



# TRAINING NEEDS ASSESSMENT

in Disaster Risk Reduction  
and Climate Change  
Adaptation





# **Training Needs Assessment in Disaster Risk Reduction and Climate Change Adaptation**

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# Acknowledgement

This study was undertaken on the initiative of 'United Nations Development Programme' (UNDP) in Himachal Pradesh as a part of their 'Enhancing Institutional and Community Resilience to Disasters and Climate Change (2013-2017)', under GOI-UNDP Country Programme Action Plan (2013-2017). We thank the Government of Himachal Pradesh for taking this initiative. Special Secretary, Revenue Department, Government of Himachal Pradesh guided us throughout and we appreciate receiving his able guidance. This report is an addendum to the earlier report on Training Needs Assessment for Stakeholders in Disaster Management, 2011. It also takes into account the recommendations of the State-level Consultation Workshop 'Training Needs Assessment for stakeholders in Disaster Risk Reduction and Climate Change Adaptation' organized by UNDP and Revenue Department, Government of Himachal Pradesh on 25 April 2014 at Himachal Pradesh Institute of Public Administration (HIPA), Fairlawns, Shimla. Experts gave valuable comments on this occasion which have been incorporated in this report. We extend our heartfelt gratitude to all those who participated in these events and gave their valuable comments. We acknowledged Mr. Manas Dwivedi, State Project Officer, UNDP for arranging logistics and providing documentation. We also place on record the excellent support provided by all the state level officers of various departments, training institutes and their faculty members, elected representatives and other universities who shared their experiences and suggestions.

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# Executive Summary

The Training Needs Assessment in Disaster Risk Reduction and Climate Change Adaptation report is built on the vision of building capacities of various stakeholders on disaster risk reduction and climate change adaptation with the objective of incorporating risk reduction in development. It is increasingly being recognized that the Himachal Pradesh is highly vulnerable to the natural and man-made disasters, impacts of climate change and climatic vulnerability due to its hilly terrain and fragile ecological systems. This study seeks to document the capacity building strategy to address the existing capacity gaps with respect to DRR and CCA in a systematic and time bound manner.

In order to understand the impact of disasters and climate change on vulnerable communities of Himachal Pradesh, an extensive review of available literature has been conducted to take stock of the work being done by state governments, NGOs, research institutes and international organizations to address issues of climate change. A consultative workshop was conducted on 25 April 2014 in Shimla where representatives from various Departments, NGOs, technical and academic institutions participated and provided inputs on CCA training needs through detailed discussions and a survey questionnaire. Based on the first set of responses, preliminary list of Training Needs for CCA was prepared and shared with the stakeholders in a validation workshop on 6 June 2014. Building upon the DM TNA, based on literature review of various initiatives being carried out in the State on DRR and CCA along with a detailed analysis of the institutional setup and policy environment for DRR and CCA in the state, institutional capacities to address the training needs and responses obtained through the consultations, a consolidated DRR and CCA TNA report is prepared.

The Training Needs Assessment report is an addendum to the earlier TNA report. In 2012, under the GOI-UNDP Disaster Risk Reduction Programme (2009-2012) a TNA for stakeholders in Disaster Management in HP was conducted by State Council for Science, Technology and Environment, and the DM Cell of the Revenue Department of HP. For this reason, this report does not contain detailed introductory sections that have been covered in the TNA report. The main objective of the TNA assignment was to undertake a training needs assessment that will inform the formulation of a capacity building strategy to address the existing capacity gaps with respect to DRR and CCA in a systematic and time-bound manner. This would provide a roadmap for strengthening of training institutions through development of training modules and conduct of Training of trainers to address capacity gaps of specific target groups. It is hoped that this report will serve the purpose of building capacities of various stakeholders on disaster risk reduction and climate change adaptation.

# Contents

Chapter 1	
Introduction	14
1.1 Background	14
1.2 Climate Change – Issues of Concern	15
1.3 DRR and CCA	16
1.4 Need of TNA Pertaining to Disaster Risk Reduction and Climate Change Adaptation In Himachal Pradesh	16
1.5 Assessment Process	17
Chapter 2	
Disaster and Climate Change Risk Profile of HP	19
2.1 State’s Profile	19
2.2 Hazard and Vulnerability Analysis	25
2.3 Current Climate Change Trends in Himachal Pradesh	37
2.4 Climate Change Vulnerability- Current & Future Projections	44
Chapter 3	
CCA and DRR Policy Environment and Institutional setup	47
3.1 Institutional and Legal Mechanism in India	47
3.2 Institutional and Legal Mechanism in Himachal Pradesh	49
3.3 Institutional Setup for Climate Induced Hazards in Himachal Pradesh	54
3.4 State level initiatives on CCA and DRR	60
3.5 An overview of ongoing interventions	63
Chapter 4	
Training Needs Assessment	69
4.1 Training Needs Assessment	60
4.2 TNA Objectives	69

4.3	Methodology	70
4.4	Gaps and Lessons Learned	71
4.5	Assessment Limitations	73
4.6	Outputs	73
Chapter 5		
	SWOT analysis of Institutional set up from a DRR and CCA perspective	74
Chapter 6		
	Mapping of Institutes for DRR and CCA training	102
Chapter 7		
	Training Needs in DRR and CCA	119
7.1	Identification of Gaps in Training Needs	119
7.2	Training required by Departments	120
7.3	Sector specific training needs to perform Climate Induced Hazards/CCA	121
Chapter 8		
	Strategy for DRR and CCA Training in HP	131
	Database of Training Institutes and Courses	183
	Bibliography	215
	Annexure	218
	Annexure 1: TNA consultation workshop: Agenda & List of participants with contact information	218
	Annexure 2: TNA Questionnaire	223
	Annexure 3: List of Departments/institutions consulted	229
	Annexure 4: List of training institutions: Currently offering courses in DRR & CCA, Potential Institutes whose capacities could be built to offer DRR & CCA trainings	231

# List of Tables

- Table 1: Literacy Status in Himachal Pradesh
- Table 2: District-wise Hazard Threat in Himachal Pradesh
- Table 3: Distribution of Population, Decadal Growth Rate, Sex-Ratio and Population Density
- Table 4: Growth in Urban & Rural Population in Himachal Pradesh
- Table 5: Winter Monsoon and Annual Air Temperature in Himachal Pradesh
- Table 6: Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis of institutional set up from a DRR and CCA perspective
- Table 7: List of Training Institutes in Himachal Pradesh
- Table 8: Sector Specific Training Needs
- Table 9: Short and long term individual level capacity development modes for public, private and civil society organizations and institutions
- Table 10: Time bound Action Plan- 2014-2019



# List of Figures

- Figure 1: Digital Elevation Model
- Figure 2: Drainage Network of Himachal Pradesh
- Figure 3: Agro-climatic Zones of Himachal Pradesh
- Figure 4: Land Use in Himachal Pradesh
- Figure 5: Soil Classification Map of Himachal Pradesh
- Figure 6: Earthquake Hazard Map
- Figure 7: Landslide Hazard Map
- Figure 8: Vulnerability & Risk Zones of Himachal Pradesh (Villages)
- Figure 9 (i): Total Seasonal Precipitation over Shimla
- Figure 9 (ii): Total Seasonal Snowfall (Equivalent to mm or water) over Shimla
- Figure 9 (iii): Beginning and end of Snowfall Season at Shimla
- Figure 10: 110 Years Annual Rainfall in Shimla
- Figure 11: District-level Mapping of Adaptive Capacity at Global level in Himachal Pradesh
- Figure 12: District-level Mapping of Climate Sensitivity Index (CSI)
- Figure 13: District-level Mapping of Climate Sensitivity Index (CSI) for India
- Figure 14: District-level Mapping of Climate Change Vulnerability (Exposure)
- Figure 15: District-level Mapping of globalization Vulnerabilit
- Figure 16: Capacity Development Process

# List of Abbreviations

AGiSAC	Aryabhata Geo-informatics & Space Application Centre
BEE	Bureau of Energy Efficiency
BICAT	Basin wise Integrated Catchment Area Treatment
CAMPA	Compensatory Afforestation Management and Planning Authority
CAT	Catchment Area Treatment
CBO	Community Based Organizations
CDD	Community-Driven Development
CEIA	Cumulative Environment Impact Assessment
CERC	Central Electricity Regulatory Commission
CLAP	Community Led Assessment, Awareness, Advocacy & Action Programme
CSI	Climate Sensitivity Index
CV	Coefficient of Variation
DEST	Department of Environment, Science & Technology
DOM	Degradable Organic matter
ECBC	Energy Conservation Building Code
EF	Emission Factor
EIA	Environment Impact Assessment
EMAP	Industry Energy Management Action Programme
EMP	Environment Management Plan
EPS	Electric Power Survey ER Emission Reductions
ET	Evapo-Transpiration
FSI	Forest Survey of India
GCM	Global Circulation Models
GHG	Green House Gas
GHNP	Great Himalayan National Park
GIS	Geographic Information System
GLOF	Glacier Lake Outbursts Floods
GtC	Gigatons of Carbon
GWh	GigaWatt per hour
HadAM	Hadley Atmospheric Model
HadCM	Hadley Coupled atmosphere-ocean Model

HadRM	Hadley Regional Climate Model
HIMUDA	HP Housing and Urban Development Authority
HPSEB	Himachal Pradesh State Electricity Board
IAEA	International Atomic Energy Agency
IHBT	Institute of Himalayan Bio-resource Technology
IITM	Indian Institute of Tropical Meteorology
IMD	India Meteorological Department
INCCA	Indian Network for Climate Change Assessment
IPCC	Intergovernmental Panel on Climate Change
ISM	Indian Summer Monsoon
IWDP	Integrated Watershed Development Project
KLD	Kilo Litres per Day
kwh	kilowatt-hour
LISS-III	Linear Imaging Self Scanning Sensor
LULUF	Land-use, Land-use Change and Forestry
MHWP	Mid-Himalayan Watershed Project
MSW	Municipal Solid Waste
NAPCC	National Action Plan on Climate Change
NATCOM	National Communication NEERI National
NPP	Net Primary Productivity
NTFP	Non Timber Forest Products
PPE	Perturbed Physics Ensemble
ppm	Parts per million
GDP	Gross Domestic Product
PRECIS	Providing Climate Investigation Studies
QUMP	Quantifying Uncertainty in Model Predictions
RCM	Regional Climate Models
RIDF	Rural Infrastructural Development Fund
SAPCC	State Action Plan on Climate Change
SEAC	State Environment Appraisal Committee
SEIAA	State Environment Impact Assessment Authority
SEOC	State Emergency Operation Centre
SFR	State Forest Report
SLR	Sea Level Rise
SMDI	Soil Moisture Deficit Index

SRES	Special Report on Emission Scenario
SWAT	Soil & Water Assessment Tool
TFR	Total Fertility Rate
TWh	TerraWatt per hour
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VA	Vulnerability Assessment
VFDS	Village Forest Development Societies
WB	World Bank
WBCIS	Weather Based Crop Insurance Scheme
WMO	World Meteorological Organizations



# 1. Introduction

## 1.1 Background

In India, the last two decades have seen a significant increase in social and economic costs due to disasters\*. Climate variability adds another dimension to the risks that communities are already exposed to. It is now widely accepted that substantial reduction in disaster-related loss of lives and damage to livelihoods, infrastructure, assets, resources, and basic services for people, particularly the poor, living in some of the most multi-hazard zones would require sustained investment in building capacities of institutions and communities.

Taking cognizance of this need and building upon the progress made by the country in disaster management, the GOI-UNDP project on "Enhancing Institutional and Community Resilience to Disasters and Climate Change (2013-2017)" provides technical support to strengthen capacities of government, communities and institutions to fast-track implementation of the planning frameworks on DRR and CCA. The project aims to build capacities of various stakeholders on disaster-risk reduction and climate-change adaptation with the objective of incorporating risk reduction (especially in the context of climate change) in development. Towards this, the capacities of select training institutions (pertaining to training on DM) will be strengthened by upgrading the training facilities in a systematic manner, which will include the conduct of training-needs assessment, and review and development of training modules, course curriculum, and training materials. Such an approach would ensure sustainability of trainings, and create a cadre of trained personnel who, in turn, can be deployed as trainers/resource persons to district and sub-district levels.

As per the approved Annual Work Plan (AWP) for HP under the GOI-UNDP project, TNA for DRR and CCA has been initiated by DM Cell of Department of Revenue in partnership with HIPA. A consultative workshop was conducted on 25 April 2014 in Shimla where representatives from various Departments, NGOs, technical and academic institutions participated and provided inputs on CCA training needs through detailed discussions and a survey questionnaire. Based on the first set of responses, preliminary list of Training Needs for CCA was prepared and shared with stakeholders in a validation workshop on 6 June 2014. Building upon the DM TNA, based on a literature review of various initiatives being carried out in the State on DRR and CCA along with the detailed analysis of the institutional setup and policy environment for DRR and CCA in the State, institutional capacities to address the training needs (detailed mapping of training institutes) and responses obtained through the consultations with relevant Departments and institutions, a consolidated DRR and CCA TNA report are prepared. The TNA report will inform the formulation of a capacity building strategy to address the existing capacity gaps with respect to DRR and CCA in a systematic and time-bound manner. This would provide a roadmap for strengthening of training institutions through the development of training modules and conduct of Training of Trainers to address capacity gaps of specific target groups.

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\*S. Parasuraman and Unni Krishnan (Eds) 2013, India Disasters Report II: redefining disasters, Oxford University Press, New Delhi, India.

## 1.2 Climate Change – Issues of Concern

Climate change is a global challenge emanating from accumulated greenhouse gas emissions in the atmosphere, anthropogenically generated through unsustainable human activities such as intensive and long term industrial growth, consumption lifestyle among other factors in developed countries. Climate change emerged on the political agenda in the mid-1980s with the increasing scientific evidence of human interference in the global climate system and with growing public concern about the environment. The United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) in 1988 to provide policy makers with authoritative scientific information. The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR4) concluded from direct observations of changes in temperature, sea level rise, and snow cover in the northern hemisphere during 1850 to the present, that the warming of the earth's climate system is unequivocal. The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005. Multi model averages show that the temperature increases during 2090-2099 relative to 1980-1999 may range from 1.1 to 6.4°C and sea level rise from 0.18 to 0.59 meters. These could lead to impacts on freshwater availability, oceanic acidification, food production, flooding of coastal areas and increased burden of vector borne and water borne diseases associated with extreme weather events.

The fragile landscapes of the Himalayan region are highly susceptible to natural hazards, leading to ongoing concerns about current and future climate change impacts in the region (Cruz et al. 2007). Climate Change concerns in the Himalayas are multifaceted encompassing floods, droughts, landslides (Barnett et al., 2005), human health, biodiversity, endangered species, agriculture livelihood, and food security (Xu et al., 2009). Extending along the northern fringe of the Indian subcontinent, from the bend of the Indus River in the northwest to the Brahmaputra River in the east, the Himalayas directly or indirectly affect lives and livelihood of over 300 million people (Schild, 2008).

Increasing frequencies and intensities of climate induced disasters and other impacts of climate variability pose additional challenges to development and overall wellbeing of communities. Climate change is impacting the natural ecosystems and is expected to have substantial adverse effects in India, mainly on agriculture on which 58 per cent of the population still depends for a livelihood, water stored in the Himalayan glaciers which are the source of major rivers and groundwater recharge, sea-level rise, and threats to a long coastline and habitations. As per the Second National Communication submitted by India to the UNFCCC, it is projected that the annual mean surface air temperature rise by the end of the century ranges from 3.5 c to 4.3 c whereas the sea level along the Indian coast has been rising at the rate of about 1.3 mm/year on an average. These climate change projections are likely to impact human health, agriculture, water resources, natural ecosystems, and biodiversity.

Himachal Pradesh, although a small Himalayan State, is nevertheless playing a very crucial role in sustaining the livelihoods of downstream areas. The conservation, sustenance of these ecologically fragile regions is a biggest challenge faced being faced at the moment, which can get further aggravated due to financial constraints and limited resources. Therefore, it can be safely stated that climate change will manifest most in Himachal Pradesh. Climate observations between 1901-2002, indicate that there is a significant increase in air temperature in the NW Himalayan region by about 1.6°C with, winter warm-

ing at a faster pace. Further, at different altitudinal zones in Himachal Pradesh, the rate of increase in maximum temperature is found to be higher at higher altitudes compared to lower altitudes (Bhutani et al, 2007). From 1995 onwards (Ranbir, 2010) an increasing trend of rainfall has been observed at higher altitudes and a decreasing trend in lower latitudes. Temperature projections for the State indicated a further rise in temperature by 1.6 to 2.8°C by the 2050s and an overall increase in precipitation, but with high spatial variability (HPSAPCC, 2012). Further, projections also point towards an increase in intensity of extreme precipitation events.

### **1.3 Disaster Risk Reduction and Climate Change Adaptation (DRR & CCA)**

Climate change is altering the face of disaster risk, not only through increased weather-related risks and sea-level and temperature rises, but also through increases in societal vulnerabilities, for example, from stresses on water availability, agriculture and ecosystems. Disaster risk reduction and climate change adaptation share a common space of concern: reducing the vulnerability of communities and achieving sustainable development. Disaster risk reduction and climate change adaptation also share a common conceptual understanding of the components of risk and the processes of building resilience. The two approaches regard risk as the product of exposure and vulnerability, either to hazard(s) or effect(s) of climate change, or both. The greater the vulnerability, exposure and magnitude or likelihood of the hazard/climate change effect, the greater the risk. Both exposure and vulnerability are compounded by other societal and environmental trends, for example, urbanization, environmental degradation, and the globalization of markets. Thus, to reduce disaster and climate change risk, exposure needs to be minimized, vulnerability reduced, and capacities for resilience strengthened in ways that address both disaster and climate change risk simultaneously, neither approach compromising the other. This is a dynamic process requiring continual effort across economic, social, cultural, environmental, institutional and political spheres to move from vulnerability to resilience.

### **1.4 Need of TNA Pertaining to Disaster Risk Reduction and Climate Change Adaptation in Himachal Pradesh**

Himachal Pradesh is prone to multiple natural and man-made disasters. Owing to its hilly terrain and fragile ecological systems, it is highly vulnerable to the impacts of climate change and climatic variability. In fact the three most convincing evidences in favor of climate change cited from NW Himalayas have been reported from Himachal Pradesh. There is strong evidence, both India and in the Himachal Pradesh, of an increase in the observed frequency and intensity of weather and climate-related hazards. Though the State has been undertaking several measures to set up the institutional framework for DM as mandated by the DM Act 2005 as well as to strengthen the preparedness and risk reduction capacities, challenges still persist. The institutional framework and policy instruments to deal with climate change are still in its nascent state and would require significant investment in the form of skilled



personnel, empowered communities and financial resources. Given the huge capacity gaps of systems, processes and various stakeholder groups, exacerbated by climate change related impacts and recurring disasters, a systematic approach towards long term capacity building across governance levels and stakeholder groups is required.

