was added to calculate rank of DDMA's.

$$\text{Rank Value} = (a+b+c+d+e+f)$$

3.2.3 Conditions for Ranking

The individual Rank value was calculated for each district DDMA and then the ranking was:

- 1) If rank value is highest, it is ranked first. It shows that district is more prepared in the field of disaster management.
- 2) If rank value is lowest, it is ranked last. It shows that the district is not prepared .
- 3) If rank value of the two districts is equal then the ranking is given on the basis of vulnerability of the district. Higher vulnerable district is ranked lower as compared to other one.



3.3 Survey methods

Survey for the institutional capacity assessment of DDMA incurred for four months. During this period all the district authorities were visited. The interviews were conducted to various responsible personnel of DDMA like Additional District Magistrate (ADM), District revenue officer (DRO) and Relief assistant.

4. DATA ANALYSIS AND OUTCOMES

Survey has been conducted in the identified District authorities .The primary data has been collected for all the six Disaster Risk Reduction Indicators .Aggregate value is given to all indicators .Rank of all the DDMA's has been calculated by adding the individual aggregate values of indicators .

4.1 Legal Framework Indicator

It stands for the Policies and rule that are required for the functioning of organization. It also includes mainstreaming in disaster management field. Questionnaires are prepared for the field survey related to this indicator and then rating is given on the bases of result analyzed.

DDMA	DDMA Functional	DDMA Structure accordance with Act	DDMA Indian codes (codes)	adhere standard (building plan	Disaster management plan	Aggregate Value(a)
Bilaspur	5	5	1	3	14	
Chamba	5	5	1	0	11	
Kangra	5	5	1	3	14	
Kullu	5	5	1	4	15	
Mandi	5	5	1	3	14	
Shimla	5	5	1	3	14	

Table 4.1: Details of value assign to Questionnaires of Legal framework indicator

Where;

0= Non existing

1 = Existing but no improvement made

2= Needs improvement

3=Moderate condition (little improvement required)

4=Good condition (No need of immediate improvement)

5= Excellent condition (capacity fully achieved)

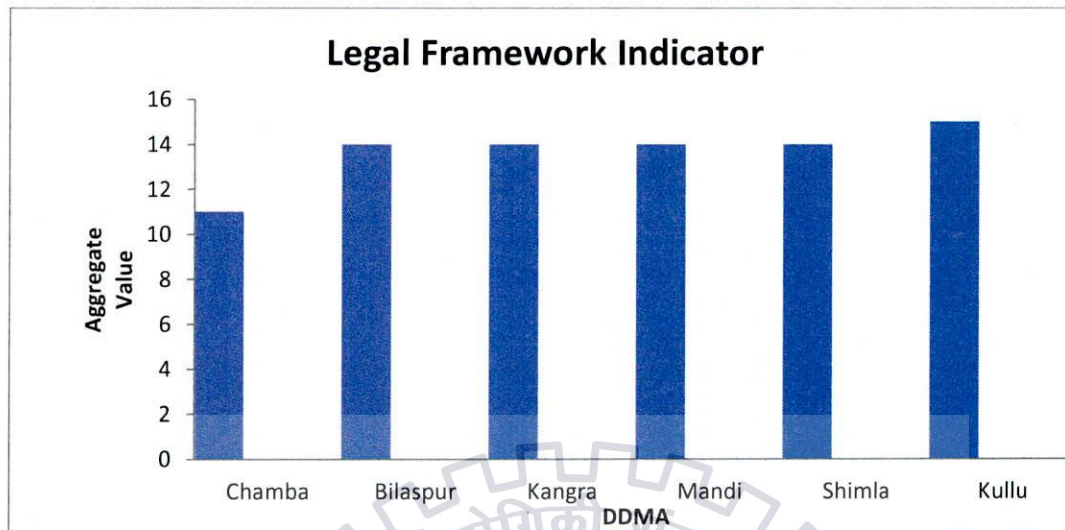


Figure 4.1: Performance of DDMA's for Legal framework indicator

It mandatory for district authorities to adhere the building codes but none of district is promoting safe construction codes. Chamba district do not prepared District disaster management plan, while other prepared DDMP in 2012, for this indicator DDMA Kullu has performed better as compared to others

4.2 Emergency Management Indicator

This indicator involves the various processes that are required during emergency situation for the effective functioning of district disaster management authority. Questionnaires are prepared for the field survey related to this indicator and then rating is given on the bases of result analyzed.

DDMA	EOC setup	Presence of IAG	EWS functional for multi hazard or for a particular hazard	EWS system connected with EOC	Aggregate Value(b)
Bilaspur	0	0	2	0	2
Chamba	0	0	2	0	2
Kangra	2	0	2	0	4
Kullu	2	5	2	0	9
Mandi	0	0	2	0	2
Shimla	3	0	2	0	5

Table 4.2: Details of value assign to Questionnaires of Emergency Management indicator