The concerned line departments and their institutions along with other stakeholders are the key in implementation of adaptation and mitigation strategies. Implementing action to tackle climate change is not only an immediate requirement, but also requires long term planning as the impact of climate change will unfold itself in the future due to accumulation of long life greenhouse gases in the atmosphere.

Training on "DRR & CCA", therefore becomes imperative for all concerned stakeholders within the government for ensuring a sustainable future. So far, the training programmes run by different government departments and their institutions focus on 'Disasters and Environmental concerns' are found to contain some peripheral contents pertaining to climate change. But training programme having core contents of 'Climate Change' is new in India. For the managers in the government to implement these strategies, it is essential that they have the core knowledge of climate change, how it influences or impacts various sectors they are managing. Further, to mainstream the climate change financial needs, the planning department and the finance department together need to work towards ensuring the same.

In 2012, under the GOI-UNDP Disaster Risk Reduction Programme (2009-2012) a TNA for Stakeholders in Disaster Management in H.P was conducted by State Council for Science, Technology and Environment, and the DM Cell of the Revenue Department of H.P. However, the recommendations of the Assessment are yet to be implemented. The Disaster Management Cell at Himachal Pradesh Institute of Public Administration (HIPA), Shimla has been conducting a number of training programmes in the State to build capacities of government officials and other stakeholders. However, these courses do not take into consideration CCA concerns. Therefore, there is a need for revision and updating of the existing training modules to include both DRR and CCA perspectives.

## 1.5 Assessment Process

### **TNA Initiation Workshop:**

In order to initiate the TNA process and get the first set of inputs regarding capacity gaps and training needs related to DRR and CCA, a State level consultation workshop was organized on 25 April 2014 in Shimla. Representatives from various Departments, NGOs, technical and academic institutions participated in the workshop and provided inputs for CCA training needs through detailed discussions and a survey questionnaire.

### **Validation Workshop:**

Based on the first set of responses, preliminary list of Training Needs for CCA was prepared and shared

with the stakeholders in a validation workshop which was organized on 6 June 2014.

**Finalization of Assessment Methodology:**

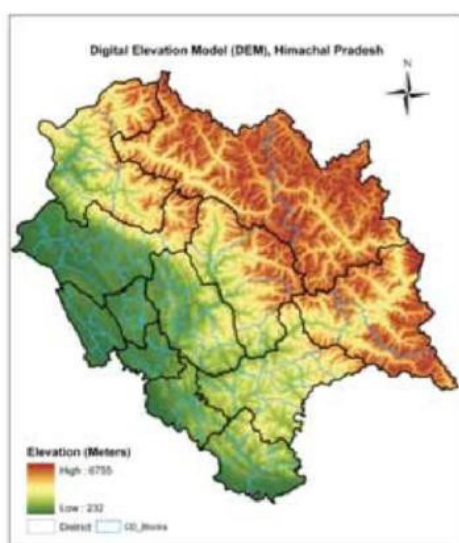
Based on a review of literature, the TNA report has been prepared outlining TNA methodology and assessment tools that would be used, along with the timeline.

## 2. Disaster and Climate Change Risk Profile of HP

The State of Himachal Pradesh, which forms part of the Northwestern Himalayas, is environmentally fragile and ecologically vulnerable. Geologically, the Himalayas are considered to be the youngest mountain-chain in the world and are still in the building phase. Natural hazards are a matter of immediate concern to the state as every year the state experiences the fury of nature in various forms- like earthquakes, cloudburst, flash floods, landslides, snow avalanches, drought, etc. The fragile ecology of the mountain state coupled with large variation in Physio-climatic conditions have rendered it vulnerable to the vagaries of nature. The Climate Change and Disaster Risk interact both on short term and long term levels. Climate variability influenced the frequency and range of shocks whereas long term climate variability can alter the productive base of society.

In the State of H.P, the incidence of cloudburst in the last few years has baffled both the meteorologist and the common man equalled. Intense and excessive rainfall resulting in cloud bursts coupled with rapid melting of snow and glaciers due to rising temperatures has been identified as the main cause of the flash floods. One of the consequences of glacier retreat that has been a cause of concern and worry to the people of Himachal Pradesh is the formation and expansion of glacial lakes high up in the mountains in the upper reaches of glacier- fed river systems. Recent Flash floods occurred in the Satluj Basin receives its seasonal flow from snow melt and glacier besides rainfall have added new dimension to the hazard vulnerability of river basins situated in the Himachal Pradesh.

### 2.1 State's Profile



Himachal Pradesh has a total area of 55,673 sq. km. It has 12 districts, 75 tehsils, 52 Sub Divisions, 75 Blocks, 20118 Villages, 57 Towns, 4 Lok Sabha and 3 Rajya Sabha and 68 Assembly Constituencies.

As per 2011 Census, population of Himachal Pradesh is 68, 56, 509 of which males are 34, 73, 892 and females are 34, 73, 892. Density of Population (per sq. km.) is 123. Females per 1000 Males are 974. The percentage share of Himachal Pradesh to India's population is 0.57.

Fig. 1: Digital Elevation Model

### 2.1.1 Education:

The literacy of the State has increased to 83.78 % in 2011 in comparison to 76.50% in 2001 and 63.94% in 1991. Literacy rates of males in the state remained highest as compared to total literacy rates and female literacy rates since 1971 to the present Census year of 2011.

While literacy rates of females remained lower to both male and total literacy rates during this period the matter of a satisfaction is that the male-female gap in literacy rates is decreasing 1981 onwards, though it has increased during 1971- 1981. The state has an elaborate network of educational institutions. As per 2011 census data, the number of primary schools in the state were 10767, 2303 middle schools, 2094 high and senior secondary schools and 88 colleges.

Table 1: Literacy Status in Himachal Pradesh (Source: Census 2011)

State/District	Literacy Rate (Persons) 2001			Literacy Rate (Persons) 2011		
	Total	Rural	Urban	Total	Rural	Urban
Himachal Pradesh	76.48	75.08	88.95	83.78	82.91	91.39
Chamba	62.91	60.63	89.50	73.19	71.63	92.90
Kangra	80.08	79.70	86.62	86.49	86.54	85.67
Lahul & Spiti	73.10	73.10	-	77.24	77.24	-
Kullu	72.90	71.55	87.99	80.14	79.12	89.75
Mandi	75.24	74.08	90.51	82.81	82.14	92.62
Hamirpur	82.46	81.90	89.34	89.01	88.67	93.48
Una	80.37	80.19	82.14	87.23	87.24	87.19
Bilaspur	77.76	76.97	89.08	85.67	85.21	92.06
Solan	76.57	73.94	87.97	85.02	83.53	91.86
Sirmaur	70.39	68.29	87.80	79.98	78.54	91.51
Shimla	79.12	75.19	91.75	84.55	81.45	93.76
Kinnaur	75.20	75.20	-	80.77	80.77	-

### 2.1.2 Health

The State has an extensive network of health care institutions. There are 52 hospitals, 23 dispensaries, 77 CHC's / RH, 463 PHC's, with an available bed capacity of 9173. Similarly, there are 28 Ayurvedic hospitals, 1105 health centers with a bed capacity of 786 available in the state. Birth and death rate in the state is 22.1 per 1000 and 7.2 per 1000 respectively as per 2010-11 census.

### 2.1.3 Roads and Bridges

As per 2011 data, the state has total road length of 33722 Km in which motor able single lane is 29464 Km and motor able double lane is 2403 Km, Jeep able 290 Km and less than Jeep able 1565 Km and there are 1365 Km bridges. About 8156 villages are connected with roads.

### 2.1.4 Drainage Network of Himachal Pradesh

Himachal Pradesh is drained by five major systems, and has five major catchment areas. Satluj the largest among all constitutes 30.69%, followed by Beas 24.5%, Chenab 14.2%, Yamuna 10.6% and Ravi 9.9%. These catchment areas are further subdivided into several river subsystems. The major rivers are snow fed and perennial in nature, and supplemented by seasonal rainfalls.

### 2.1.5 Lakes/Reservoirs

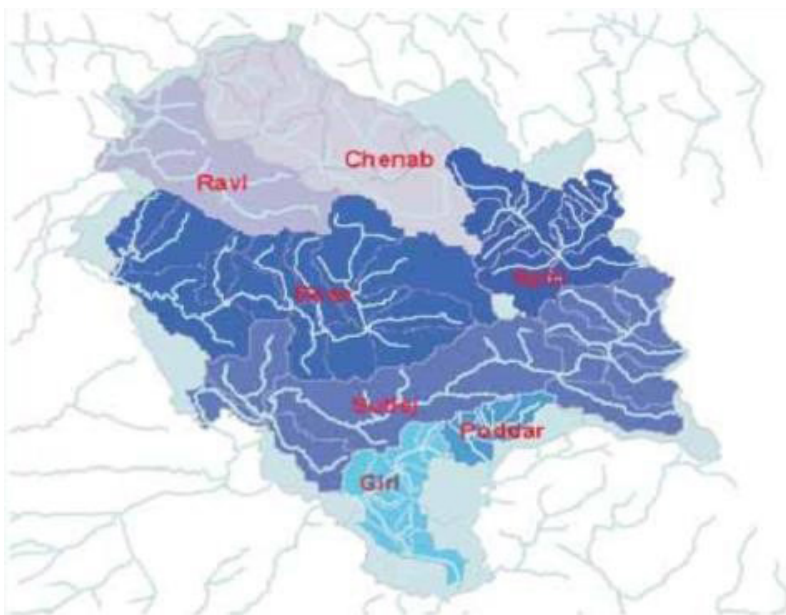


Fig. 2: Drainage Network of Himachal Pradesh

The state has both artificial and natural water bodies located in different parts of the state for specific purposes viz. Irrigation, hydroelectricity, and flood control. Some of the important reservoirs of the state are Gobind Sagar, which spreads into the Bilaspur and Una districts, Pong Dam in Kangra, and Pandoh in Mandi District. Chandertal, Renuka and Manimahesh are some of the important natural lakes of the state.

Most of the surface water resources of the Himachal Pradesh flow from Perennial Rivers which originate from glaciers. The flow in these rivers is further

augmented by runoff from the catchment area. 90% of the State's drainage forms part of the Indus River System. The rivers that actually originate from the State and flow through it are the Chenab, the Beas and the Ravi, the Satluj have their origin in Tibet and flows through Himachal Pradesh forming the largest river catchment in the state. The Yamuna crosses only the South eastern border, but has some catchment area in the State of Himachal Pradesh.

## **2.1.6 Agriculture**

Agriculture is the largest occupation and source of livelihood for most people in Himachal Pradesh which is about 66.71% of the total population. The topography of the State is largely hills where cultivation is mainly done on terraces. The cultivation in the hills is subjected to soil erosion since crop cultivation is practiced on 5% to over 30% slopes. This also affects the soil fertility status and changes in pH values. Cultivation is mainly (80.9%) rain dependent. The agricultural work force is 34.41% of the total population, of which 63.25% are cultivators.

## **2.1.7 Agro-climatic Zones**

The State comprises of four different Agro-climatic Zones (Fig. 3).

### **1. Shivalik Hill Zone:**

Climate Sub Tropical, consists of foothills and the valley area of 350 to 650 meters above mean sea level, it occupies about 35% of the geographical area and about 40% of the cultivated area of the State. The major crops grown in this Zone are Wheat, Maize, Paddy, Gram, Sugarcane, Mustard, Potato, Vegetables etc.

### **2. Mid Hill Zone:**

This zone extends from 651 meters to 1,800 meters above mean sea level. Having a mild temperate climate. It occupies about 32% of the total geographical area and about 37% of the cultivated areas of the State, the major crops are Wheat, Maize, Barley, Black Gram, Beans, Paddy etc. This zone has very good potential for the cultivation of cash crops like Off- Season Vegetables, Ginger and production of quality seeds of temperate vegetables like Cauliflower and root crops.

### **3. High Hill Zone:**

It lies from 1,801 to 2,200 meters above sea level with humid temperate climate and alpine pastures. This zone covers about 35% of the geographical areas and about 21% of the cultivated area of the State. The commonly grown crops are Wheat, Barley, Lesser Millets, Pseudo-cereals (Buckwheat and Amaranthus), Maize and Potato etc. The area is ideally suited for the production of quality seed Potato and temperate Vegetables. This zone possesses good pastures and meadows.

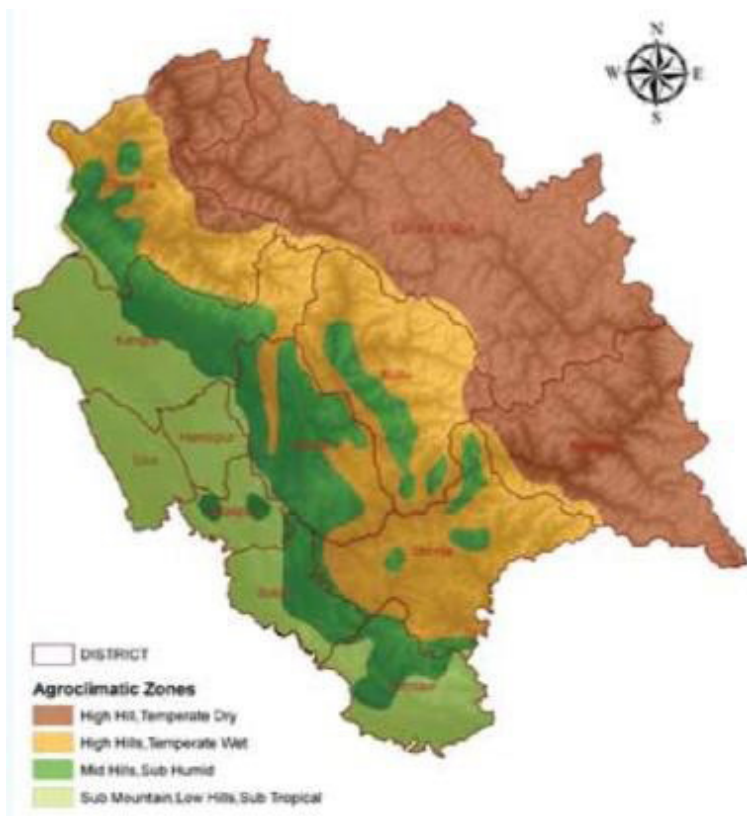


Fig. 3: Agro-climatic Zones of Himachal Pradesh

#### 4. Cold Dry Zone:

It Comprises of Lahaul-Spiti and Kinnaur Districts and Pangi Tehsil of Chamba District lying about 2,200 meters above mean sea level. It occupies about 8% of the geographical and 2% of the total cultivated area of the State. The major crops grown are Wheat, Barley, Pseudo-cereals like Buck wheat and Amaranthus. It is ideally suited for the production of quality Seed Potato, temperate and European type of Vegetables and their Seeds, Seed Potato, Peas as green and seed purposes.

### 2.1.8 Land Use/Land Cover

The land use pattern of the State is as under:

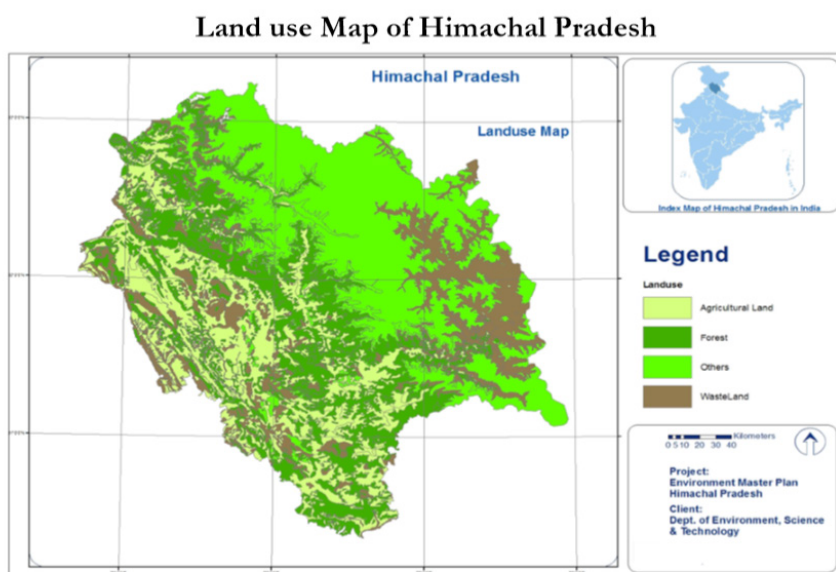


Fig. 4: Land Use in Himachal Pradesh



Table 2: Land Use Pattern of Himachal Pradesh

Land use	Area in '000 ha	Percentage
Total geographical area	5,567	-
Reporting area of land utilization	4,549	100.00
Forest	1,101	24.21
Not available for cultivation	1,129	24.82
Permanent pastures and other grazing lands	1,496	32.89
Land under misc, tree crops and groves	65	1.43
Cultivable wasteland	138	3.03
Follow lands other than current fallows	15	0.33
Current fallows	64	1.41
Net area sown	541	11.90

### 2.1.9 Soils

The soils of Himachal Pradesh can be divided into nine groups on the basis of their development and Physio-chemical properties (Fig. 5). These groups are alluvial soils, brown hill soils, brown earths, brown porous soils, grey wooded or podzolic soils, grey brown podzolic soils, plansolic soils, humus and iron podzols and alpine humus mountain skeletal soils. The soils of Himachal Pradesh can be divided into nine groups on the basis of their development and physio-chemical properties. These groups are alluvial soils, brown hill soils, brown earths, brown porous soils, Grey wooded or podzolic soils, grey brown podzolic soils, plansolic soils, humus and iron podzols and alpine humus mountain skeletal soils.





Fig.5: Soil Classification Map of Himachal Pradesh

## 2.2 Hazard and Vulnerability Analysis

### 2.2.1 Hazard Analysis

Himachal Pradesh is prone to a number of hazards both natural and human induced . Earthquakes, flash floods, riverine floods, landslides, snow storms and avalanches, droughts are the main natural hazards. In addition the State is also prone to forest fires, accidents-road, rail, air, stampedes, boat capsizing, biological, industrial and hazardous chemicals etc.