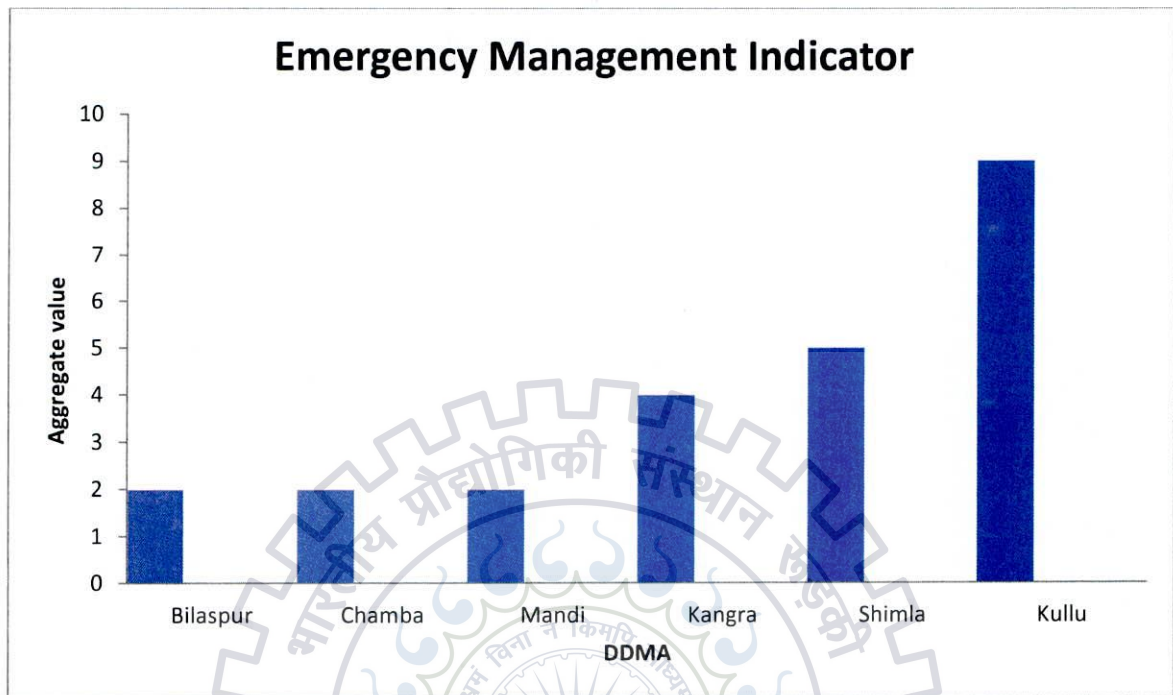


Figure 4.2: Performance of DDMA for Emergency Management indicator

On the basis of assign methodology Kullu District obtained maximum rating for the fact that it has some peculiar features like Inter-Agency Group (IAG) and Emergency Operation Center (EOC) which all districts lack. Since Kullu and Kangra has setup EOC but it is not fully functional while EOC in Shimla district is functional. None of district has connected their EOC with early warning system. Rests of districts are rated as per the quorum. For this indicator Kullu DDMA has performed better as compared to others.

4.3 Training and Capacity Building Programs Indicator

It also includes the Capacity building trainings, mock drills as well as the awareness activities done by DDMA

DDMA	Mock Drill	Capacity building training of Stakeholders	Public awareness program	School safety program	Aggregate Value(c)
Bilaspur	1	0	1	0	2
Chamba	0	1	0	1	2
Kangra	1	0	0	1	2
Kullu	1	1	1	0	3
Mandi	1	0	1	0	2
Shimla	1	1	1	0	3

Table 4.2: Details of value assign to Questionnaires of Training and Capacity Building Programs Indicator

Where,

0= No activity conducted

, 1= Activity Conducted

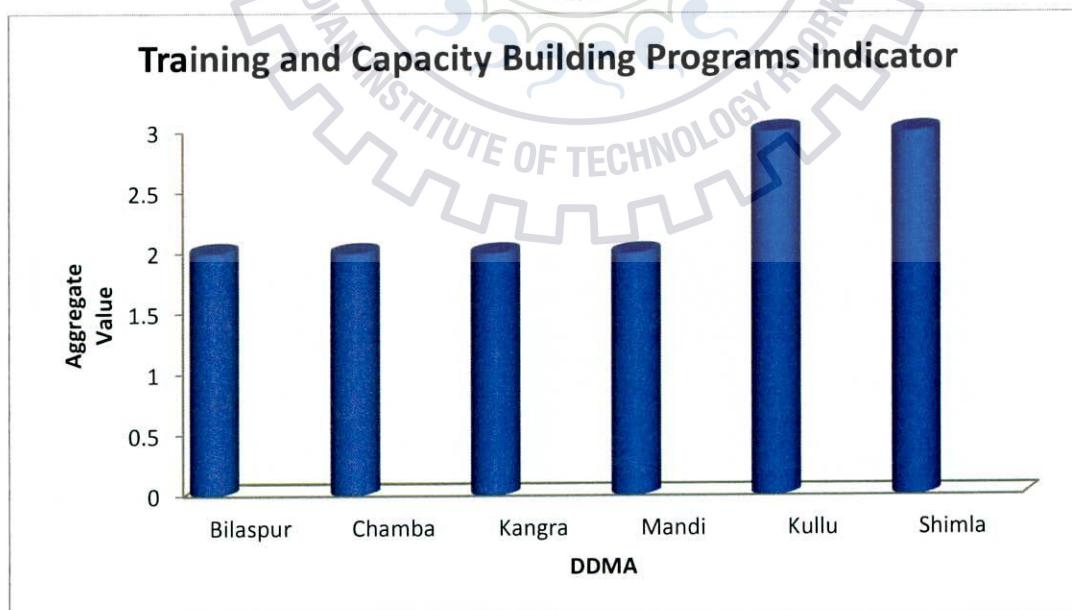


Figure 4.3: Performance of DDMA for Training and Capacity Building Programs Indicator

The all districts have conducted various programs at their level. Kullu and Shimla DDMA's are rated highest while others are rated below. For this indicator Kullu and Shimla have performed better than other districts.

4.4 Human Resource Indicator

This indicator shows the human strength present and skills of employees that are required for the effective functioning of district disaster management authority. Questionnaires are prepared for the field survey related to this indicator and then rating is given on the bases of result analyzed.

DDMA	Employees in DDMA	volunteer's dada base	Data base of experts trainings	Technical Expert	Aggregate Value(d)
Bilaspur	1	2	3	0	6
Chamba	1	0	0	0	1
Kangra	1	2	0	0	3
Kullu	1	4	0	0	5
Mandi	1	2	3	0	6
Shimla	1	4	3	0	8

Table 4.4: Details of value assign to Questionnaires of Human Resource indicator

Where, conditions are as per section 5.1

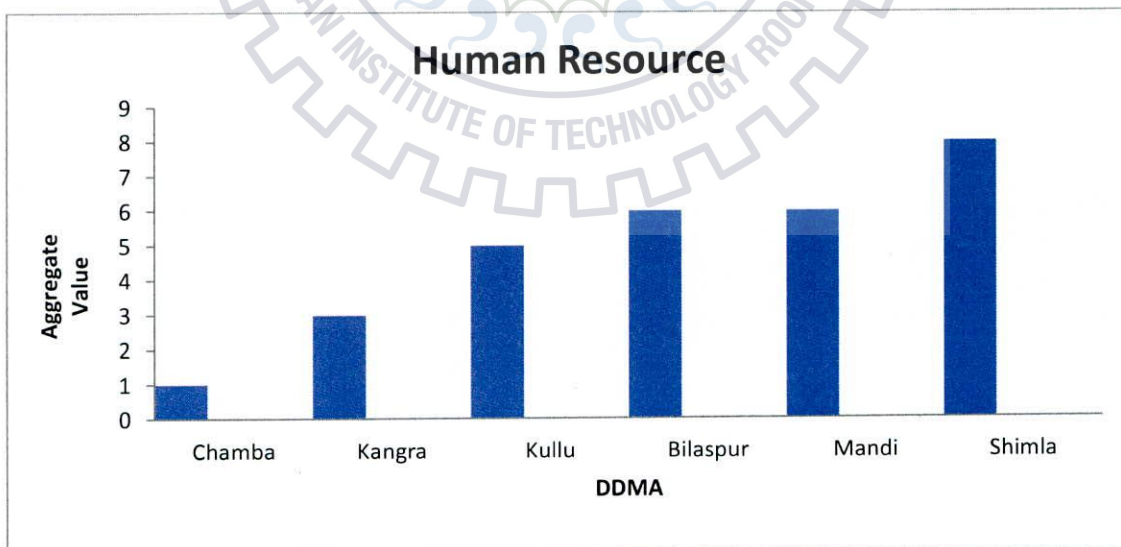


Figure4.4: Performance of DDMA's for Emergency Management indicator

None of the district has dedicated employees for DDMA. Only some Government personnel are temporarily assigned for basic operational purposes. So districts are given equal weightage. None of the districts have technical experts to take care of DDMA activities. Shimla district has updated volunteer database while other district lack of updated database. Mandi and Shimla districts have prepared data base of empanel personnel for capacity building trainings. For this indicator DDMA Shimla performed better as compared to others.

4.5 Technical Resource Indicator

This indicator stands for the hardware and software capacity that required for the effective functioning of DDMA. It involves the various technical elements like Hazard, Risk and Vulnerability Analyses (HRVA), website and various rescue equipments. Questionnaires are prepared for the field survey related to this indicator and then rating is given on the bases of result analyzed.

DDMA	HRVA mapping	Resource mapping	DDMA has its own website	Equipment and peripherals	GIS software or other software	Aggregate Value(e)
Bilaspur	0	3	0	3	0	6
Chamba	0	0	0	3	0	3
Kangra	0	3	5	3	0	11
Kullu	3	4	0	3	0	10
Mandi	0	3	0	3	0	6
Shimla	3	3	5	3	0	14

Table 4.5: Details of value assign to Questionnaires of Technical Resource indicator

Where, conditions are as per section 5.1

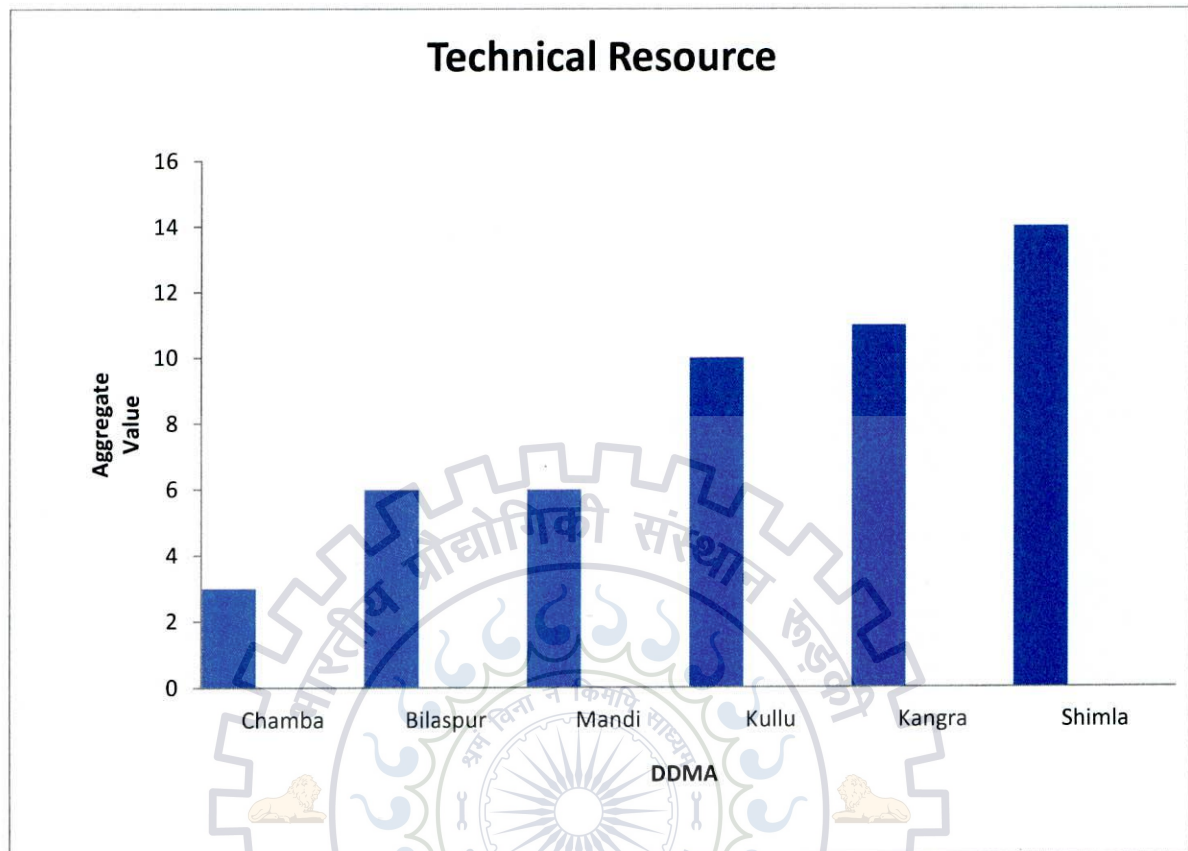


Figure 4.5: Performance of districts for Emergency Management

Shimla and Kullu district has conducted Hazard risk and vulnerability mapping. The level of HRVA is L1 i.e. macro level. Except Chamba district other districts have conducted resource mapping. Kullu district has updated resource inventory while other have done in 2012. All the districts have purchased various rescue equipments according to funds allocated so each district have assigned equal weightage for this. Shimla and Kangra districts have fully functional individual DDMA website. Considering all the factors Shimla district is rated highest, Kangra on second and Chamba at lowest level for this indicator

4.6 Financial Resource Indicator

State Authority gives funds to distinct authorities for activities such as awareness generation, capacity building trainings, preparation of training materials and for updating disaster management plans.