Earthquake, however, remains the most prominent hazard. According to the recorded history of earthquakes\* , the State has experienced more than 80 earthquakes having a magnitude of 4 and above on the Richter scale. As per the BIS seismic zoning map five districts of the State, namely Chamba (53.2%), Hamirpur (90.9%), Kangra (98.6%), Kullu (53.1%) and Mandi (97.4%) have 53 to 98.6 percent of their area liable to the severest intensity of MSK IX or more, while the remaining area of these districts are liable to intensity VIII. Two districts, Bilaspur (25.3%) and Una (37.0%) also have substantial areas in MSK IX and the rest in MSK VIII. The remaining districts also are liable to intensity VIII. The housing typology in the State which is mostly consisting of walls of clay mud, un-burnt bricks or random rubble masonry without any earthquake resisting features compounds the risks of earthquake.

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\* HP State Disaster Management Plan, 2012

The Landslide is another natural hazard which occurs very frequently in the State during monsoons and earthquakes. The State is rich in forest cover and faces threat of forest fires endangering rich flora and fauna of having serious repercussions on the ecological balances. Besides, domestic fire incidents cause loss of property every day. Hundreds of people are killed and many more injured in road accidents every year. Monkey menace is another big problem being faced by the people of the state.

The State is also prone to climate change induced hazards such as unprecedented droughts, frequent floods, cloud bursts, dam outburst, erratic and changing pattern of rain and snowfall, higher temperature and milder and late winters have affected the availability of natural resources in general and water in particular, retreating glaciers, depleting snow cover, Glacial Lake Outburst Floods (GLOFs) and long lasting rains could also trigger landslides, erosion and increased sediment yields in the drainage systems as the slopes in the upper catchment and in glacial topography are generally steep and unstable. Recent Flash floods occurred in Satluj Basin receives its seasonal flow from snow melt and glacier besides rainfall have added new dimension to the hazard vulnerability of river basins situated in the Himachal Pradesh.

### Potential Hazard Threat to the State

Hazards both natural and manmade are of immediate concern to the State of Himachal Pradesh as it faces the fury of one or the other disaster every year. The fragile ecology and geology of the State coupled with large variations in Physio-climate conditions render it vulnerable to vagaries of nature in one way or the other.

Table 2: District-wise Hazard Threat in Himachal Pradesh (Source: State Disaster Management Plan, 2012)

District	Earthquake	Landslide	Floods	Avalanche	Forest Fire	Drought	Cloud Burst
Kangra	VH	L	M	M	H	H	M
Chamba	VH	VH	H	M	H	M	H
Hamirpur	H	L	L	-	VH	M	L
Mandi	VH	H	H	-	VH	M	H
Kullu	VH	VH	H	H	H	M	VH
Bilaspur	H	M	L	-	VH	M	L
Una	H	L	H	-	M	H	L
Sirmour	H	L	L	-	VH	M	M
Solan	H	M	L	-	M	M	L
Kinnaur	H	H	H	VH	M	M	VH
Lahaul & Spiti	M	M	M	VH	M	M	H
Shimla	VH	H	H	M	H	M	H

Some of the common natural and human induced disasters experienced in the State. (SDMP 2012)

Table: Natural and human induced disasters experienced in the State

Water and Climate Related Hazards	Geological-ly Related Disasters	Chemical and Industrial Disasters	Accidents Related Disasters	Biological-ly Related Disasters	Emerging Threats-Climate induced Hazards	Man and animal conflict
Cloud Bursts Hailstorms Cold Waves Snow Avalanches Droughts Thunder and lightning Floods Snow Storms Landslides	Earthquake Landslide Rock Falls Land Subsidence Land Erosion Dam Failures/Lake bursts	Specific to industrial belts (Nalagarh, Mehatpur, Baddi-Barotiwala, Kala-Amb and Paonta Sahib) a) Industrial Fires b) Gas & Chemical Leakages	Forest fires Electrical fires Urban fires/ Village fires Building Collapses Festival / Fair / Temple Stampedes Road accidents / rail accidents Boat capsizing	Epidemics Pest attacks Food poisoning Water Contamination Cattle epidemics	Glacial Lake Outburst Floods (GLOF) Landslide Dam Outburst Floods (LDOF) Flash Floods	Monkey Menace

### 2.2.2 Vulnerability Analysis

The vulnerability of the State is defined by the ability to anticipate, cope with, resist and capacity to recover from any probable disaster. The factors like limited livelihood opportunities, low per capita income, underdeveloped infrastructure, unplanned development, rapid urbanization, prevailing social structures, demographic expansion and environmental degradation make Himachal Pradesh highly vulnerable to multi disaster. The state of Himachal Pradesh being prone to multiple geophysical and man induced hazards, its people are highly vulnerable to the vagaries of nature. Some of the peculiarities of the state that render the hill communities vulnerable and risk prone are: (SDMP 2012)

- Physical isolation & tough terrain.
- Scattered nature of settlements & hamlets.
- Harsh climatic conditions.
- High construction cost.
- Inadequate infrastructure.

- Inadequate road connectivity
- Fragility of eco-system.
- Non availability of adequate land.
- Poor or inadequate communication infrastructure.
- Dependency of 69% people on agriculture and allied sectors for their livelihood.
- 90% of the population being rural in character.
- Heavy dependence on rains and inadequate irrigation facilities.
- Substantial population of livestock (52, 26,388).
- High Vulnerability to climate change.

### 2.2.2.1 Vulnerability due to limited access to adequate resources and services

The Immediate impact of disasters such as floods, landslides or earthquake is the disruption in the road connectivity. Sometimes the roads in the valley areas remain cut off for months due to the occurrence of landslides, formation of lakes and submergence of roads. There are many instances when the districts of Kinnaur and Lahaul & Spiti remained cut off from the rest of the state for months. At times the connectivity is also broken due to avalanches and snowstorms hindering the transport to the affected areas and especially in the border areas. Lack of connectivity would also cause secondary effects such as non availability of essential supplies, hoarding by the rich and hardship to the poor. The Vulnerability of the communities is expected to further increase as we are on the path towards an increasing warmer world.

#### 1. Education and Health:

In the year 2010 the state as a whole had 10,767 primary schools, 2303 middle schools, 2094 higher secondary schools and 88 Colleges. 59% of these institutions are situated in highest vulnerable zone and 38% in high vulnerable and only 3% in moderate to low vulnerable zone. Similarly out of 605 medical institutions(Hospitals(52), Dispensaries (23), CHC/RH(77), PHCS(453) existing in the state (2010-11 data) about 48% are located in districts falling in a highest vulnerable zone and 44% in high vulnerable zone only about 8% institutions are located in areas with moderate to low vulnerable zones.

#### 2. Hydro Power Infrastructure:

Besides buildings, factories, institutions, hydropower infrastructure which is considered crucial to sustain the country's economic growth is at risk. The state has identified the potential of hydropower to the tune of 27436 MW and of which 6150 MW is operational. In terms of economics the investments in hydropower sector amounts more than 60,000 crores in different basins of the state which is likely to increase to aggregate capacity of 12500 MW with an investment of Rs 1 lakh crore by the year 2022.

#### 3. Dispersed Settlements:

The dispersed and scattered nature of the settlements away from the roads on top of spur, hills and deep in the valleys also render the communities highly vulnerable in the wake of disasters. For instance in the absence of road connectivity the fire tender could not reach village Chachawari in Rohru area of Shimla district which was devastated by the fire on Dec 23, 2011.As a result about 65 houses were

reduced to ash, 250 cattle perished and 450 people were affected including the aged and children. As per the 2011 Census the State has about 20,000 villages scattered in different districts of the state. As on day only about 8,000 villages have been connected by roads. One of the sample surveys in the state indicates that the average distance of unconnected villages from the nearest motor able road is 5.17 Km in the high hill areas, 2.06 Km in the low hills and 1.41 Km in the plain and valley areas. Poor connectivity is attributed to high hill costs of cutting roads through steep slopes and hard rocks and relatively longer gestation of road projects Apart from road connectivity the disrupted telecommunication and electricity supplies will further enhance the vulnerability of communities

### 2.2.2.2 Vulnerability due to demographic factors

The population of the State increased by 17.53% between the years 1991–2001 and further decreased by 12.81 % in 2011. Rural population is 89.96% and urban population is 10.04%. The population density is 123 persons per km<sup>2</sup>. Decadal growth of population of Himachal Pradesh in 1991- 2001 is 9, 07, 023 and 7, 78, 609 in 2001- 2011 with a percentage contribution to total growth of India being 0.5 and 0.43 respectively.

Table 3: Distribution of Population, Decadal Growth Rate, Sex-Ratio and Population Density

State/District	Population 2011	Percentage Decadal Growth Rate of Population		Sex -Ratio (Number of Females per 1000 Males)		Population Density per sq. km.	
		1991-2001	2001-2011	2001	2011	2001	2011
	Persons						
Himachal Pradesh	68,56,509	17.54	12.81	968	974	109	123
Chamba	5,18,844	17.19	12.58	959	989	71	80
Kangra	15,07,223	14.05	12.56	1025	1013	233	263
Lahul & Spiti	31,528	6.17	5.10	802	916	2	2
Kullu	4,37,474	26.17	14.65	927	950	69	79
Mandi	9,99,518	16.1	10.89	1013	1012	228	253
Hamirpur	4,54,293	11.8	10.08	1099	1096	369	406
Una	5,21,057	18.51	16.24	997	977	291	338
Bilaspur	3,82,056	15.4	12.08	990	981	292	327
Solan	5,76,670	30.94	15.21	852	884	259	298
Sirmaur	5,30,164	20.78	15.61	901	915	162	188
Shimla	8,13,384	17.02	12.58	896	916	141	159
Kinnaur	84,298	9.91	07.61	857	818	12	13
Note: For calculation of sex ratio, total of males and others as males used							
Source: Series-3 Provisional Population Totals Paper-1 of Census 2011							

It is noted from the census data that although the urban population is increasing at a faster pace in the State but yet the majority of the population lives in rural areas of the State and is dependent on agriculture- horticulture and the state's natural resources. Most of the Agri-Horti practices are of subsistence type and depending on prevailing climatic conditions for yield. The vulnerability of the agricultural population is further enhanced as 86% of total farmer community constitutes small and marginal farmers.

Table 4: Growth in Urban & Rural Population in Himachal Pradesh (Source - Census 2011)

State/District	Population 2011			Percentage Decadal Growth (Persons) 2001-2011		
	Total	Rural	Urban	Total	Rural	Urban
Himachal Pradesh	68,56,509	61,67,805	6,88,704	12.81	12.50	15.64
Chamba	5,18,844	4,82,653	36,191	12.58	13.21	4.77
Kangra	15,07,223	14,20,864	86,359	12.56	12.17	19.47
Lahul & Spiti	31,528	31,528	0	-5.1	-5.10	-
Kullu	4,37,474	3,96,216	41,258	14.65	12.87	35.47
Mandi	9,99,518	9,36,894	62,624	10.89	11.49	2.69
Hamirpur	4,54,293	4,22,880	31,413	10.08	10.56	4.00
Una	5,21,057	4,76,140	44,917	16.24	16.46	13.93
Bilaspur	3,82,056	3,56,930	25,126	12.08	11.91	14.46
Solan	5,76,670	4,74,592	1,02,078	15.21	15.93	11.93
Sirmaur	5,30,164	4,72,926	57,238	15.61	15.09	20.07
Shimla	8,13,384	6,11,884	2,01,500	12.58	10.20	20.49
Kinnaur	84,298	84,298	0	7.61	7.61	-

Besides the heavy concentration of the total population, educational institutions and high percentage of vulnerable houses existing in highest vulnerable and risk zone the concentration of socially vulnerable groups is also very large in this zone. Districts of Chamba, Mandi, Kangra, Kullu & Hamirpur that constitute Zone-A has also maximum population of physically challenged people (61%) and social security pensioners (60.6%). 90% of the population being rural uncertainties of nature affect their livelihood in farm sector with the small size of operational holdings. Their coping capacity is very limited to deal with situations resulting from the total failure of crops of all types including high value commercial crops like apples. Vulnerability of people in high altitude areas is further accentuated due to the limited working season and the erosion of traditional coping strategies like diversification, mixed cropping, reciproca-tion and resource pooling.

The GIS based analysis revealed that 60% of total education institutions in the state are located in the very high risk zone. The population of the age group from 5 to 15 is also very high in high risk areas. The

Vulnerability of these children and associated risk involved is very high in the event of earthquake if that happens during day time when most of the children will be in their classrooms. Women are vulnerable because they constitute a large group population of marginalized workers as their coping capacity is relatively much less.

### **2.2.2.3 Vulnerability due to Seismic Events**

The seismic vulnerability of Himachal Pradesh is primarily attributed to northward movement of Indian plate and to the major dislocation tectonic features such as MBF, MBT, Punjab thrust and MCT, etc. Besides the longitudinal tectonic feature trending parallel to the Himalayas there are a large number of transverse fractures, faults that have been responsible for the seismic activity in the Himalayan region in general and Himachal Pradesh in particular. The Kinnaur earthquake of 1975 was associated with the transverse Kaurik fault. In fact, about 250 earthquakes with magnitude 4 and 62 earthquake having magnitude of 5 and above have impacted the state so far. It is also pertinent to note that the state of Himachal Pradesh is not only highly sensitive from the earthquake point of view, but the risk has also grown many folds as the population and infrastructure have increased considerably over the last 20 years. Chamba, Kullu, Kangra, Una, Hamirpur, Mandi and Bilaspur Districts lie in Zone V i.e. very high damage risk zone and the area falling in this zone may expect an earthquake intensity maximum of MSK IX or more. The remaining districts of Lahaul and Spiti, Kinnaur, Shimla, Solan and Sirmour lie in Zone IV i.e. the areas in this zone are a high damage risk with expected intensity of MSK VIII or more.

### **2.2.2.4 Vulnerability due to Landslides**

Occurrence of landslides and landslips is a common feature in the state. Hydro-meteorological conditions and fragile structural fabric of geological strata are primarily responsible for the slides. Anthropogenic factors such as removal of vegetation cover, overloading of slopes by debris also contribute to a great extent. Development activities like construction of roads, tunnels and excavation for hydro projects have further accentuated the problem. Loss of life, damage to buildings, soil erosion, loss of tree cover, damage to bridges, communication lines and hydropower infrastructure are some of the common impacts the landslide and slips cause in the state.

From the severity perspective the districts can be divided into three vulnerable zones. Chamba, Kullu as very highly vulnerable where the severely affected area is more than 1500 to 2000 sq km. Mandi, Kinnaur, Shimla and Sirmour as highly vulnerable area were severely affected area is 500 to 1500 Sq Km and Bilaspur, Kangra, Lahaul Spiti, Sirmour constitute a third zone with severely affected area is less than 500 Sq Km. Districts of Hamirpur and Una has negligible area in this category. Every year one or the other stretches of the roads are blocked due to landslide or huge rock mass causing loss of life & property.

Recently the Urni landslide which is still active have caused immense economic loss to the Apple economy of the state, besides disrupting the traffic along the strategic NH-22.



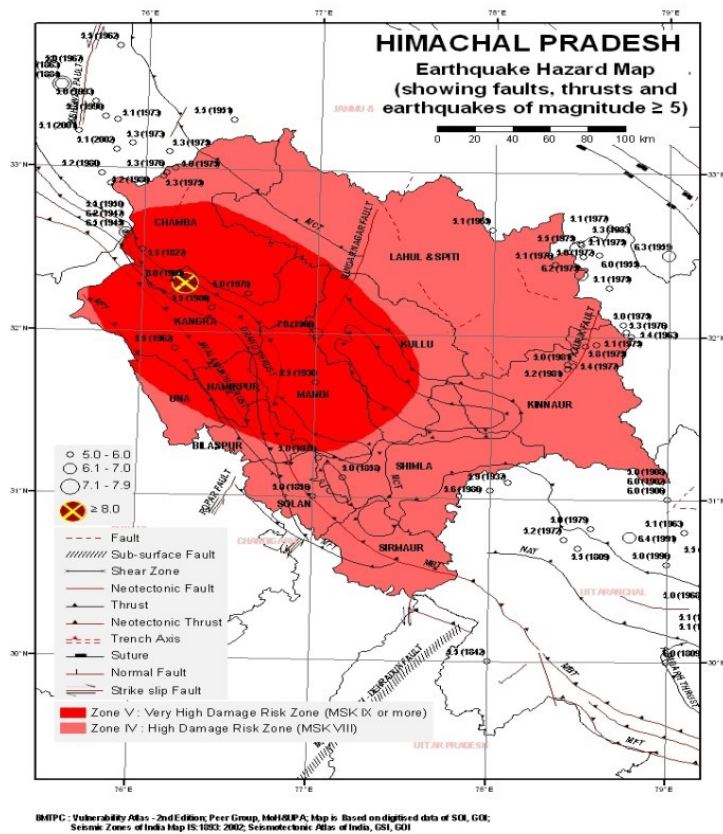


Fig. 6 Earthquake Hazard Map

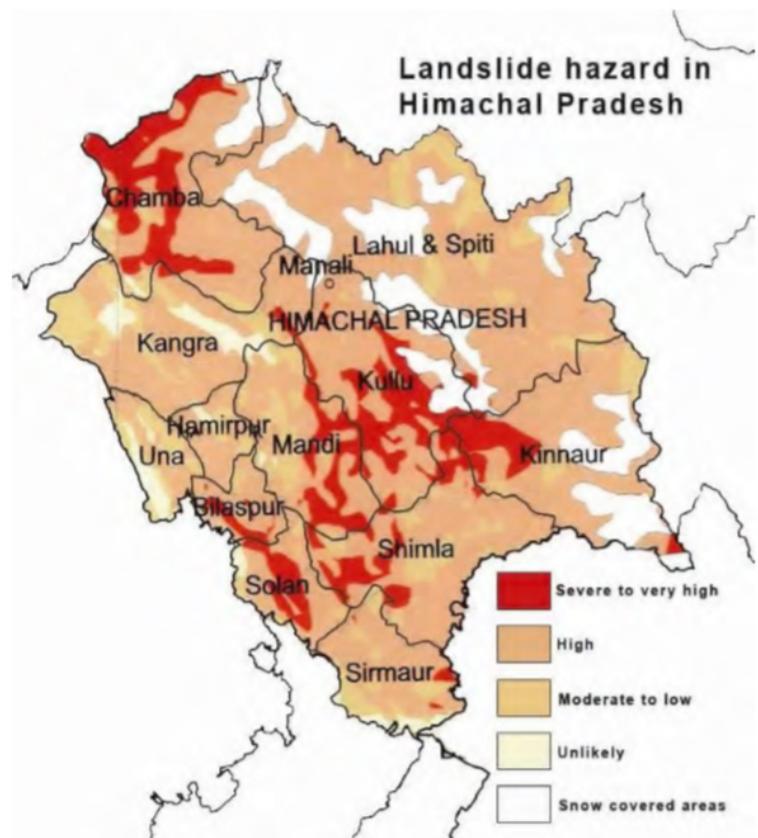


Fig. 7 Landslide Hazard Map



### **2.2.2.5 Vulnerability due to Floods**

Floods on account of high precipitation or cloud bursts cause inundation where carrying capacity of the streams is exceeded. Floods not only causes huge economic loss in the form of damage to houses, roads, bridges, power projects, public utilities but also cause immense loss of human and livestock. The topography and geometry of channels in the state are such that inundation takes place only in stretches and widespread flood problem does not exist in the state. The flash floods and cloud bursts has caused enormous loss of life and property in the past. The risk has also grown many times as large number of power projects and drinking water supply infrastructure in the state are situated in the major river basins. During the floods of 2000 the economic loss was to the tune of more than Rs. 1,000 crores and 150 people were killed. Every year the relief is distributed to compensate for the losses incurred due to floods of various kinds.

### **2.2.2.6 Vulnerability due to Cloudbursts**

Cloudbursts are devastating weather phenomenon representing highly concentrated rainfall over a small area for a short time, usually 100 mm of rainfall per hour is reported during such situation. The secondary consequence of cloud bursts is the occurrence of landslides and flash floods causing destruction of houses, dislocation of traffic and human miseries on a large scale. Exact mechanism responsible for cloud bursts is not yet understood. Cloudbursts are generally associated with thunderstorm clouds. The air currents rushing upwards in the clouds hold up a large amount of water. The geographical configuration of Himachal valleys provides conducive situation for the vertical lifting necessary for the formation of cumulonimbus clouds of those upward currents suddenly cease the entire amount of water descends onto a small area with catastrophic force all of a sudden resulting in devastation.

The state experience cloud bursts during the southwest monsoon period and the frequency is more during the months of July & August. Most vulnerable and sensitive areas are:

a) Parts of districts Kullu, Shimla, Kinnaur and Mandi. b) Stretch from Bhuntar to Manikaran (Bank of river Parvati) and Kullu to Manali (Banks of river Beas). In the above belts at least one or more cloud burst is reported every year. c) Parts of districts Kangra, Chamba, Sirmour, Solan and Hamirpur constitute areas with moderate to low vulnerability.

### **2.2.2.7 Vulnerability due to Drought**

Drought vulnerability of state is primarily due to the fact about two-third of the rural population of the state is dependent on agriculture & horticulture for earning their livelihood contribution of agriculture and allied sectors account for nearly 18% of GDP. Only 10 % of the total land of the state are under cultivation and the remaining land under agriculture has to depend on rain for irrigation. Uncertainties of nature render a majority of people highly vulnerable. Limited options due to climatic conditions couple with small size of operational holdings add further to the vulnerability conditions. As per meteorological

criteria no area in the state could be termed as chronically drought prone, but the districts of Kangra and Una have experienced frequent droughts in the past. The factors that are responsible are exogenous in character and depends on agriculture and allied livelihood is so high that even a small and seasonal change in weather component can create an adverse impact on rural populace and force them to borrowing from moneylenders or banks.

### **2.2.2.8 Vulnerability due to Fires**

Forest and building fires are a common phenomenon in the state of Himachal Pradesh. Precious life and property is lost on account of this disaster in almost all parts of the state. According to one estimate about 90% of forest fires are human induced. Sometimes during summer when there is no rain for months the forests become littered with dry senescent leaves and twigs which are prone to fire when ignited by slightest spark? Human negligence, throwing smoldering stubs of cigarettes, cooking in the forest is some of the reasons for forest fires. Forest fires not only deplete the forest wealth, but destroy precious flora and fauna as well. The severity of the problem may be judged from the forest fire of 1995 spreading across Uttarakhand & Himachal in which direct loss incurred was to the tune of Rs. 1750 million.

Urban and village fires are also common in the state and especially in high hill areas of Shimla district where traditional building material is wood and social habits and lifestyle is very conducive for fire events. Haphazard growth of towns and habitations also render them susceptible to fires of all types. Cluttering and clustering of buildings of all ages is also a factor contributing to high vulnerability. Rural villages in the state are particularly vulnerable because the construction of houses involves the use of a substantial quantity of timber and fuel wood as a source of energy for cooking and warming. Every year there are numerous incidences of fires causing human, animal and material loss. The destruction of the Malana village in Kullu and Chachawari village in Rohru area of Shimla district and heritage buildings in Shimla town is the recent instances of fire hazards in the State.

### **2.2.2.9 Vulnerability due to Harsh Climate**

The harsh climate, especially the winter season can disrupt the response, preparedness and rehabilitation operations in case the disaster happens to be during such period. Isolation of affected communities and villages due to hostile weather condition render them vulnerable to hardships of all kinds besides the risk of increased death toll due to snowfall, rains, freezing temperature and non availability of required relief. In fact, during 1975 Kinnaur earthquake, not many people died due to earthquake, but due to heavy snowfall, providing relief became difficult and the affected people had to suffer in the absence of health services to injured, shortage of food, shortage of warm clothing and shelter. Due to poor visibility and inclement weather even reaching to the affected villages by helicopter was not possible.

It is apparent that earthquake vulnerability and associated risk is widespread cutting across the administrative and physical boundaries. Thus, when seen in association with the population concentration,

nature of construction, concentration of institutions like schools and infrastructure three distinct vulnerability & risk zones could be delineated in the state of Himachal Pradesh.

**Zone-A:**

**Very High Vulnerability Risk Zone:** This zone constitutes areas classified as falling in Zone-V of seismic zoning map of India. With the maximum concentration of population (60%), schools (59%) and heavy concentration of infrastructure the physical, social and economic vulnerability of this zone is very high. Most parts of districts Kangra, Mandi, Hamirpur, Kullu and Chamba districts constitute this zone.

**Zone-B:**

**High to Moderate Vulnerability & Risk Zone:** Most parts of districts Bilaspur, Solan, Una, Sirmour, and Shimla & Kinnaur constitute



Fig 8. Vulnerability & Risk Zones of Himachal Pradesh (Villages)

this zone. Population concentration in this zone is about 38% of the total population with equal number of school concentration is present in this zone. Vulnerability of urban centers in this zone like Shimla, Solan, Una, and Ponta Sahib is also relatively more. Overall the vulnerability & risk associated with this zone have been termed to be high.

**Zone-C:**

**Moderate to Low Vulnerability Risk Zone:** This zone constitutes most parts of Lahaul & Spiti and northern parts of Chamba, Kullu, Kinnaur & Kangra districts where population concentration is as low as 3% of the total population. Even though the past seismicity suggests that seismic hazard threat in the Lahaul Spiti sector is relatively more, but due to low density of population and negligible economic impact the associated vulnerability and risk is moderate to low.

GIS based sample assessment indicates that about 54% of villages having 59% of population are located in highest vulnerable zone. Likewise about 41% villages with 38% population are located in the high risk zone and only 5% villages with 3% population in moderate to low risk zone. Hence 97% population in the state is located in high to very high seismic risk zone. This when viewed in conjunction with building topology and population density portrays very high risk scenario for the state requiring immediate attention.

### 2.2.2.10 Vulnerability due to Climate Change

Climate observations between 1901-2002, indicate that there is a significant increase in air temperature in the NW Himalayan region by about 1.6°C with, winter warming at a faster pace. Further, at different altitudinal zones in Himachal Pradesh, the rate of increase in maximum temperature is found to be higher at higher altitudes compared to lower altitudes (Bhutani et al, 2007). The trend analysis of annual rainfall data (Ranbir, 2010) of the last 25 years in different districts in Himachal Pradesh, reveals an increasing trend of rainfall at districts lying at higher altitudes and decrease in rainfall at lower latitudes. Temperature projections for the state indicate a further rise in temperature from 1.6 to 2.8°C by the 2050s and an overall increase in precipitation, but with high spatial variability (HPSAPCC, 2012). Further, projections also point towards an increase in intensity of extreme precipitation events.

The melting of glaciers and snow fields in the state has been reported to be on the rise. Sometimes glacial retreat melt water blocks glacier debris forming a lake behind the newly exposed terminal moraine. The formation of the lake due to glacier melting and damming by moraines and subsequently their bursting may lead to catastrophic discharge causing huge floods resulting in loss of precious lives and infrastructure. This phenomenon is known as GLOF i.e. glacial lake outburst floods (GLOF).

Besides precipitation, the frequent seismic activity and permafrost thawing can also trigger landslides resulting in the damming of river channel forming lakes. These natural dams cause valley inundation upstream and when subsequently breached by lake water pressure results in flash floods or debris flows downstream causing heavy loss of life and property. This phenomenon is called LDOF. Recent events of Parechu lake outburst are one such event that has given new dimension to the possibility of lake formation due to geo-environmental factors. Huge infrastructure of hydropower projects located in different basins of the state in particular is at risk to the phenomena of GLOF & LDOF.

The economy of the State is dependent on sectors like the hydel power generation, horticulture, agriculture, forestry and tourism, etc. and these sectors are highly susceptible to the changing climate. Climate change may trigger cascading effect besides impacting the agrarian economies of mountain regions, but also everyone living below in the plains. Major concerns of concern due to the emerging threat of climate change in Himachal Pradesh are:

- Agrarian economy of 90% rural population and their livelihood.
- Dependence on rains for agrarian activities.
- Sustainability of hydro economy
- Sustainability of Water sources for drinking and irrigation.
- Rural livelihood dependency on forest for fuel wood, fodder and non wood products.
- The role of medicinal herbs in economy.
- Climate induced and other natural hazards threat in the state.
- Shrinking alpine zone.
- Upward shift in vegetation species.
- Increase in the Incidences of forest fires.
- Changing precipitation patterns.

## 2.3 Current Climate Change Trends in Himachal Pradesh

Both precipitation (Rainfall & Snowfall) and temperature are significant indicators. Based on comprehensive studies carried over NW Himalayas on long term trends in maximum, minimum and mean annual air temperature by Bhutiyani, et. al. 2007, included observation from Shimla, HP for a period 1901-2002, at 95 % confidence level indicates that there is a significant increase in air temperature in the NW Himalayan region by about 1.6 C with winter warming at a faster pace.

The rate of increase in maximum temperature at higher altitudes was more than that at the lower altitudes similarly in the last century north western Himalayan region warmed significantly higher than the global average. Through an analysis of data from 1866-2006 w.r.t. Climate change and precipitation, (Bhutiyani et. al. 2009) is observed to a minimum, but there was a significant decrease in monsoon precipitation.

Trend analysis of annual rainfall data (Ranbir, 2010) of the last 25 years in different districts in Himachal Pradesh, reveals an increasing trend by about 33.5%, 54.3% and 51.5% has been observed in the State in district Kinnaur, Chamba and Lahul & Spiti and decrease trends by about 8.7%, 13.3% and 26.6% in districts Solan, Shimla and Sirmour respectively.

Ranbir et. al further reported about 40% reduction in rainfall over the last 25 years as it was 948 mm in 1987 which is reduced to about 470 mm in the year 2009. Another analysis with respect to climate of Shimla reveals that total precipitation and snowfall for all the season indicates a decreasing trend. The analysis of twenty years data by (Bhan & Manmohan, 2011, IMD) reveals that the seasons tends to end 10-12 days earlier per decade leaving long term impacts on agriculture- horticulture production of the State.

Table 5: Winter Monsoon and Annual Air Temperature in Himachal Pradesh

Observation Location	Season	Winter bx100	Monsoon bx100	Annual bx100
Shimla	Mean Maximum	2.6	2.8	2.4
	Mean Minimum	1.0	(-) .01	0.5
	Average Annual	1.8	1.5	2.0
North West Himalayas	Mean Maximum	1.7	1.3	1.6
	Mean Minimum	1.7	0.4	1.1
	Average Annual	1.7	0.9	1.6

Source: Bhutiyani et.al. 2007 (95% confidence level)

**Analysis of Trends of Rainfall & Snowfall of Shimla Himachal Pradesh**  
 (Source: Bhan, Manmohan, 2011, IMD)

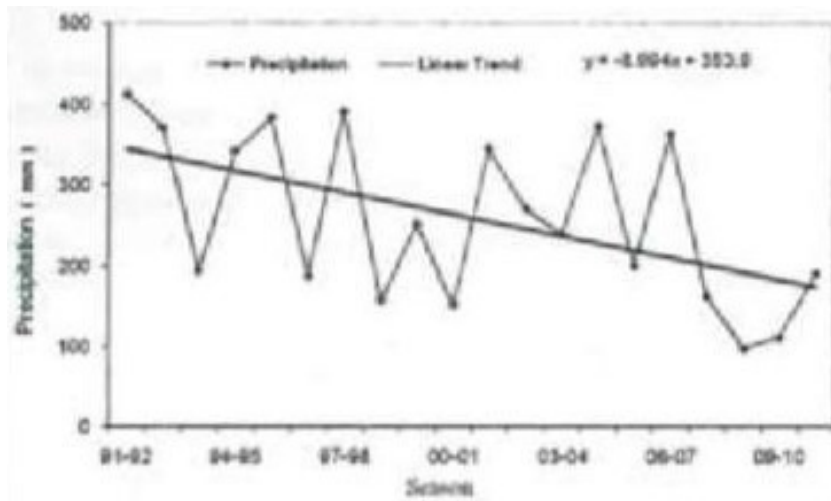


Fig. 9 (i): Total Seasonal Precipitation over Shimla

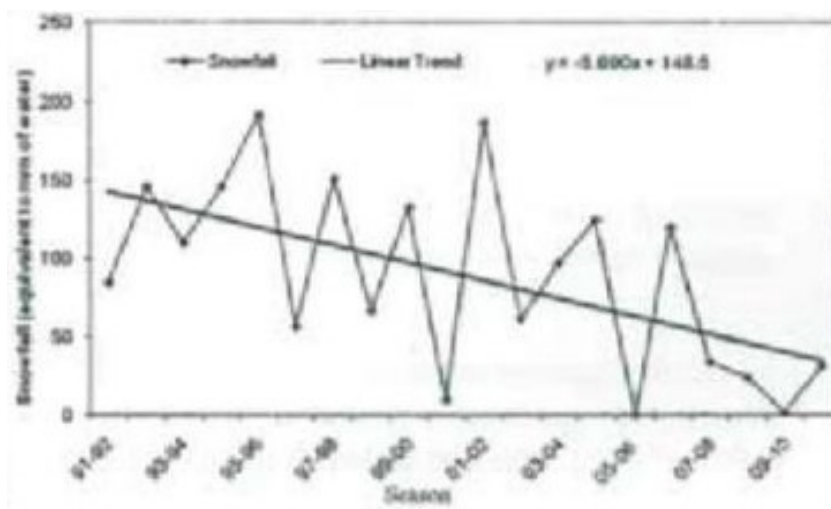


Fig. 9 (ii): Total Seasonal Snowfall (Equivalent to mm or water) over Shimla



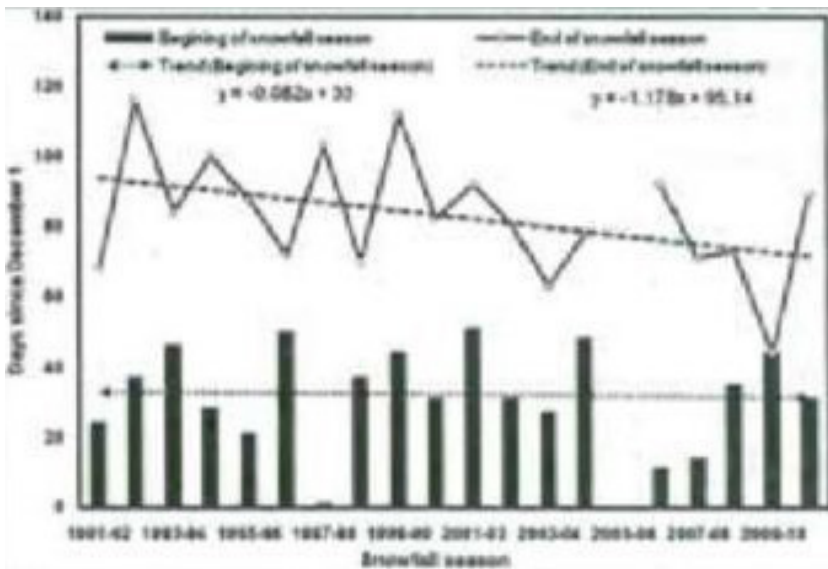


Fig. 9 (iii): Beginning and end of Snowfall Season at Shimla

110 years annual rainfall trend of Shimla, Himachal shows a decreasing trend which is similar for about 50 KM aerial distance around (Fig. 10).