DDMA	Vulnerability	Population	Awareness Generation (in lakhs)	Capacity Building & Training of stakeholders (in lakhs)	Preparation of Training material (in lakhs)	DDMP (in lakhs)	DEOC (in lakhs)	Total (in lakhs)
Bilaspur	High to moderate	3,82,056	6	4	.5	4	20	34.5
Chamba	Very High	5,18,844	8	7	.5	7	20	42.5
Kangra	Very High	15,07,223	14	12	1	10	--	37
Kullu	Very High	3,81,571	5	5	.5	4	10	24.5
Mandi	Very High	9,99,518	11	5	1	8	--	25
Shimla	High to mod	8,13,383	10	8	1	8	--	27

Table 4.6: The details of funds available of each DDMA

The district wise funding detail is given as:

4.6.1 DDMA Bilaspur:

Total fund released in Financial year 2014-15 = Rs. 34.5 lakhs

Total fund released for awareness activities = Rs. 6 lakhs

Fund Expenditure on purchase of Equipments = Rs. 6 lakhs

Fund Expenditure on awareness activities = Rs. 50,000

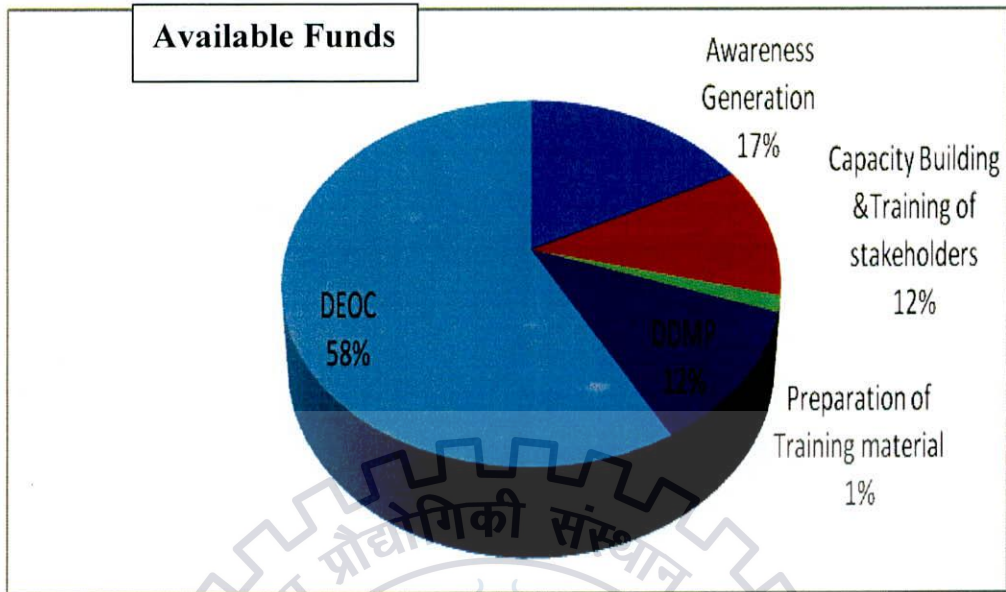


Figure 4.6: Available funds (percentage) for financial year 2014-15

Per capita available fund for awareness activities =Rs. 1.57

Per capita expenditure for awareness activities = Rs.0.13

The total expenditure =Rs. 6.5 lakhs

Funds remained unutilized

District received total amount of Rs. 34.5 lakhs but total expenditure is Rs. 6.5 lakh. Rest of funds remained unutilized. The remaining unutilized funds for awareness activities, preparation of training material, updating disaster management plans and DEOC are Rs.5.5 lakhs, Rs.0.5 lakh, Rs. 4lakhs and Rs.20 lakhs respectively.

4.6.2 DDMA Chamba

Total fund released in Financial year 2014-15 = Rs. 42.5 lakhs

Total fund released for awareness activities = Rs. 8 lakhs

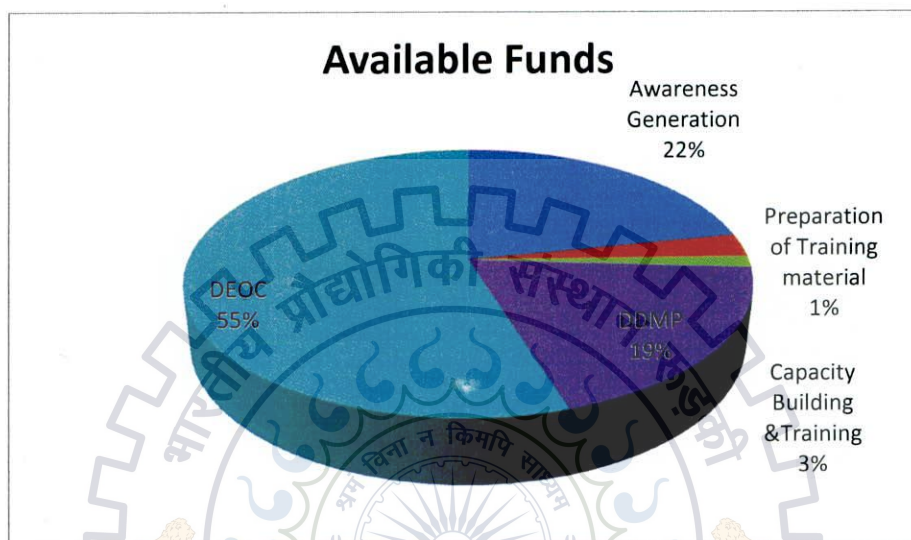


Figure 4.7: Available funds (percentage) for financial year 2014-15

Fund Expenditure on purchase of Equipments = Rs. 7 lakhs

Fund Expenditure on awareness activities = Rs. 45,000

Per capita available fund for awareness activities = 1.54

Per capita expenditure for awareness activities = Rs.0.11

The total expenditure = Rs. 7.45 lakhs

Funds remained unutilized

District received total amount of Rs. 42.5 lakhs but total expenditure is Rs. 7.45 lakh. Rest of funds remained unutilized. The remaining unutilized funds for awareness activities, preparation of training material, updating disaster management plans and capacity building are Rs.7.55lakhs, Rs.1 lakh, Rs. 10 lakhs and Rs5 lakhs respectively.