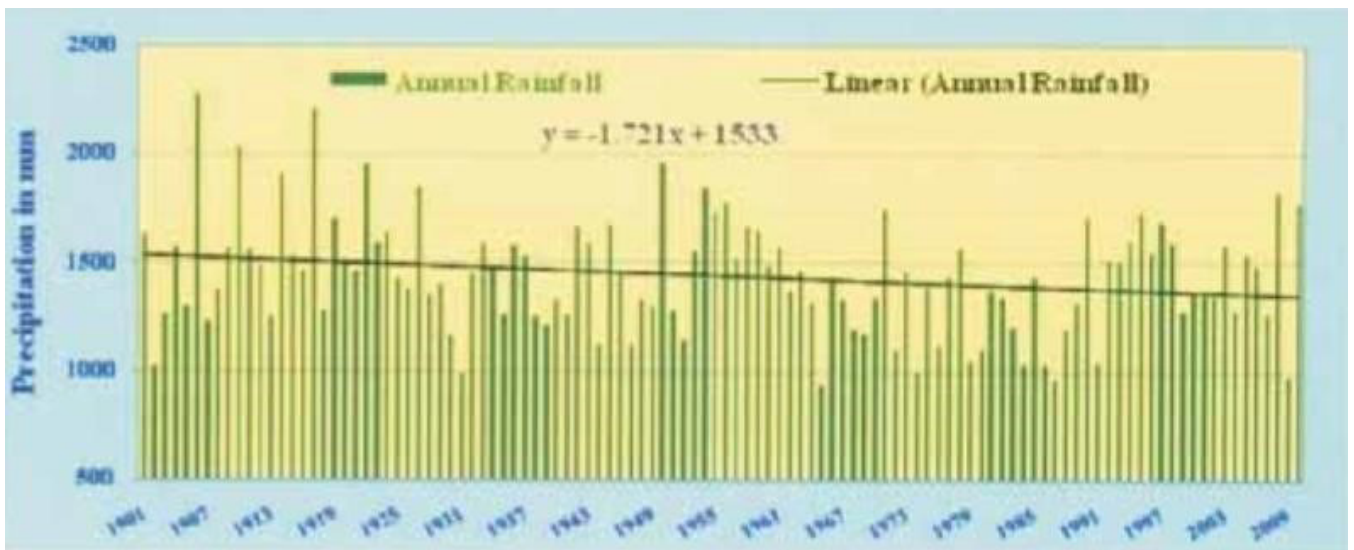


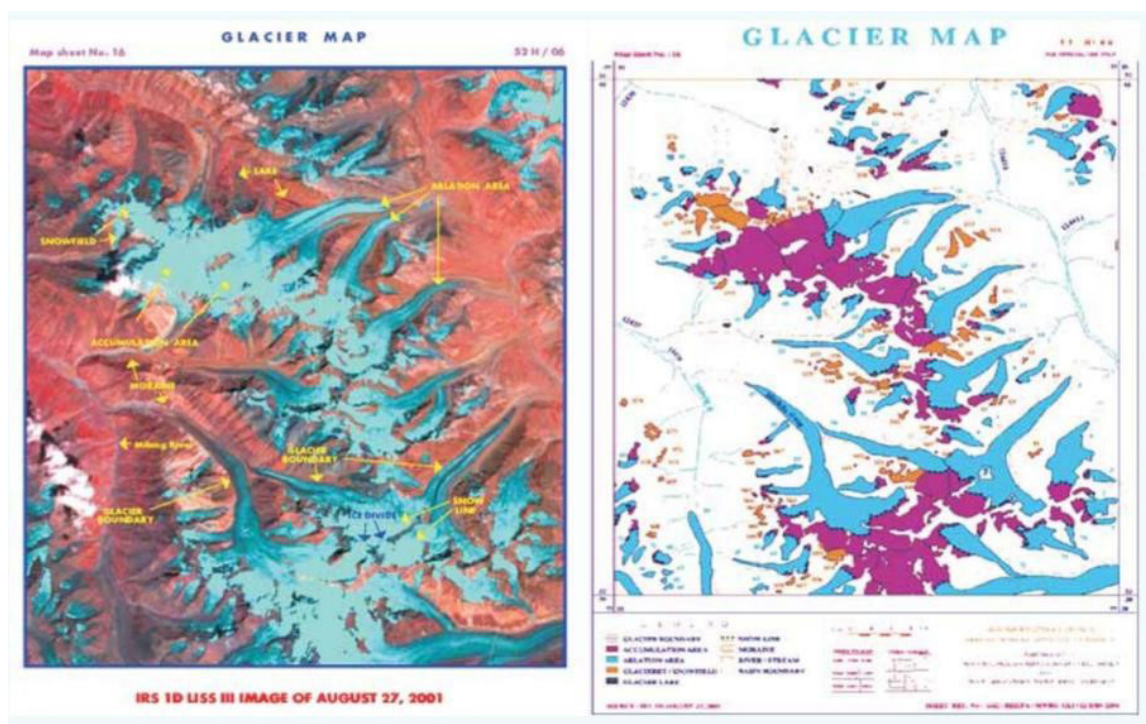
Fig. 10: 110 Years Annual Rainfall in Shimla (Source: IMD, Pune)

### 2.3.1 Glaciers & Snow Fields in Himachal Himalaya

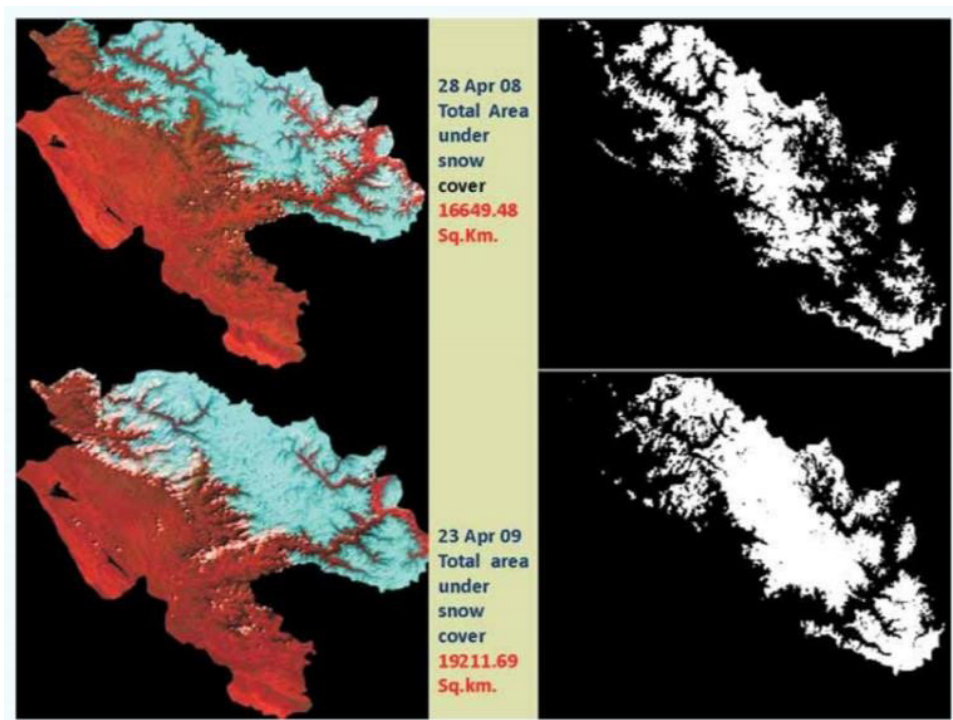
As per the investigations carried out in the Himachal Himalayas, there are about total of 334 glaciers in the entire Satluj basin which includes the glaciers in Beas, Sainj, Spiti, Baspa basins and 457 glaciers in the Chenab basin in Himachal Himalaya. Out of 334 glaciers in the entire Satluj basin, 202 glaciers are located in Himachal Pradesh (Kulkarni et. al). The total area covered by these glaciers in Satluj and Chenab basins is around 2,175 sq. km. Besides, the glaciers there are about 1,826 permanent snow fields in these basins having a total area of 1,101.737 sq. km.

The glaciers are receding, precipitation is becoming erratic, the protection of glacier fields is emerging as an important issue and associated livelihood issue does require attention at the moment. The analysis of data whatever available, therefore, presents that effects of climate change are likely to become more intense by next 2-3 decades when the temperature may rise by 2-4 C. There would be a clear change in the monsoon precipitation pattern which may increase by 20-25 %. The Frequency of extreme events may double. Resultantly there will be snow and glacier field loss, which will affect the flow in river system, the flow in the streams located at lower elevation would reduce maximum. The glacier fields may reduce by more than 50% due to rise in temperature, increased melting rate, monsoon, extreme events may further increase the issues of sedimentation, intense erosion, destabilization of slopes and the increase in events of GOLF's etc. (Kulkarni et. al).

### 2.3.2 Climate Change Impact on the Himalayan Glaciers







Impact of Climate Change on the Seasonal Snow Cover Patterns

### 2.3.3 Climate Change Vulnerability

Various factors show that Himachal Pradesh possesses a high degree of vulnerability to climatic variations, which will affect majorities of poor rural people. Climate change in fact is emerging as the pre-eminent development issue in the entire Indian Himalayan region. Some of the identified key aspects of Himachal Pradesh have been elaborated using parameters such as adaptive capacity, exposure and sensitivity that contribute to its net vulnerability to climate change in the State.

As per the spatial vulnerability District-level mapping of the adaptive capacity of Himachal Pradesh at global level measured as a composite of biophysical, social, and technological indicators (1960-1990) shows lowest adaptive capacity for Chamba and Kullu whereas higher adaptive capacity of Kangra, Hamirpur, Una, Solan and Sirmour districts (Fig. 11).

District-level mapping of the Climate Sensitivity Index (CSI) for India based on observed climate data (1961–1990) and based on results from the HadRM2 model is shown in the Fig. 12 and as per estimate, sensitivity is lowest for Lahaul & Spiti and low in Chamba, Shimla, Kullu and Kinnaur regions (Fig. 11). Analysis carried out by the Department of Environment, Science and Technology, GoHP.

The districts Una, Hamirpur, Solan, Bilaspur, Sirmour has been categorized as highly exposed and vulnerable towards climate change, whereas, Kullu and Shimla have a medium level of vulnerability (based on 1960-1990 data base at Global level) (Fig. 13).

The Climate Change Vulnerability has been measured as a composite of adaptive capacity and climate sensitivity under exposure to climate change. District-level mapping of globalization vulnerability is measured as a composite of adaptive capacity and trade sensitivity (for a representative basket of import-sensitive crops). Hamirpur district has been categorized as highly vulnerable with Kangra and Kullu districts at high and Solan, Mandi and Shimla districts with medium level of vulnerability (Fig. 15).

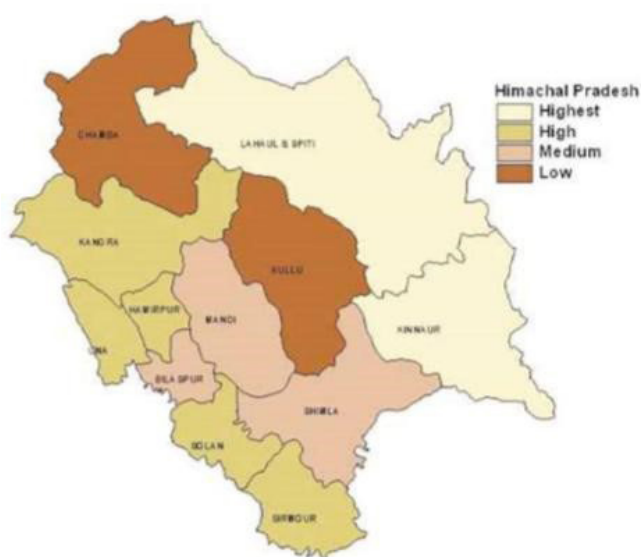
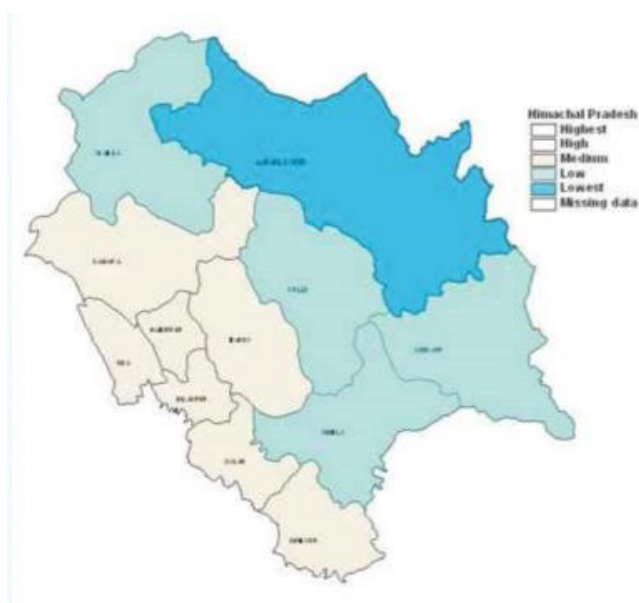


Fig. 11: District-level Mapping of Adaptive Capacity at Global level in Himachal Pradesh (Source- Environment Master Plan, Vulnerability Assessment, H.P)

Fig. 12: District-level Mapping of Climate Sensitivity Index (CSI) (Source- Environment Master Plan, Vulnerability Assessment, H.P)



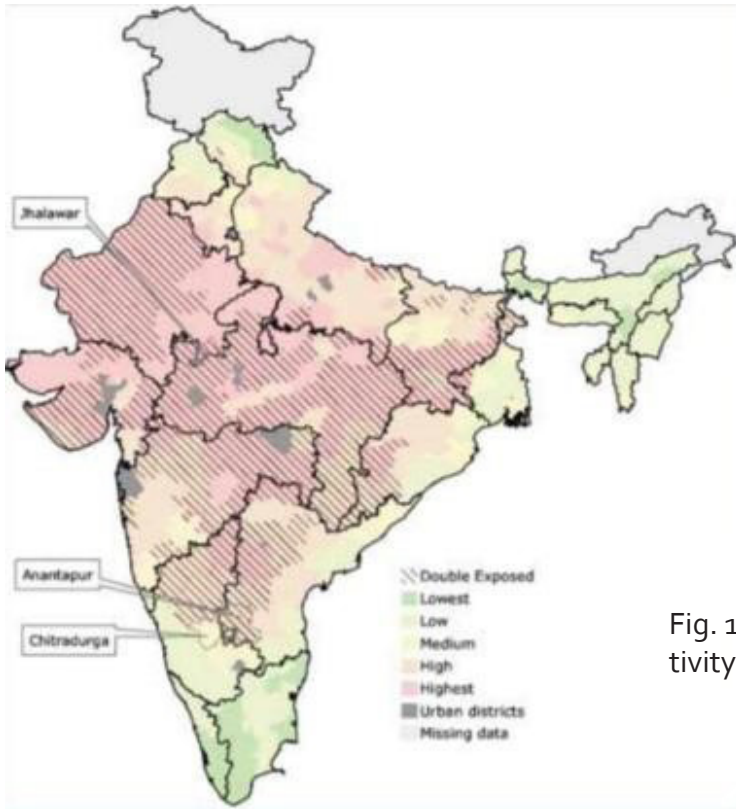


Fig. 13: District-level Mapping of Climate Sensitivity Index (CSI) for India

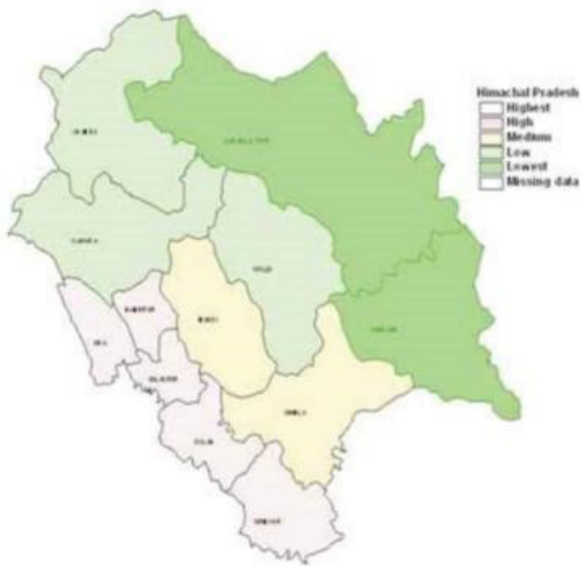


Fig. 14: District-level Mapping of Climate Change Vulnerability (Exposure) (Source- Environment Master Plan, Vulnerability Assessment, H.P)

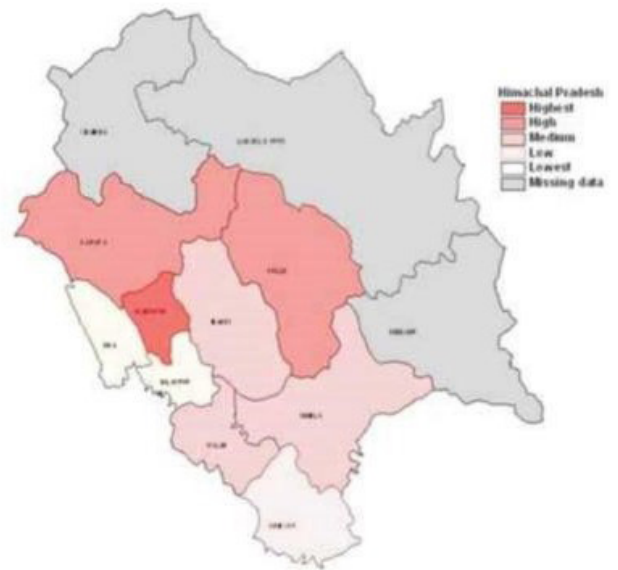


Fig. 15: District-level Mapping of globalization Vulnerability (Source- Environment Master Plan, Vulnerability Assessment, H.P)

## 2.4 Climate Change Vulnerability- Current & Future Projections

Recently very comprehensive studies on climate change and apple production scenario for Himachal Pradesh has been carried out by Prof. Verma and his colleagues at Y. S. Parmar University of Horticulture and Forestry Solan. Based on the analysis of data pertaining to the two stations at Shimla and Solan they have drawn the following inferences:

- The mean maximum temperature in Shimla showed an increasing trend for the period 1976-80 to 2006-2007.
- Mean minimum temperatures increased from 8.42°C in 1976-80 to 9.20°C in 2006-2007.
- Both rainfall and snow precipitation showed a negative trend. Rainfall in Shimla in 1973-75 was 1346.93mm which reduced to 816.15 mm in 2006-2007.
- About 17% decrease in rainfall was observed from 1996-2000 onwards till 2007.
- Total snowfall received during 1973-75 period was 190.53cm which in 1981-85 increased to 827.38 cm, declined to 101.90cm in 1986-1990 further reduced to 78cm in 2006-07 and it was only 15 cm in the year 2009.
- The decreasing trend in seasonal snow fall in Shimla is very conspicuous since 1990 and it was lowest in 2009.

The future climate scenario as worked out for the period from 2021-2050 using HadRM3 modal scenario AIB indicates that:

- The rise in temperature in subtropical and sub-temperate covering the districts of Solan, Sirmour, Una and Mandi will be in the order of 2.43-1.73 with a seasonal average of 2.08°C.
- In sub-temperate to temperate climate conditions covering the districts of Shimla, Kullu, Lahaul & Spiti, Kinnaur and Chamba the maximum temperature is likely to increase by 2.77°C and minimum temperature by 2.17°C with a seasonal average of 2.47°C.
- District wise winter (Nov-Feb) temperature and rainfall projected scenario suggests that both Kullu and Shimla districts will experience a maximum rise in temperature and fall in precipitation.
- The projected future climate change scenario for the state of Himachal Pradesh will increase the occurrence and frequency of hydro meteorological hazards such as floods, drought and GLOF and LDOF besides the localized disaster such as landslides, avalanches etc.

The predicted potential impacts of climate change on Himachal Pradesh are both positive and negative. While many of the impacts would be disruptive and potentially very costly, none is likely to be on a par with the worst impacts elsewhere in the Country. Examples of the projected impacts based on scenarios generated Reports and other research findings broadly indicates the following outfalls:

- Changes in precipitation (rain and snowfall) with the average water levels in rivers, lakes less than normal with serious drought like conditions, and in rainy seasons, flooding being more frequent, areas currently subject to flooding would suffer flooding of greater severity and for more duration; areas currently flood-free would suffer from occasional floods and flash floods. Lesser spring, summer rainfall causing regular water shortages, especially in the mid hills would be affecting both people and the ecosystems. There would be less recharge of reservoirs during the summer; water shortages would occur regularly and would be longer than at present. The change in rainfall patterns may further cause regular water deficits, leading to accelerated soil erosion and loss of fertility and biodiversity.
- Rising river water levels due to rapid glacier melt and more storm events and storm surge, particularly in the Satluj, Beas and Ravi rivers and their tributaries, storms of greater severity may trigger landslides, erosion and flooding threatening the infrastructure.
- Riverbed areas subject to human industrial development would be at risk, and could suffer loss of infrastructure. Human use of the river bed is quite intensive, and low lying areas of all valleys are highly developed with different key industries (mainly energy), and tourism, residential development along the river are under potential threat. Protective options include abandonment of land, stronger planning controls, and fiscal disincentives for riverside development.
- Short-term increased agricultural production with new crops becoming viable in certain regions and agricultural production costs, reduced if prolonged summer droughts do not become a problem. Grass growth could enjoy the benefits with a good increase with higher temperatures and changes in rainfall patterns. Increase in man-animal conflicts in the event of decreasing forest covers and degradation of habitats.
- New grassland and livestock management systems would be possible, with a longer grazing season and the prospect of growing additional forage crops (e.g. Maize, fodder beet). There would be little or no increase in cereal yields, but increases in other crops are possible, and the area for growth of many arable crops would migrate northwards. A number of new crops (e.g. Sunflower best option) may become viable in our area as well.
- Some existing forestry species may suffer badly (e.g. Where availability of water and nitrogen are limiting factors), with others becoming more productive (higher temperatures and increased CO<sub>2</sub> concentrations in the atmosphere supporting higher rates of photosynthesis and hence higher growth rates).
- Issues associated with Glaciers and Snow fields over Himachal Himalayas: Five major perennial rivers of Northern India pass through Himachal Himalayas, which have their origin in the glaciated terrains either in the State or outside. These are Beas, Satluj, Yamuna, Ravi, and the Chenab rivers. The rivers like Chenab, Ravi and Beas originate from Himachal Pradesh, whereas, the other two have economic losses from disasters are high in comparison to many other developing nations.

2012- 2013 An overview w.r.t. damages due to Droughts, Flash Floods, and widespread Rains in Himachal Pradesh:

Due to climatic extreme events Himachal Pradesh economy has faced many losses from time to time, both in terms of lives and infrastructural damages such as:

Year 2005-06 (Rabi Season): The damage due to drought conditions in Himachal Pradesh has been assessed to the tune of Rs. 366 crore which include loss of agri-horti crops, IPH infrastructure, and animal husbandry.

Year 2002-03 (Kharif Season): The estimated damage due to drought conditions in Himachal Pradesh was Rs. 707.21 crore.

Year 2000-01 (Rabi Season): The estimated damage was Rs. 360.85 crore.

Year 1999 The damage due to widespread rains, flash floods and drought were beyond imaginations about 2.423 lac ha area under agriculture and 0.447 lac ha area under horticulture (total monetary loss estimated to Rs. 23,487.00 crore) was affected due to extreme events besides physical losses estimated to Rs. 19,151.67 lacs were observed

Year 1998: The total loss (physical and crops) was assessed for an amount of Rs. 33,226.79

Year 1997: The estimated damage was Rs. 79,865.19 lacs.

Year 1996: The estimated damage was Rs. 47,677.28 lacs

Year 1995: The estimated loss was about Rs. 50,599.82 lacs.



# 3. CCA and DRR Policy Environment and Institutional setup

The institutional and policy mechanisms for carrying out response, relief and rehabilitation have been well-established in India since Independence. These mechanisms have proved to be robust and effective insofar as response, relief and rehabilitation are concerned. The Parliament of India has enacted the National Disaster Management Act in November 2005, which brings about a paradigm shift in India's approach to disaster management. The Disaster Management Act, 2005 lays down institutional, legal financial and coordination mechanisms at the central, state, district and local levels. These institutions are not parallel structures and will work in close harmony. The new institutional framework is expected to ensure implementation of the national desire for a paradigm shift in DM from a relief-centric approach to a proactive regime that lays greater emphasis on preparedness, prevention and mitigation.

## 3.1 Institutional and Legal Mechanism in India

At the national level, the Ministry of Home Affairs is the nodal Ministry for all matters concerning disaster management. The Central Relief Commissioner (CRC) in the Ministry of Home Affairs is the nodal officer to coordinate relief operations for natural disasters. The CRC receives information relating to forecasting/ warning of a natural calamity from India Meteorological Department (IMD) or from Central Water Commission of Ministry of Water Resources on a continuing basis. Each Ministry/Department/Organization nominates their nodal officer to the Crisis Management Group chaired by Central Relief Commissioner. The nodal officer is responsible for preparing sectoral Action Plan/Emergency Support Function Plan for managing disasters.

The National Policy on Disaster Management prepared by the National Disaster Management Authority (NDMA), Government of India and approved by the Cabinet in 2009 was formulated with the vision to build a safe and disaster resilient India by developing a holistic, proactive, multi-disaster oriented and technology driven strategy through a culture of prevention, mitigation and response. The National Policy envisaged a paradigm shift from the hitherto reactive post-disaster relief-centric regime to a more proactive and enabling environment of strengthened disaster preparedness, mitigation and improved emergency response capacities of all stakeholder groups. Mandated by the enactment of the Disaster Management (DM) Act 2005, institutional mechanisms like the National Disaster Management Authority (NDMA) chaired by the Prime Minister of India at the national level, State Disaster Management Authorities (SDMAs) chaired by the Chief Ministers of the respective State Governments at the State level and District Disaster Management Authorities (DDMAs) chaired by the respective District Collectors and co-chaired by the Sabhapatis of the Zilla Parishads at the district level were established. However, in many cases, these institutions are not active and operational except a few honorable exceptions.

Similarly, even though the DM Act, 2005 stipulated the setting up of the Disaster Response Fund and the Disaster Mitigation Fund at National, State and District levels, only the National and State Disaster Response Funds have become operational till now. The increasing frequency and damage to property, assets and infrastructure caused by recurring disasters makes it imperative that the provisions of the DM Act, 2005 are enforced in letter and spirit.

### 3.1.1 National Institute of Disaster Management

The National Centre for Disaster Management, established in 1995 was upgraded to the National Institute of Disaster Management (NIDM) after the transfer of the subject of disaster management to the Ministry of Home Affairs. The main responsibility of the institute is human resource development through development and implementation of human resource plans, capacity building & training, research, documentation and policy advocacy in the field of disaster management. NIDM works in tandem with the NDMA and Central, State and local governments as well as various other stakeholders to build their capacities towards promoting a culture of prevention and preparedness at all levels.

### 3.1.2 National Disaster Response Force

Ten battalions of National Disaster Response Force (NDRF) comprising 144 specialized teams trained in various types of natural, man-made and non-natural disasters have been set up. All the battalions are being trained to respond to natural disasters while four of them are being specially trained for handling radiological, nuclear, biological and chemical disasters.

### 3.1.3 Nodal Ministries at Union Level

Table - Ministries responsible for various categories of disasters:

Disasters	Ministries/ Departments
Earthquake and Tsunami	MHA/Ministry of Earth Sciences/IMD
Flood	MHA/ Ministry of Water Resources/ CWC
Cyclone	MHA/ Ministry of Earth Sciences/ IMD
Drought	Ministry of Agriculture
Biological Disaster	Ministry of Health and Family Welfare
Chemical Disaster	Ministry of Environment and Forests
Nuclear Disaster	Ministry of Atomic Energy
Air Accidents	Ministry of Civil Aviation
Railway Accidents	Ministry of Railways



### 3.1.4 National Level Initiatives in DRR and CCA

In view of the fact Government of India plays a major/leading role in DRR/CCA, its resources in the form of legislations, policy-planning and institutionalization have been enumerated as following:

1. Disaster Management Act, 2005
2. Disaster Management Policy, 2009
3. Prime Minister's Council on Climate Change
4. Parliamentary Forum on Global Warming and Climate Change
5. Climate Change Action Programme (CCAP)
6. Twelfth Five-Year Plan and Climate Change
7. India Network for Climate Change Assessment (INCCA)
8. Himalayan Glaciers Monitoring Programme
9. Launch of Indian Satellite to Monitor Greenhouse Gases
10. Green India Mission
11. India's Forest and Tree Cover as a Carbon Sink
12. India's GHG Emissions Profile
13. Expert Group on Low Carbon Economy
14. National Policy on Bio-fuels
15. National Water Policy, 2002
16. National Environment Policy (NEP), 2006
17. National Urban Sanitation Policy
18. Notification on Protection and Improvement of Quality of Environment in the Himalayas, 2001
19. National Rural Health Mission (2005-12)
20. Environment (Protection) Act, 1986
21. National Health Policy, 2002
22. Environment (Protection) Rules, 1986
23. The Water (Prevention and Control of Pollution) Act, 1974 (Amended -1988)
24. The Water (Prevention and Control of Pollution) Cess Act, 1977 (Amended 1992 and 2003)
25. Municipal Solid Wastes (Management and Handling) Rules, 2000
26. Biomedical Waste (Management and Handling) Rules, 1998 (As amended in 2003)
27. Environment Impact Assessment (EIA) Notification, September 14, 2006
28. EIA Notification 2006

## 3.2 Institutional and Legal Mechanism in Himachal Pradesh

The State Government has adopted the Disaster Management Act 2005 as enacted by the Govt. of India for providing an effective mechanism for Disaster Management in the State of Himachal Pradesh.

### 3.2.1 State Disaster Management Authorities

As per clause b of sub-section (2) of Section 14 of the Disaster Management Act 2005, the Himachal Pradesh Disaster Management Authority under the chairperson of the Honorable Chief Minister was constituted on 1st June 2007 with the following persons as members of the HPSDMA:

Table - HPSDMA Members

1.	Honorable Chief Minister	Chairperson
2.	Hon'ble Revenue Minister	Co- Chairperson
3.	Shri. Rajender Rana, Ex MLA, Sujanpur	Vice Chairperson (nominated)
4.	Chief Secretary	Member
5.	Principal Secretary (Revenue)	Member
6.	Principal Secretary (Home)	Member
7.	Principal Secretary (PWD)	Member
8.	Principal Secretary (Health)	Member
9.	Director General Police	Member
10.	Principal Secretary (Revenue)	Member Secretary

#### Roles and Responsibilities:

1. Lay down the State disaster management policy
2. Approve the State Plan in accordance with the guidelines laid down by the National Authority.
3. Lay down guidelines to be followed by the departments of the State Government for the purpose of coordination and integration measures for prevention of disasters and mitigation in their development plans and projects and provide necessary technical assistance.
4. Coordinate the implementation of State Plan at State and District level.
5. Recommend provision of funds for mitigation and preparedness measures.
6. Review the development plans of different departments of the State and ensure that prevention and mitigation measures like earthquake resistant structures are built at least for life line structures.
7. Review the measures being taken in mitigation, capacity building and preparedness by the departments of the State Government and issue such guidelines as may be necessary.

### 3.2.2 State Executive Committee

As per sub-section (1) of section 20 of the Disaster Management Act 2005, the State Executive Committee under the chairperson of Chief Secretary was constituted by the Government of Himachal Pradesh on 1st June 2007 comprising the following members:

Table - State Executive Committee Members

1.	Chief Secretary	Chairman
2.	Principal Secretary (Revenue)	Member
3.	Principal Secretary (Home)	Member
4.	Principal Secretary (PWD)	Member
5.	Principal Secretary (Health)	Member

As per the Disaster Management Act 2005, the SEC may discharge following functions:

1. Coordinate and monitor the implementation of the National Policy, the National Plan and State plan.
2. Examine the vulnerability of different parts of the State to different forms of disasters and specify measures to be taken for their prevention or mitigation.
3. Preparation of State Disaster Management Plans.
4. Monitor the implementation of State Disaster Management Plan (SDMP) and Crisis Management Plan (CMP) prepared by the line departments of the State Government and District Authorities.
5. Monitor the implementation of the guidelines laid down by the State Authority for integrating the measures for prevention of disasters and mitigation by the departments in their development plans and projects.
6. Evaluate preparedness at all government or non-governmental levels to respond to any threatening disaster situation or disaster and give directions, where necessary, for enhancing such preparedness.
7. Coordinate response in the event of any threatening disaster situation or disaster;
8. Give directions to line Departments of the government of the state or any other authority or body in the State regarding actions to be taken in response to any threatening disaster situation;
9. Promote general education, awareness and community training and to conduct regular Mock drills to test the plan in regard to the forms of disasters to which different parts of the

State are vulnerable and the measures that may be taken by such community to prevent the disaster, mitigate and respond to such disaster;

10. Advise, assist and coordinate the activities of the Departments of the Government of the State, District Authorities statutory bodies and other governmental and non-governmental organizations engaged in disaster management.;

11. Provide necessary technical assistance or give advice to District Authorities and local authorities for carrying out their functions effectively;

12. Advise the State Government regarding all financial matters in relation to disaster management.

13. District Disaster Management Authorities: District Disaster Management Authorities have been set up as planning, coordinating and implementing bodies for disaster management and to take all measures in the district in accordance with the guidelines laid down by the National and State Authorities.

### **3.2.3 Technical Committee(s)**

Under sub-section (1) of Section 21 of the Disaster Management Act, 2005, the SEC has constituted a sub-committee to look into the issue of amendment to the TCP Act and building bye-laws of Urban Local Bodies.

### **3.2.4 State Emergency Operations Centre**

The State Emergency Operations Centre (SEOC) will be a hub of all activities related to disaster response in the State.

### **3.2.5 District Disaster Management Authority**

The District Disaster Management Authority (DDMA) will act as the district planning, coordinating and monitoring body in accordance with the guidelines laid down by the State Authority.

As per Section 25 of the DM Act 05, DDMA for every district in the State of Himachal Pradesh has also been constituted, consisting of the following members:

Table - DDMA Members

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

### 3.2.6 District Disaster Management Advisory Committee(s):

District level Disaster Management Advisory Committee(s) will be appointed by the District Disaster Management Authority to take advice on various subject specific fields within the overall context of disaster management. The committee will comprise disaster management experts, which may be from government departments, research institutes and NGO's.

### 3.2.7 District Emergency Operation Centres

The District Emergency Operation Centres will be the hub of all the activities related to disaster response in the District. It will coordinate and communicate upward and down ward with regard to emergency response.

### 3.2.8 Tehsil/Sub-Tehsil/Block Disaster Management Committee

Subject to the directions of the District Authority, the Tehsil/Sub-Tehsil/block disaster management committee will be responsible for the development and implementation of block level disaster management plans.

### 3.2.9 Gram Panchayat/Village Disaster Response Committee

Response committees will be constituted to be the first responders under the Chairpersonship of Panchayat Pradhan. The secretary of Panchayat will be secretary of the committee and local Patwaris and ward members shall be its members.

## 3.3 Institutional Setup for Climate Induced Hazards in Himachal Pradesh

### 3.3.1 State Level Governing Council on Climate Change

: In order to respond effectively to the challenges of climate change, the H.P State Government has constituted a State Level Governing Council on Climate Change, under the chairmanship of Chief Minister. The Council has broad based representation from key stake- holders departments to monitor the targets, objectives and achievements of the Eight National Missions specified under National Action Plan on Climate Change. The State Governing Council also provides guidance on matters relating to coordinated national action on the State's agenda and review of the implementation of the National Action Plan on Climate Change. The State Level Governing Council chaired by the Chief Minister also provides guidance on the matters relating to national level negotiations including bilateral, multilateral programmes for collaboration, research and development in the State of Himachal Pradesh.

In order to achieve the objectives of the National Action Plan on Climate Change (NAPCC) and dovetail State's initiatives with the Centre, State Level Governing Council on Climate Change constituted in the following manner:-

Table - State Level Governing Council on Climate Change Members

1.	Hon'ble Chief Minister, Himachal Pradesh	Chairperson
2.	Himachal Pradesh Hon'ble Minister for (Power & Non-Conventional Energy Sources), H.P.	Executive Member
3.	Hon'ble Minister for (PWD and Revenue), H.P.	Executive Member
4.	Hon'ble Minister for (TCP and Housing), H.P.	Executive Member
5.	H.P. Hon'ble Minister for (Urban Development), H.P.	Executive Member
6.	H.P. Hon'ble Minister for (Irrigation & Public Health), H.P.	Executive Member
7.	H.P. Hon'ble Minister for (Agriculture & Horticulture), H.P.	Executive Member
8.	H.P. Hon'ble Minister for (Transport), H.P.	Executive Member
9.	Hon'ble Minister for (Forest, Env. & Scientific Technologies) H.P.	Executive Member
10.	Secretary (Forests), H.P.	Member
11.	Secretary (Urban Development), H.P.	Member
12.	Secretary (Agriculture & Horticulture), H.P.	Member
13.	Secretary (MPP & Power) to the Govt. of H.P.	Member
14.	Secretary (Irrigation & Public Health), H.P.	Member
15.	Secretary (PWD and Revenue) to the Govt. H.P.	Member
16.	Secretary (TCP and Housing), H.P.	Member
17.	Secretary (Transport), H.P.	Member
18.	Secretary (Env. & Sci. Technologies), H.P.	Member Secretary

Besides, an Executive Council under the chairpersonship of Chief Secretary, Himachal Pradesh has also ensured involvement of almost all stake holder line Departments with the objective of implementation and monitoring of the directives of the State Governing Council on Climate Change.

### **3.3.2 State Centre on Climate Change**

A Centre on Climate Change has already been established in Himachal Pradesh which will act as a nerve centre for climate change data base and actions. This Centre is being catered and supported for its GIS applications need by the Aryabhata Geo-informatics & Space Application Centre (AGiSAC).

*Mission- To understand climate change and its impact on the Himalayan Ecosystem and to develop and implement mountain specific strategy, mitigation and adaptation plans based on vulnerability, risk scenario and analysis by enhancing the capacity of all stakeholders to combat the threat of climate change.*

### **3.3.3 Department of Environment, Science & Technology (DEST)**

The DEST comprises three Divisions – Environment, Biotechnology and Science & Technology – and two autonomous institutions – State Pollution Control Board and the Council for Science, Technology & Environment. Under the Environment Division and the Biotechnology Division, two societies have been created to facilitate specific activities. The Department acts as a Nodal Agency to coordinate and deal with the climate change issues. The Department of Environment, Science & Technology, the State Council for Science, Technology & Environment, and State Centre on Climate Change would continue to evolve strategies and programmes, based on new scientific and technical knowledge as they emerge and in response to the evolution of the multilateral climate change regime including arrangements for national and international cooperation. Further, the Department shall monitor and assess State's progress in addressing climate change issues and to increase awareness in all sectors of the opportunities and challenges presented by the transition to a carbon neutral economy.