4.6.3 DDMA Kangra

Total population of Kangra = 15, 07,223

Total fund released in Financial year 2014-15 = Rs. 34.5 lakhs

Total fund released for awareness activities =Rs.14 lakhs

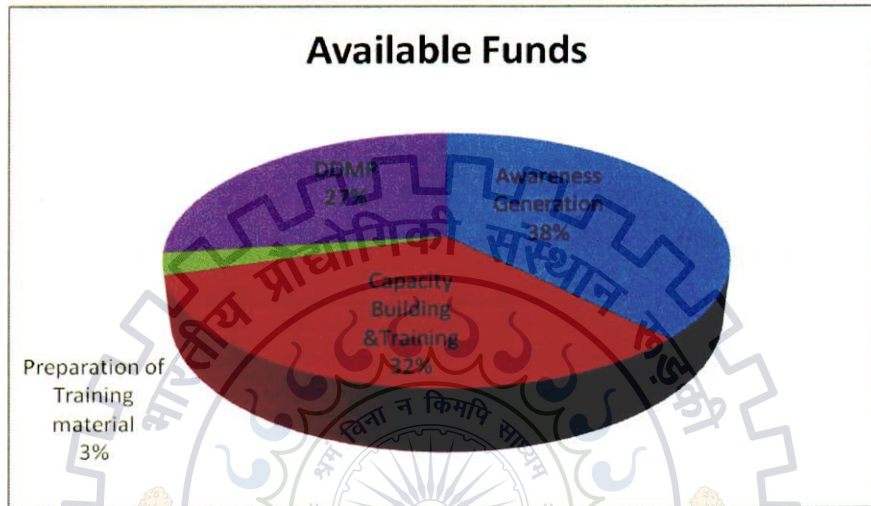


Figure 4.8: Available funds (%) for financial year 2014-15

Fund Expenditure on purchase of Equipments = Rs. 6.5 lakhs

Per capita available fund for awareness activities = Rs.0.92

Fund Expenditure on awareness activities = Rs. 45,000

Per capita expenditure for awareness activities= Rs.0.029

The total expenditure =Rs. 6.95lakhs

Funds remained unutilized

District received total amount of Rs. 37 lakhs but total expenditure is Rs. 6.95 lakhs. Rest of funds remained unutilized .The remaining unutilized funds for awareness activities, preparation of training material, updating disaster management plans and Capacity building are Rs.13.55 lakhs, Rs.1 lakh, Rs. 10 lakhs and Rs.5.5 lakhs respectively.

4.6.4 DDMA Kullu

Total population of Kullu = 3, 81,571

Total fund released in Financial year 2014-15 =24.5lakhs

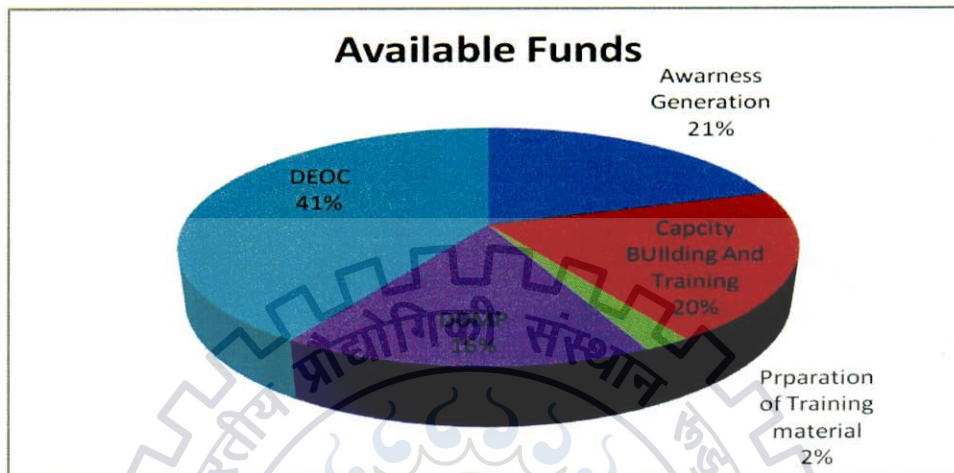


Figure 4.9: Available funds (%) for financial year 2014-15

Fund Expenditure on conducting mock drill = Rs. 21,000

Fund Expenditure on conducting workshop for Stakeholders = Rs.1.38 lakhs

Fund Expenditure on Equipment = Rs.10 lakhs

Total fund released for awareness activities = Rs.5lakhs

Fund Expenditure on awareness activities = Rs.29, 000

Per capita available fund for awareness activities = Rs.1.31

Per capita expenditure for awareness activities	= Rs.0.076
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Total Expenditure of District =11.88lakhs

Funds remained unutilized

District received total amount of Rs. 24.5 lakhs but total expenditure is Rs. 11.88 lakh. Rest of funds remained unutilized .The remaining unutilized funds for awareness activities, preparation of training material and updating disaster management plans are Rs.4.71 lakhs, Rs.0.5 lakh and Rs. 7 lakhs respectively.

4.6.4 DDMA Mandi

Total population of Mandi = 9, 99,518

Total fund released in Financial year 2014-15 =25lakhs

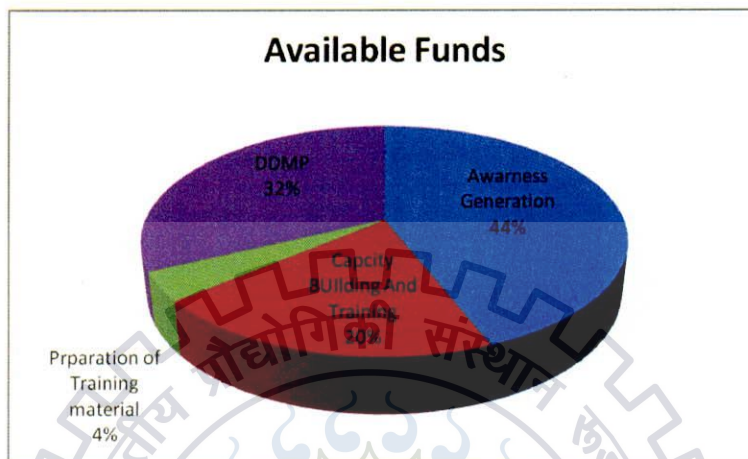


Figure 4.10: Available funds (%)for financial year 2014-15

Fund Expenditure on Equipment	=Rs.5 lakh
Fund Expenditure on conducting mock drill	= Rs 16,000
Total fund released for awareness activities	= Rs 11 lakhs
Fund Expenditure on awareness activities	= Rs 5.5lakhs
Per capita available fund for awareness activities	= Rs 1.10
Fund Expenditure on awareness activities	= Rs. 45,000

Per capita expenditure for awareness activities	= Rs.0.52
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Total Expenditure of District =10.66lakhs

Funds remained un-utilized: District received total amount of Rs. 25 lakhs but total expenditure is Rs. 10.66 lakh. Rest of funds remained unutilized .The remaining unutilized funds for awareness activities, preparation of training material and updating disaster management plans are Rs.5.5 lakhs, Rs.1lakh and Rs. 7 lakhs respectively