### 3.3.4 Nodal Departments at State Level

Nodal departments/agencies deserved to be identified with a fine focus. Here is their mapping with some introductory description.

Table - Nodal Departments at state level

Sr. No.	Department/ Primary Agency	Description
1	Department of Irrigation and Primary Health	Primary Department for Flood, Cloud Burst, Drought, Boat Capsizing Supporting Department for Dam Failures/ Dam Bursts, Urban Fires Irrigation and Primary Health department mandated for early warning of floods in the state
2	Department of Agriculture	Primary Department for Hailstorm, Drought, Pest Attack Agriculture department mandated for early warning of cyclone in the state
3	Department of Horticulture	Primary Department for Hailstorm, Pest Attack
4	Department of Revenue	Primary Department for Thunder and Lightning, Heat Wave and Cold Wave Supporting Department for Hailstorm, Cloud burst, Drought, Biological disasters and epidemics, pest attack, cattle epidemic, food poisoning, forest fires, urban fires, major building collapse, serial bomb blasts, festival related disasters, electrical disasters and fires, air, road and rail accidents, village fires, boat capsizing, biological disasters and epidemics, pest attacks, cattle epidemics, food poisoning Revenue department mandated for early warning of heat and cold waves in the state
5	Department of Home	Primary Department for Nuclear disasters, urban fires, serial bomb blasts, festival related disasters, village fire Supporting Department for Hailstorm, Snow Avalanches, Chemical and industrial disasters, forest fires, urban fires, major building collapse, electrical disasters and fires, air, road and rail accidents, boat capsizing, village fires, Biological disasters and epidemics, pest attack, cattle epidemic, food poisoning



6	Department of Environment, Science and Technology	Primary Department for Snow Avalanches, Earthquake, Climate Change Supporting Department for Nuclear disasters, Thunder and lightning, flood, cloud burst, forest fires Environment, Science and Technology department mandated for early warning of Snow Avalanches in the state
7	Department of Industries and Geological Wing and DIC	Primary Department for Landslide and mudflow, chemical and industrial disasters, Supporting Department for urban fires Geological wing of industry department mandated for early warning of landslide in the state
8	Public Works Department	Primary Department for landslides and mudflows, Supporting Department for major building collapse
9	Department of labour and Employment	Primary Department for chemical and industrial disasters
10	Department of MPP and Power	Primary Department for boat capsizing, dam failures/dam burst
11	Department of Himachal Pradesh State Electricity Board	Supporting Department for Chemical and Industrial disasters
12	Forest Department	Primary Department for forest fires Supporting Department for heat wave and cold wave,
13	Department of Urban Development	Primary Department for major building collapse, landslides and mudflows
14	Department of Transport	Primary Department for Road Accidents
15	Department of Animal Husbandry	Primary Department for cattle epidemics
16	Department of Health and Family welfare	Primary Department for food poisoning, biological disasters and epidemics Supporting Department for heat wave and cold wave, Snow Avalanches, urban fires, major building collapse, serial bomb blasts, festival related disasters, electrical disasters and fires, air, road and rail accidents, village fires, boat capsizing

17	Department of Civil Aviation	Primary Department for Air accidents
18	Department of Rural Development	Supporting Department for Drought
19	Department of Land Records	Supporting Department for Drought
20	Department of Fire	Supporting Department for forest fires
21	Department of Town and Country Planning	Supporting Department for urban fires
22	Department of Art, Language and Culture	Supporting Department for festival related disasters,
23	Home Guards and Civil Defence	Supporting Department for traffic and patrolling duties, guarding of vital installations, manning of treasuries/sub-treasuries, maintenance of Law and Order during fairs and festivals and besides security duties at temples and zonal hospitals. In addition to this women Home Guard volunteers were also deployed for nursing training in the Hospitals.
24	Fire Services	Primary Department for fires Supporting Department for accidents
25	Snow and Avalanche Study Establishment (SASE)	Primary Department for Snow Avalanches
26	Nauni and Palampur Universities	Supporting Department for drought
27	Indian Railway	Primary Department for Rail accidents
28	Border Roads Organization	Primary Department for landslides and mudflows
29	Manali (DRDO)	Primary Department for Snow Avalanches
30	Indian meteorological Department (IMD)	Supporting Department for Flood, Hailstorm, Cloud burst, heat wave and cold wave, drought, thunder and lightning, Landslides and Mudflows, Earthquake
31	Central Water Commission (CWC)	Supporting Department for Flood, Cloud burst
32	Tribal Admin	Supporting Department for Snow Avalanches
33	Mountaineering Institute	Supporting Department for Snow Avalanches

34	Geological Survey of India (GSI)	Supporting Department for Snow Avalanches, Landslides and Mudflows, Earthquake
35	DMI Bhopal	Supporting Department for Chemical and Industrial disasters
36	NDRF	Supporting Department for Chemical and Industrial disasters, biological disasters and epidemics, pest attacks, cattle epidemics, food poisoning
37	Central Road Research Institute	Supporting Department for Landslides and Mudflows,
38	Wadia Institute of Geology	Supporting Department for Landslides and Mudflows

### 3.3.5 State Level Policies / Regulations relevant to DRR and CCA

In view of the fact that disaster management necessitates multipronged and inter-departmental inputs, we enumerate the following policy documents, laws and rules as a part and parcel of the report.

1. State Disaster Management Policy, 2011
2. State Training Policy
3. HP Water Supply Act, 1968
4. HP Water Supply Rules, 1989
5. State Water Policy, 2013
6. Water Allocation Priorities
7. Draft Urbanization Policy, 2009
8. The State's New Hydropower Policy, 2006
9. Himachal Pradesh Forest Sector Policy, 2005
10. Tourism Policy, 2005
11. River/Stream Bed Mining Policy Guidelines for the State of Himachal Pradesh, 2004, Notified on 28-2-2004
12. Himachal Pradesh Groundwater (Regulation and Control of Development and Management) Act, 2005
13. Himachal Pradesh Groundwater (Regulation and Control of Development and Management) Rules, 2006
14. Himachal Pradesh Town and Country Planning Act, 1977
15. Himachal Pradesh Municipal Act, 1994
16. Provisions for Water Supply
17. Supply of Water for Domestic Purposes
18. Supply of Water for other than Domestic Purposes
19. Procedure for Water Connections
20. Obligation of owner or occupier to give Notice for Wastage of Water
21. Cutting off Water Supply to Premises
22. Power to Require Buildings Owners to Provide Storage Reservoirs for Rain Water on

their Premises

23. Repair of Reservoirs
24. Provisions of Drains and Privies
25. Repair and closing of Drains and Privies
26. Unauthorized Building over Drains
27. Sewerage Connection
28. Removal of Latrines etc. near any Source of Water Supply
29. Discharging Sewerage
30. Making or Altering Drains without Authority
31. Power to require Removal of Nuisance arising from Tanks and the Lake
32. Connection with Main not to be made without Permission of Municipality
33. Prohibition by Municipality of use of Unwholesome Water
34. Himachal Pradesh Municipal Business Bye-Laws, 2006
35. Himachal Pradesh Housing and Urban Development Authority Act, 2004
36. Himachal Pradesh Panchayati Raj Act, 1994
37. Management of Minor Water Bodies in the Scheduled Area
38. Himachal Pradesh Non-Biodegradable Garbage (Control) Act, 1995
39. Himachal Pradesh Tourism Development and Registration Act, 2002
40. State's Sector Reform
41. Organic Farming Policy
42. Environment (Protection) Act.1986
43. Bio-Medical Waste (Management & Handling) Rules 1998
44. The Cigarette & other Tobacco Products (Prohibition of Advertisement &
45. Regulation of Trade and Commerce Precipitation Act.2003 and Rules made there under on 30.5.2008
46. The Mental Health Act.1987
47. Prevention of Food Adulteration Act.1954 and Rules 1955 and Food Safety Standard Act 2006(Act.No.34 of 2006)
48. The persons with Disabilities (Equal opportunities, protection of Right and full Particulars) Act,1995

### **3.4 State level initiatives on CCA and DRR**

The State Government seems to be conscious of the requirements of moving ahead on the path of development with utmost care to ensure the environment of the state is disturbed by developmental activities. It has taken several initiatives to protect its environment. The major initiatives which the Government of H.P. has taken so far in this connection are as follows:

1. In pursuant to the National Action Plan on Climate Change (NAPCC), Government of Himachal Pradesh took several actions which include Himalayan Chief Minister's Conclave on 'Indian Himalaya: Glaciers, Climate Change & Livelihoods' held in Shimla on October, 29-30, 2009. The recommendations based on the deliberations with policy makers were presented and a declaration entitled "Shimla declaration on Climate Change and Himalayan Development" was made.
2. Government constituted State Council for Climate Change under the Chairpersonship of Worthy Chief Secretary, Himachal Pradesh and Notified vide Notification Number STE-F(1)-12/2008-I
3. Set up a State Centre on Climate Change in Himachal Pradesh under the aegis of the State Council for Science Technology & Environment.
4. State Strategy and Action Plan for Climate Change through vulnerability assessment of various sectors at the tehsil level.
5. Himachal Pradesh State Disaster Management Policy.
6. Himachal Pradesh State Disaster Management Plan.
7. State has prepared ten District Disaster Management Plans and remaining two plans are under process.
8. Environment Master Plan formulated.
9. Climate change cell formulated in Irrigation and Public Health department.
10. Carbon intensity of the state evaluated and published.
11. Greenhouse Gas (GHGs) Emissions Inventory of the State.
12. Reduction of GHG emissions by way of banning fossil fuel and other traditional material for space heating.
13. Climate Change Adaptation focused Sustainable Water Resources Strategy for Himachal Pradesh carried by Asian Development Bank.
14. To earn revenue through Carbon Credits under Mid-Himalayan Watershed Project.
15. Energy Efficiency by promoting CFL through 'Atal Bijli Bachat Yojna'.
16. Community Led Assessment, Awareness, Advocacy Program (CLAP) for Environment

## Protection & Carbon Neutrality.

17. Afforestation scheme viz. Sanjeevani Van –Sanjha Van for the promotion of medicinal herbs.
18. Use of plastic in developmental works for road construction as binding material for management of plastic waste.
19. Creation of Green Fund as a corpus for environment protection works.
20. Awareness programmes on the conservation and management of Biodiversity.
21. Awareness programmes on environment conservation through Eco clubs, National Green Corps etc.
22. Development of Environment Master Plan for sustainable development.
23. Constitution of State Water Management Board.
24. Water Conservation (Rain Water Harvesting) mandatory for all type of constructions.
25. Construction of atleast one check dam at sub-division level.
26. Constitution of State Disaster Management Authority (SDMA), State Executive Committee (SEC), & Disaster Management Cell (DMC).
27. Formulation of State Disaster Management Plan.
28. In 2012, under the GOI-UNDP Disaster Risk Reduction Programme (2009-2012) a TNA for Stakeholders in Disaster Management in H.P was conducted by State Council for Science, Technology & Environment, and the DM Cell of the Revenue Department of H.P. However, the recommendations of the Assessment are yet to be implemented. Also, the scope of the assessment needs to be expanded to incorporate climate change concerns. The Disaster Management Cell at Himachal Pradesh Institute of Public Administration (HIPA), Shimla has been conducting a number of training programmes in the State to build capacities of government officials and other stakeholders. TNA for DRR and CCA has been initiated by DM Cell of Dept. of Revenue in partnership with HIPA. A consultative workshop was conducted on 25 April 2014 in Shimla where representatives from various Departments, NGOs, technical and academic institutions participated.
29. State Training Policy: The Government of Himachal Pradesh explicitly recognizes the need for training and capacity enhancement ever since it formulated the State Training

Policy 2009. The Policy enjoins upon the government “a duty to ensure that it makes all efforts to improve the competence of its employees who are the principal agents of delivering all that the State strives to achieve for its people.’ The key objectives of the State Training Policy are to: (i) Promote better understanding of professional requirements in the given and emerging socio-economic and political environment. (ii) Update and enhance professional knowledge and skills needed for better performance of individuals and organizations as a whole. (iii) Bring about the right attitudinal orientation

The focus of most of the Disaster Management Plans developed by various departments is largely in response. Hence there is a need to revisit/review these plans from a DRR/CCA perspective and revise them to incorporate specific mitigation aspects that can be implemented by the respective departments. The DM cell of the State Institute of Public Administration has been identified as the nodal training institute in the state for conducting training programmes and development of some training modules on Disaster Risk Reduction. However, the capacity of the institute to fulfill this mandate has not been assessed not the courses/modules developed peer reviewed.

### **3.5 An overview of ongoing interventions**

The following initiatives are directly and indirectly correlated with DRR and CCA in the State. However, their mutually-dovetailed action-plan is the need of the hour. Then, there is also a requirement to objectively monitor and evaluate the correlations and performances.

1. Integrated Watershed Management Programme
2. Mid Himalayan Watershed Development Project
3. Mahatma Gandhi National Rural Employment Guarantee Act (MNREGA)
4. Pandit Deen Dayal Kisan Bagwan Samridhi Yojna
5. Himachal Pradesh Crop Diversification Project
6. Horticulture Technology Mission
7. Apple Re-plantation Scheme
8. Mid-Himalayan Watershed Development Project
9. Rashtriya Krishi Bima Yojna (RKBY)

10. Biogas Development Programme
11. Soil Health Management Programme
12. Horticulture Technology Mission Programme
13. Anti Hail Radar and Gun systems
14. Jan-Jan Sanjeevani Abhiyan scheme
15. Sanjha Van Sanjeevani Van programme
16. Apna Van Apna Dhan programme
17. Peepal–Bargad Plantation scheme
18. Carbon Revenue: Generating Income through Carbon Credits
19. HP Mid Himalayan Watershed Development Project (MHWDP)
20. Bio-carbon, Clean Development Mechanism (CDM) Project
21. Bio-carbon-sub project
22. National Bamboo Mission
23. Green India Mission
24. Van Sarovar scheme
25. National Flagship programme NREGA
26. A medicinal plant project has been got sanctioned from “National Medicinal Plants Board” (NMPB) for Kangra, Kullu, Chamba and Sirmaur districts
27. Cultivation, Value Addition and Marketing of Medicinal and Aromatic Plants for Rural Upliftment in HP
28. National Rural Drinking Water Programme (NRDWP)
29. Jalmani scheme
30. Implementation and Strengthening of Rain Water Harvesting Structures (RWHS )



31. Integrated & Comprehensive Hydrological Database - Hydrology Project II
32. World Bank funded Hydrology Project – II
33. Hydrological Information System (HIS)
34. Doodh Ganga Scheme
35. Mukhya Mantri Arogya Pashudhan Yojana
36. Feed & Fodder Development Scheme
37. Bhed Palak Samridhi Yojana
38. Shepherd Insurance Scheme
39. Small, Micro & Mini-Micro (572) Projects are being promoted to produce about 10,131 MW of Hydro-power
40. Scientific Environment Management in Hydel Projects
41. Scientific Muck Management
42. Local Area Development Fund (LADF) is currently being implemented in about 25 projects with an estimated Rs. 1600 million (33 million USD) that has been either spent or deposited with Local Area Development Committees (LADC) by the developers as per Ministry of Environment & Forest, Govt. of India provisions of 1.5% project cost for LADF
43. Integrated Catchment Area Treatment Plan
44. Cumulative Environment Impact Assessment (CEIA) studies are conducted
45. Government is committed for harnessing renewable sources of energy in the State. Wind Solar Hybrid System of 12 KW (10 KW Wind Aero-generators and 2 KW Solar Photovoltaic Panels; investment of Rs. 41.30 lacs) has been installed at Pooh, District Kinnaur during 2008-09 with an objective to facilitate the Military Operations at high altitude near Line of Control (LOC), China.
46. Atal Bijli Bachat Yojna (ABBY)
47. Solar Passive Building Programme
48. Solar Thermal Programme

49. Solar Photovoltaic Programme

50. Environmental Audit Scheme

51. The vision of Sustainable Industrial Growth of Himachal Pradesh envisages an industrial development, which is inclusive and is in harmony with the environment. During last few years, the State Government has initiated several policy amendments, provided concessions, offered incomparable services/infrastructures and created investment friendly environment, which have started yielding results in terms of setting up of more industrial units and enhancing employment opportunities for the local people.

52. Translating the above vision into action, the State Government amended the Industrial Policy in December 2011 to promote environment friendly development in the State and encourage cleaner production. Salient features of the amendment are as under: • Promotion of cleaner production and environmental management system consistent with internationally recognized standards. • Disincentive to industries on negative list. • Promote public disclosure of pollution status at the unit and cluster level.

53. The State Government is according top priority for setting up of a Common Effluent Treatment Plant (CETP) through a Special Purpose Vehicle (SPV) namely M/s Baddi Infrastructure Ltd, formed by Baddi Barotiwala Nalagarh Industrial Association (BBNIA), Baddi, District Solan, Himachal Pradesh

54. The Ambient Air Quality Programme

55. Online Continuous Ambient Air Monitoring Station (CAAQMS) by ACC Plant Gagai

56. Hazardous Waste Management

57. The Common Treatment, Storage, Disposal Facility (TSD) at village Majra, Tehsil Nalagarh, District Solan is operational since June, 2008 for scientific disposal of landfillable hazardous waste.

58. Till March 2011, about 2427 units generating hazardous waste have been identified. Out of which 1862 are operational as on March 2011 and responsible for generating hazardous waste under Hazardous Waste (Management, Handling & Trans-boundary Movement) Rules, 2008. Of them authorization was granted to 1862 units.

59. A total of 27,786 MT of landfillable hazardous waste has been disposed off in TSD by various landfillable hazardous waste generating industries.

60. Management of E-wastes: • Guidelines for the Environmentally Sound Management

of E-Wastes and Guidelines for Environmentally Sound Mercury Management in Fluorescent Lamp have been issued by the MoEF/CPCB in 2008. This is being pro-actively implemented. • The aspect of E-waste generation in the state and its management is being taken up on priority, beside the management of mercury from the CFL lamps and its disposal requires awareness and proper central disposal facility.

61. Bio-medical Waste Management: Till March 2011, 555 Health Care facilities were inventorised and covered under Biomedical Waste (Management & Handling) Rules, 1998 which includes 233 Government and 322 Private health institutions.

62. Municipal Solid Waste processing facilities towards Green Himachal: Eight number of waste processing facilities (composting plants) are functional, wherein approx.; 80-90 tons of municipal solid waste from 10 number of municipalities is processed/ day, Total waste generation is approx. 300-350 tons/day within the area of jurisdiction of municipal limits; The establishment of composting plants of five more municipalities has also been proposed; and Besides technical assistance, financial assistance was also provided for establishment of waste processing facility at MC Nahan.