4.6.6 DDMA Shimla

Total population of Shimla = 8, 13,384

Total fund released in Financial year 2014-15 =Rs.27lakhs

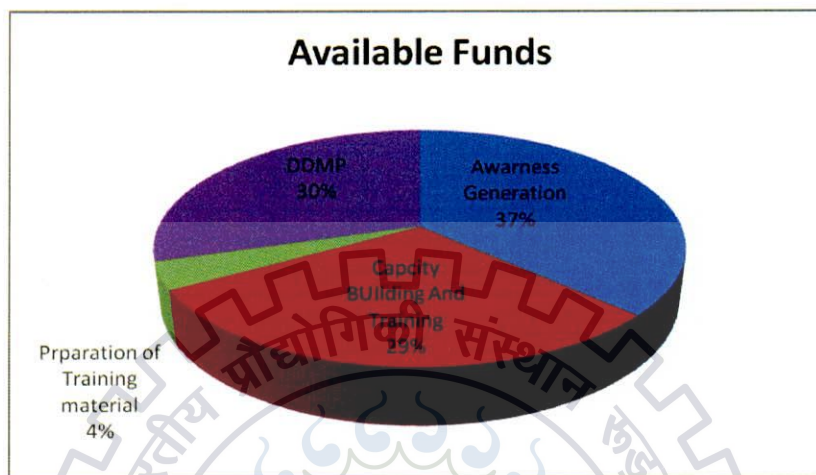


Figure 4.11: Pie chart showing the available funds for DDMA Shimla

Fund expenditure on preparedness activities =Rs.2.0 lakhs

Fund expenditure on Mitigation = Rs.2.0lakhs

Fund expenditure on public awareness = Rs.1.5 lakhs

Fund Expenditure on Equipment = Rs.5 lakh

Per capita available fund for awareness activities = Rs.0.85

Fund Expenditure on awareness activities = Rs. 45,000

Per capita expenditure for awareness activities = Rs.0.18

Total Expenditure of District =10.5lakhs

Funds remained unutilized District received total amount of Rs. 22 lakhs but total expenditure is Rs. 10.50 lakh. Rest of funds remained unutilized .The remaining unutilized funds for awareness activities, preparation of training material and updating disaster management plans are Rs.8.5 lakhs, Rs.1 lakh and Rs. 7 lakhs respectively.

Almost all the district authorities have not spent funds available for the financial year 2014-15. Most of them total expenditure ranges close to 1/3 of their available fund except Mandi and Kullu districts having expenditure near about half of the available funds. For Financial resource indicator the numerical value is given on the basis for drafted conditions to each District Authorities as:

DDMA	Fraction of fund utilized out of total fund	Assign Value for Financial Resources Indicator
Bilaspur	.20	1
Chamba	.17	1
Kangra	.18	1
Kullu	.42	3
Mandi	.48	3
Shimla	.38	2

Table4.7: Details of Fraction of fund utilized out of total fund

Where,

0= Total funds remained unused

1 = $\frac{1}{4}$ Fraction of fund utilized out of Total fund

2 = $\frac{1}{3}$ Fraction of fund utilized out of Total fund

3= $\frac{1}{2}$ Fraction of fund utilized out of Total fund

4= $\frac{2}{3}$ Fraction of fund utilized out of Total fund

5 = Full utilization

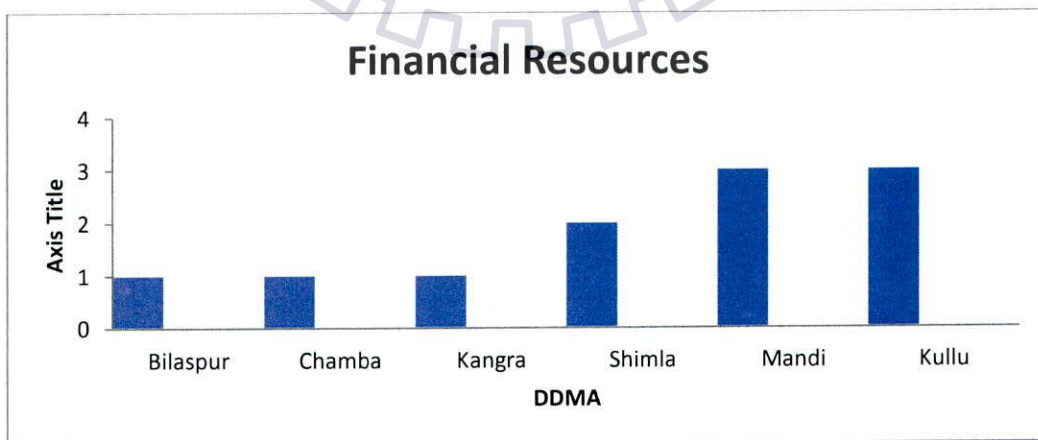


Figure 4.12: Performance of DDMA's for Financial Resource indicator

None of the district authorities have updated their DDMP and the available fund remained unutilized. For this indicator DDMA Mandi and Kullu performed better than other district, whereas Bilaspur and Chamba performed poor.

4.7 Calculation of Rank Value

Rank value is the sum of aggregated value of six indicators.

Rank Value= Aggregated value Legal framework indicator + Aggregated value Emergency Management Indicator + Aggregated value Training and Capacity Building Programs Indicator + Aggregated value Human Resource Indicator+

District-Wise Rank value for DDMA's

For DDMA Bilaspur, Rank Value =14+2+2+6+6+1 =31

For DDMA Chamba, Rank Value=11+2+2+1+3+1 =20

For DDMA Kangra, Rank Value =14+4+2+3+11+1 =35

For DDMA Kullu, Rank Value =15+9+3+5+10+3 =45

For DDMA Mandi, Rank Value =14+2+2+6+6+3 =33

For DDMA Shimla, Rank Value=14+5+3+8+14+2 =46

4.7.1 Assign Ranking

According to the evaluated rank value, ranking is given to the DDMA's.

Ranking	District	Rank value
1	Shimla	46
2	Kullu	45
3	Kangra	35
4	Mandi	33
5	Bilaspur	31
6	Chamba	20

Table 4.7: Ranking of DDMA's

Rank value for DDMA Shimla is highest, it is ranked first while other are ranked in according to evaluated rank value. DDMA Chamba is ranked lowest. The results show that working condition of DDMA Chamba is very poor. While working condition of district authorities of Bilaspur, Mandi and Kangra is moderate. DDMA Shimla and Kullu is better performer compared to others.

4.8 Outcomes

The six disaster risk reduction indicators are evaluated for each authority. DDMA Chamba secure lowest secure in spite of very high vulnerability. This exhibits the poor preparedness level district Chamba. DDMA Shimla and Kullu performed better than other districts, while rest of all there district also exhibits the poor condition in the field of disaster management. These six study domains are classified on priority levels as:

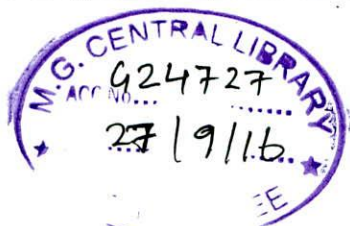
Priority levels	Higher concern	Moderate Concern	Lower Concern
DDMA	Chamba	Bilaspur , Mandi and Kangra	Shimla and Kullu

Table 4.8: Level of priorities

DDMA Chamba required dedicated efforts to improve its conditions regarding DRRM .While district authorities of Bilaspur, Mandi and Kangra have to revise their capacities. Shimla and Kullu have to upgrade their strengths. For each district authority existing strengths and loopholes mentioned in the Table 4.8.

Some of the key gaps have been identified which are:

1. Inadequate understanding of the provisions of the Law by district authorities and other stakeholders particularly on their respective roles.
2. Difficulties in introducing the mainstreaming process in plans, programs and projects.
3. Lack of Disaster Risk Reduction and Management (DRRM) plans and absence of technical capacity for DRRM planning.
4. Lack of capacity development strategies at local level.
5. Inadequate capacities in several key functional areas of Disaster Risk Reduction (DRR). The key areas such as Emergency Communication, Public Awareness and Capacity Building and Knowledge Management.



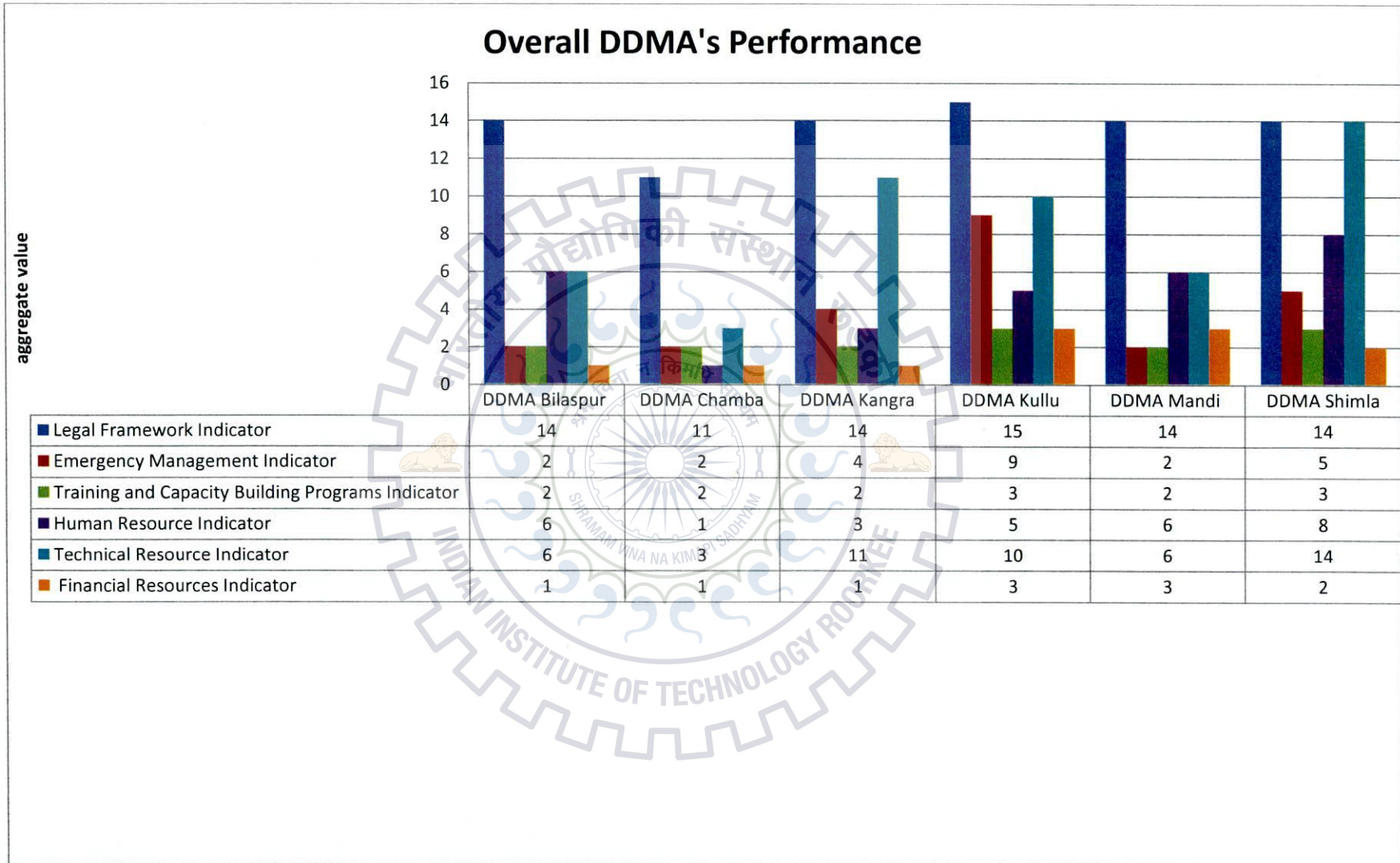


Figure 4.13: Overall DDMA's Performance

Districts	Study Rank & Rank Value	Existing Strengths in DDMA	Existing Loopholes
Shimla	Study Rank 1	<ul style="list-style-type: none"> • HRVA has been done. • DEOC has been setup • Public awareness activities has been conducted • Database of volunteers has been prepared • Database of empanel person for capacity building training. • Rescue equipments are available. • Resource mapping has been done. • Mock drill has been conducted. • Early warning system for flood incidents. 	<ul style="list-style-type: none"> • No inter agency group. • No IEC material prepared. • Lack of Capacity building for stakeholders. • No full time or part time employees. • Funds are not distrusted to NGO's and CBO's.
	Rank value 46		
Kullu	Study rank 2	<ul style="list-style-type: none"> • Hazard Risk Vulnerability Analysis of District has been conducted. • Resource mapping has been done. • Mock drill has been conducted. • Capacity building training of panchayat representative has been done for three days. • Database of volunteer is prepared. • Early warning system for floods is functional. • Funds are allocated to different stakeholders for purchase of rescue equipment. 	<ul style="list-style-type: none"> • Lack of public awareness activities. • No IEC material is prepared. • Data base of emplaned persons for capacity building training is not prepared. • It has no separate official website. • No full time or part time employees • Funds are not distrusted to NGO's and CBO's. • Emergency operation center should be made functional and effective.
	Rank value 45		

Kangra	Study rank 3	<ul style="list-style-type: none"> • DDMA has website. • Resource mapping has been done. • Capacity building training for stakeholders has been conducted. • Emergency operation center is set up. • Early warning system for floods is functional in the district. • Resource mapping has been done. • Rescue equipments are available. • Database of volunteers has been prepared. 	<ul style="list-style-type: none"> • Hazard Risk Vulnerability Analysis of District has not conducted • Inter agency group is not established. • No IEC material is prepared. • No full time or part time employee. • Funds are not distrusted to NGO's and CBO's. • Data base of emplaned persons for capacity building training is not prepared. • Lack of public awareness activities.
	Rank value 35		
Mandi	Study rank 4	<ul style="list-style-type: none"> • SMS portal of early warning system for flood incidents. • NYK volunteer database has been prepared. • Rescue equipments are available. • Awareness program has been conducted in 10 blocks. • Mock drill has conducted on the day IDDR. • Database of empanel person for capacity building training maintained. • Resource mapping is done. 	<ul style="list-style-type: none"> • HRVA has been not done • Emergency operation center is not setup. • No inter agency group. • No IEC material has been prepared. • Lack of Capacity building for stakeholders. • No full time or part time employee. • No DDMA website. • Fund has not distrusted to NGO's and CBO's. • Lack of public awareness activities.
	Rank value 33		

Bilaspur	Study rank 5	<ul style="list-style-type: none"> ▪ DDMA has done resource mapping of the district as required by SDRN. ▪ Database of volunteers has been prepared. ▪ Block level mock drills as preparedness activity has been conducted. ▪ Rescue equipments are available. ▪ Early warning system for floods is functional. 	<ul style="list-style-type: none"> ▪ Hazard Risk Vulnerability Analysis of District has been not conducted. ▪ Emergency operation center is not setup in the district. ▪ There has been no inter agency group. ▪ DDMA has not prepared any IEC material for public awareness. ▪ Capacity building trainings for different stakeholders has not conducted. ▪ There is no full time or part-time dedicated employee of Authority. ▪ It has no separate official website ▪ Fund is not distrusted to NGO's and CBO's. ▪ Lack of public awareness activities.
	Rank value 31		
Chamba	Study rank 6	<ul style="list-style-type: none"> • Conducted mock drills. • It has prepared the data base of volunteers. • Rescue equipments are available. • Early warning system for floods is functional in the district. • Training of NYK, Home guard volunteers has been conducted for seven days. 	<ul style="list-style-type: none"> • Hazard Risk Vulnerability Analysis of District has not conducted. • Resource mapping has not done in the district • Emergency operation center is not setup. • No inter agency group established in the district. • No IEC material has been published • Lack of Capacity building training for different stakeholders of the DDMA. • There is no full time or part-time dedicated employee of Authority. • It has no separate official website Fund is not distrusted to NGO's and CBO's. • Lack of public awareness activities. • DDMP is not available.
	Rank value 21		

Table 4.9: Details of existing strengths and loop holes of DDMA's

6. RECOMMENDATIONS

Based on the survey results, ten disaster risk reduction recommendation are compiled on the basis of following protocols.

Hazard Risk and Vulnerability Analysis (HRVA)

HRVA is a prominent tool to evaluate existing risk in the community. It calculates possible hazards of the assigned domain and on the basis of vulnerability, subsequent risk is mapped which finally recognizes the potential risk zones in the region. Recommendation for relevant DDMA's on the basis of HRVA protocol is inclusive of the fact that since the DDMA's Bilaspur, Kangra, Mandi and Chamba have yet not performed their macro-level HRVA, they need to undertake efforts for the same, whereas DDMA's of Shimla and Kullu have completed macro-level HRVA so they should advance to the block level HRVA.

Emergency Communication

During disaster situation failures of communication system hinders response activities. It crucial to have Emergency Operation Centre (EOC) at the district level to provide all channels to encourage Humanitarian Supply Chain Management (HSCM) and other relief efforts. A District EOC should be equipped with all modern technologies like HAM Radio, VSAT and Satellite phones. DDMA's of Bilaspur, Chamba and Mandi need to install EOC and authorities of Kangra, Kullu and Shimla need to periodically test and upgrade their EOC equipment.

Inter-Agency Group (IAG) Coordination

Developing resilience environment in the district IAG coordination is an important tool. The role of IAG is mention in Disaster Management Act 2005. IAG is a platform where GO-NGO works to gather. District Authorities of Bilaspur, Mandi, Chamba, Kangra and Shimla should facilitate establishment of a functional IAG in their districts.

Information Education and Communication (IEC) Materials

For creating awareness regarding disasters, IEC materials are significant medium for the purpose. In course of preparing of the contents multidisciplinary approach should be adopted. It should be simple and easy to understand. All six DDMA's should publish IEC material.

Capacity Building Training

For better coordination during response activities capacity building training of different stakeholders should be conducted. All six DDMA's should regulate Capacity Building Training in their districts.

Build Human Resources and Leadership Trainings

Disaster Management requires individuals from multi-disciplinary backgrounds. It is obligatory to have skilled person for the purpose. Therefore proper module for training should be procured. All six DDMA's should appoint full time experts of disaster management field.

Capacity Development for Resource Mobilization and Promotion of funds Utilization

Disaster Authorities receives funds from various schemes form state as well as national level. There should be strategies for fund utilization and promotion of resource mobilization. All DDMA's should make a pathway for the same.

Knowledge Management adoption

There is need for a knowledge sharing platform on DM and to facilitate interaction and dialogue with related areas of expertise. This could be achieved by developing individual DDMA website. Authorities of Bilaspur, Kullu, Mandi and Chamba need to develop dynamic website for subsequent knowledge sharing.

Linkage with ongoing flagship programs

All the development schemes should be pragmatic, incorporating the awareness of local disaster risk and vulnerability and also ensure that the schemes have addressed these concerns and included specific provisions for mitigating. Authorities should link themselves with such programs.

Funding to local organizations

Local organizations work at grass root level. These organizations are more aware about the local hazards and also have local human strength to perform small mitigation projects. It also helps in creating inventory at local level. Necessary action should be taken for allocation of funds to the local organization organizations.

7. CONCLUSION

Himalayan States are most vulnerable region for numerous hazards. Earthquake, landslide and flash floods are common incidents in this region. During recent time various prediction are published regarding the vulnerability of Himalayan States for the massive destruction in future time. It is an alarming situation for the governments as well to the individuals.

This study has been conducted in the six districts of Himachal Pradesh. Out of six districts, overall vulnerability of four districts is very high. These are Chamba, Kullu, Mandi and Kangra. The three key issues have been identified during study .1) utility of funds: Each district has sufficient funds but expenditures of funds are below standards. Authorities are utilizing fraction of total available funds.2) Lack of Human Resource: None of the authority has dedicated full time employee.3) Intention of the Authorities for Disaster Management: The approach of authorities regarding disaster management is very ordinary.

Study results shows that authorities have limited capacities related to preparedness, prevention and mitigation activities. Recommendations have been given for authorities on the basis of identified existing loops of district authorities.

For implementing DM holistic approach, State Authority should appoint experts at state as well as at district level and should take initiative for capacity building of different stakeholders. The stakeholders working in the field of DM should adopt the capacity development strategies.

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