63. Municipal Waste Management

64. Redressal of Public Complaints/Representations: • The State Government ensured that surveillance and monitoring becomes a regular event to maintain a constant vigil on the environmental quality and impact thereof on the people. • The concerned regulatory authority not only keep liaison with the people but also take prompt action for mitigation of the public grievances. • During the years 2008-11, the State Pollution Control Board took remedial action on 641 public complaints/representations that were received during these years.

65. Home Stay Scheme, is a unique environment friendly scheme, which provides secure and comfortable Home Stay facilities of standardized services to the tourists and to supplement the availability of accommodation in the rural tourist destinations, besides generating employment opportunities and adding economic values in the interior, remote and rural areas. 'Home Stay' scheme is pivotal for promoting rural tourism in the State. Himachal is now being recognised as 'A Destination for All Seasons & All Reasons'.

66. Eco-Tourism: In order to achieve the dual objective of resource generation and the protection of our fragile Himalayan ecology, the efforts are to encourage tourism in the relatively lesser explored parts of Himachal Pradesh. The involvement of local community would help in keeping the natural pristine environs intact while enabling tourists to enjoy the exclusive natural Himalayan retreat.

67. Towards Sustainable Tourism Development-Tourism Master Plan

68. Recognizing the potential of the tourism sector and the contribution it could make in the State's GDP, the GoHP in extension to its Tourism Policy has set a mission of making tourism the prime engine of economic growth. The State Government, in its endeavour of becoming a carbon neutral state, has focused at expanding tourism activities having low carbon footprints. The Government of Himachal Pradesh is in the process of formulating a long term Tourism Master Plan so that tourism development remains in harmony with the environmental conservation.

69. The Government of Himachal Pradesh has initiated many programmes for dealing with the challenges of climate change. The initiatives and action can be categorized into the following broader areas as:

- State specific Action Plan on Climate Change.
- Institutional framework to deal with different facets of climate change.
- Catalyzing research on critical areas on developmental & livelihood.
- Strategy and action plan for generating awareness and education.
- Adaptation measures to combat the impact of climate change.
- Creation of centralized database.
- Managing water sources.
- National and international initiatives for dealing with the impacts of climate change on livelihoods of people.
- Working towards achieving and sustaining the goal of making Himachal Pradesh the first Carbon Neutral State of Country.
- Use of remote sensing technology for the better management of climate induced, other natural hazards and the natural resources.

70. Sustainable Wetland Management Practices ensured: In view of threats to Wet land Eco system in the State, the Government has initiated various programmes and steps to protect the pristine wetlands in the State. These include preparation of Guidelines for Camping in the Wetland regions, Do's and Don'ts for Tourists, Guidelines for 'Mindful Travel' in the State sensitive areas, banning of vehicles in eco sensitive zones etc.

71. Eco- Monitoring Scheme for eco-clubs

72. National Green Corps Programme

# 4. Training Needs Assessment

## 4.1 Training Needs Assessment

A training need exists when there is a gap between what is required of a person to perform competently and what he actual knows. A “training needs assessment”, or “training needs analysis”, is the method of determining if a training need exists and if it does, what training is required to fill the gap. The expectation of knowledge, skills and abilities of officials at different levels is different so their training needs are also different. Training needs assessment has therefore to be for different target groups for exactly knowing what training is required for each group.

The purpose of conducting a needs assessment is to build capacities of various stakeholders on disaster risk reduction and climate change adaptation with the objective of incorporating risk reduction (especially in the context of climate change) in development. Training needs assessment is to identify the gap between the model situation and the actual situation and the way in which it can be bridged. As the gaps are identified, they are evaluated to determine the manner in which the gaps can be bridged. Some situations will indicate training needs. Some may need non–training solutions (e.g., financial aspects, institutional strengthening, providing the right tools etc.). Such an approach would ensure sustainability of trainings, and create a cadre of trained personnel who in turn can be deployed as trainers/ resource persons to the district and sub-district levels.

## 4.2 TNA Objectives

The project aims to build capacities of various stakeholders on disaster-risk reduction and climate-change adaptation with the objective of incorporating risk reduction (especially in the context of climate change) in development.

1. Capture disaster risks in the state, day-to-day stresses, observed changes in weather patterns that impact various sectors, vulnerability of its people and assets, etc.;
2. Analyze the institutional set up for DM within the State – the roles and functions of the DRM practitioners at various levels and look at the required competencies for each (as per the DM Act 2005);
3. Identify training gaps and needs of key sectors for DRR and CCA (required as per the DM Act 2005) and for effective implementation of the State Action Plan on Climate Change, especially the CCA aspects;
4. Map capacities of training institutes/programmes and quality of courses offered;
5. Identify areas/sectors and stakeholder groups that require capacity building interven-

tions; and

6. Provide recommendations on how to address the capacity gaps (human, financial and others) that will inform the preparation of a Capacity Development Plan for DRR and CCA in the State.

## 4.3 Methodology

Data for the TNA was collected at institutional as well as individual level. Relevant government and non-government departments/agencies/organizations/institutes were identified and key personnel selected were interviewed using key informant interviews and questionnaires. Other method used included literature review. There were three stages to the analysis of training needs in DRR and CCA in HP, a literature review, a questionnaire, and a series of interviews with key informants.

### 1. Literature Review: Identifying Perceived Gaps

The first stage was a desk review of relevant literature on DRR and CCA and the perceived gaps in disaster management in a HPs context.

### 2. Questionnaire and Interview: Finding Information on Training Activities

The second stage was to compile a picture of TNA in DRR and CCA workshop which has been undertaken recently. A State-level Consultation Workshop on TNA for stakeholders in DRR and CCA was organized on 25 April 2014 at Himachal Pradesh Institute of Public Administration (HIPA), Fairlawns, Shimla. First, a questionnaire was designed and administered to the representatives of different organizations covering both national and state training. The workshop was attended by representatives from State, District and Municipal Govt., including those from various line departments such as: Home, Town & Country Planning, Panchayati Raj, Agriculture, Forests, Education, Health, Urban Development, Revenue, Transportation, PWD, Health, Science, Technology & Environment, etc.; Resource persons were from Swiss Agency for Development Cooperation (SDC), United Nations Development Programme (UNDP), ICLEI, representatives from the Academia, Training and Research Institutes, and local representatives of NGOs/agencies such as WWF-India, TARU, CASA, CORD, etc. This one-day workshop was undertaken as part of the UNDP-Gol project "Enhancing Institutional and Community Resilience to Disasters and Climate Change" (2013 –2017)" which aims to build capacities of various stakeholders on disaster risk reduction and climate change adaptation with the objective of incorporating risk reduction (especially in the context of climate change) in development. TNA serves as the first step towards developing a long-term training and capacity development strategy for HP in DRR and CCA.

Broadly, the questionnaire covered the following aspects:

- Awareness on DRR & CCA, Policies/Plans related to DRR & CCA;
- Existence of Policies/Plans/Programmes on DRR & CCA in respective Depts/Organizations;
- Risk Assessments and its application;

- Data collection/systematic monitoring of disaster risks/climate change;
- Capacity to conduct trainings (resources, infrastructure, training materials);
- Training needs; and
- Identification of Priority sectors.

Based on the first set of responses, preliminary list of Training Needs for CCA was prepared and shared with the stakeholders in a validation workshop on 6 June 2014.

### 3. Key Informant Interviews

Remaining information on DRR and CCA was gathered through interviews with key informants. Both the questionnaire and the interviews sought to identify the basic details of the training course such as its aim and objectives, its duration, frequency and location, its perceived audience, a profile of participants, the teaching methodology, a brief outline of the course content and whether or not it is externally accredited.

There were three levels of interviews:

*Face to Face:* Interviews with relevant departments in Shimla were conducted. In each of these departments a range of disaster management personnel were interviewed. To ensure that opinions came from a wide range of people, individuals from state government departments and associated government agencies were interviewed. In all 19 people were interviewed.

*Telephone:* Most of these interviews were with key disaster management personnel in Shimla. Eighteen practitioners were interviewed via telephone.

*E-mail:* This was mainly conducted with remaining departments which were not visited in person. In total 42 people were interviewed about their views on the training needs in DRR and CCA.

## 4.4 Gaps and Lessons Learned

Disaster risk reduction has gained a lot of attention and momentum in the State for the past several years. Numerous projects and activities have been undertaken by various organizations and stakeholders on DRR but institutional framework and policy instruments to deal with climate change are still in its nascent state. Threats remain to confront stakeholders in adopting good practices and learning from past experiences. Vulnerability and people's risk to disasters are still on the rise.

1. Addressing the underlying causes of vulnerability: More efforts are needed in identifying hazard-prone areas and factors which contribute to people's exposure to disasters, incorporating risk analysis in development plans, building capacities towards sustainable livelihood options, to name a few. Although DRR has been gaining attention in various sectors of the society, more resources and initiatives must be

given to Climate Change Adaptation, mainstreaming DRR and CCA into development plans by incorporating DRR and CCA activities and priority areas to address the underlying causes of people's vulnerabilities, and provision of different sustainable livelihood options for vulnerable sectors of society.

2. Convergence of DRR and CCA: Conceptual gaps and differences due to poor understanding of development implications existed among disaster management and humanitarian professionals/workers. The convergence is yet to be articulated in more concrete terms particularly in increasing people's capacity to adapt to the changes and climate-related hazards induce vulnerability.

3. Barriers to integration of DRR and CCA:

- Separate frameworks for CCA and DRR
- Capacity constraints related to lack of coordination, communication, political will, insufficient funds and absence of expertise.
- Perceptions of development practitioners that DRR and CCA are not valuable; and
- Difficulty quantifying the benefits of DRR and CCA

4. Approaches to address barriers and facilitate integration

- Improved access to practical weather and climate change information
- Strong enabling environment and enhanced communication to practitioners in other fields and to the broader public.
- More emphasis on bottom-up approaches; and information support for decision-making (both scientific and economic)

5. Mainstreaming of DRR and CCA into development plans: Programs and projects are not sustained because they are not mainstreamed into the development plans and more importantly, into state and local policies- both of which will secure sustained funding and political support.

6. Information, capacities and skills on DRR and CCA: Number of Information, education and communication (IEC) materials have already been produced, most of them continue to highlight disaster preparedness and response. Developments of information and campaign materials which will help people understand the linkages between DRR and CCA and how these two concepts contribute to risk reduction are of utmost importance. Likewise, having institutionalized mechanisms for knowledge development, sharing and management will contribute to the documentation, replication and scaling up of good practices on DRR and CCA.

7. Strengthen Partnerships: There is a need to strengthen partnerships and improve ways of working among key players and stakeholders. To build resilience, post-disaster relief and rehabilitation requires sensitivity to the development processes so that dependence is not encouraged and sustainability is assured.

8. Building back better: Current practices have not ensured that better and safer structures are built on safe locations during reconstruction and rehabilitation. Through the combination of increased



knowledge and capacities, DRR mainstreaming into development plans and programs, and building institutional mechanisms through monitoring, evaluation and learning, “building back better” can be achieved. Over time, improvements in the way DRR and CCA are addressed in infrastructure, utilities, buildings, and housing should be seen.

g. Building capacities of community and institutions: Gaps in applying resiliency principles to actual practice exist at different levels of government and among disaster management practitioners and various stakeholders. Roles and responsibilities need to be understood in the context of emergency situations and DRR. Thus, competency-based capacity building programs on DRR and CCA should be developed and continually conducted in order to be effective and responsive to the needs of communities and institutions. These capacity building activities will help to enhance their understanding and skills so that DRR and CCA principles and concepts can be applied, and concrete actions can be taken towards building resilience.

The greatest potential for harmonizing DRR and CCA in HP is at community level. Community-based adaptation (CBA), ecosystem-based adaptation and community based DRM (CBDRM) are powerful approaches for transcending the unproductive distinction between CCA and DRR that still pervades policies and planning at regional level. A key feature of community initiatives is that they often occur in a policy vacuum, with little national budget support. Due to weak linkages at the policy level, Governments are missing out opportunities to ensure that the national-level enabling environment is supportive of the efforts at the community level. This is an important gap that needs to be addressed across the region.

## 4.5 Assessment Limitations

- (i) Lack of detailed quantitative analysis on DRR and CCA
- (ii) Lack of explicit connections between CCA and DRR
- (iii) Limited documentation of practical examples of best practices in CCA
- (iv) Emphasis of most studies on natural disasters, with less attention on gradual changes in weather induced by climate change, which has a less immediate but more drastic long-term impact on human population
- (v) Limited literature on CCA and DRR

## 4.6 Outputs

Outputs have been anticipated/ listed as following:

Outputs have been anticipated/ listed as following:

1. Report outlining TNA Methodology and Assessment tools;
2. Compilation of various trainings conducted in the State on DRR and CCA
3. SWOT Analysis of institutional mechanism for DM in the State and identified sectors/ Departments;
4. Draft TNA Report

# 5. SWOT analysis of Institutional set up from a DRR and CCA perspective

A Training Needs Assessment Workshop was organized on April 25, 2014 at HIPA, Shimla. The workshop was attended by the heads/representatives and the Nodal officers for Disaster Management of all line departments working in the areas related to disaster risk reduction and climate change adaptation. Based on the TNA exercise carried out during the one day workshop the SWOT analysis was carried out for different departments. The findings of the analysis have been compiled and reproduced as per Table 6.

Table 6: Strengths, Weaknesses, Opportunities and Threat (SWOT) analysis of institutional set up from a DRR and CCA perspective

Name of the Department - District Administration (Revenue)

Pre Disaster Level:

- To have an overview of the state and district level administrative, institutional and techno-legal regime (including relief code) structure of DM.
  - To have proper DM plans at different levels including regular updation and their integration with development plans.
  - To have an effective operational EOC.
  - To have post disaster relief and logistics management.
  - To have an effective emergency support functions and their coordination mechanism
  - To have an inventory of resources and material available in the district.
  - To have the modalities for deployment of army during extreme emergencies.
  - To manage relief camps and camp for volunteers arriving for relief operation.
  - To have field level coordination with various Govt. and nongovernmental agencies, community participation at various stages of DM.
  - To have the arrangements for financing relief and reconstruction activities.
  - To have the coordination and management of NGOs and other activities during emergencies and assigning roles to various stakeholders.
- Mapping & vulnerability assessment of the area Formulation and strict implementation of building by-laws.

- Construction/retrofitting of public buildings particularly schools, hospitals, community centre, panchyats bhawans etc. and publically funded buildings like IAY houses for earthquake resistance.
- Regular monitoring of structural safety of public buildings, water tanks, roads, bridges, dams and other built structures.
- Mass campaigns involving community for disaster risk reduction.
- Awareness and motivation of the civil society.
- Identification of public shelters and equipping them with basic facilities, training of Govt. servants/ volunteers in Medical First Aid (MFA) and Search and Rescue (SAR).

#### Post Disaster Level:

- Maintenance of law and order.
- Arrangements for evacuation of people.
- Recovery of dead bodies and their disposal.
- Restoring lines of communication and information flow.
- Quick assessment of damage.
- Cordoning off the area
- Quick relief distribution
- Restoration of minimum communication.
- Restoration of basic transport facilities.
- Establishment and functioning of Control Room

#### Strengths

Large human resource at different levels in the district and is well spread up to the village level.  
Critical knowledge of the area.

Manpower with the administration is involved in the activities related to Disaster Management.  
At the time of crisis these actions can lead to better coordination and response.

The district administration has good experience in disaster response, relief & rehabilitation.

#### Weaknesses

- No proper training/exposure to district officials in DRR and CCA.
- Lack of coordination among different stakeholders
- Role and responsibilities are not clearly defined and understood also.
- EOC not set up
- DDMPs not properly formulated
- Integration of DM not done with development plans.
- No prioritization for DRR and CCA.
- Safety of infrastructure and buildings is lacking.
- Lack of EOCs and reliable communication network to manage crisis.
- Lack of trained staff and lack of equipment.

- Lack of knowhow about damage assessment.
- Non-availability of proper DMPs.
- Improper prioritization towards Disaster Risk Reduction (DRR) and CCA
- Improper disaster safety of infrastructure and buildings with the Administration
- Lack of EOC and improper communication network to manage any crisis Shortage of staff
- Lack of know how about damage assessment and compensation disbursement amongst the working staff.
- Non- availability of proper Disaster Management plans
- Disaster response mechanism is not equipped to handle big disasters.
- Lack of specialized SAR Teams.
- Inadequate SAR equipment.
- Inadequate preparedness.
- Community not trained to handle emergencies properly.

### Opportunities

- Tremendous opportunities for DRR and CCA
- Proper training will lead to better management of any disaster like situation
- Availability of proper plans will ensure not only better post disaster management but also ensure better prevention, mitigation and preparedness.
- The on-going programmes can be effectively implemented.
- Time is available for community training and capacity building.
- The database of NGOs, CBOs can be prepared and they can be trained for emergencies.
- IEC activities can create public awareness and preparedness.
- Time is available for filling up the gaps. The on-going programmes if implemented properly can lead to better response.

### Threats

- Climate change and extreme weather variability
- Disaster management and CCA activities may be taken over by some other agency if not handled properly.
- As per experience DRR and CCA has become highly unprofessional and if no improvements are made, the conditions will deteriorate further.
- Lack of interest in DM, DRR and CCA activities at all levels.
- DRR and CCA is viewed as additional and extra work.
- DRR and CCA is not seen as an opportunity.
- Non-functional DDMAAs can jeopardize the opportunities available.

<b>Public Works Department (PWD)</b>
<b>Pre Disaster Level:</b>
<p>Hazard resistant/safe constructions.</p> <ul style="list-style-type: none"> <li>• Retrofitting of the lifeline buildings and other critically important buildings.</li> <li>• Identification of sites for raising temporary shelters.</li> <li>• Ensuring raw material for raising temporary shelters.</li> <li>• Availability of tools/instruments required during the disaster for removals of debris etc.</li> </ul>
<b>Post Disaster Level</b>
<ul style="list-style-type: none"> <li>• Debris removal</li> <li>• Setting up temporary shelters</li> <li>• Restoration of roads to their normal condition.</li> <li>• Repair /reconstruction of public utilities and buildings.</li> <li>• Designation of routes strategic to evacuation and relief should be identified and marked in close coordination with EOC.</li> </ul>
<b>Strengths</b>
<p>Pre- Disaster Level</p> <p>Large Manpower Professional and technical organization</p> <p>Post Disaster Level</p> <p>The manpower, expertise and experience of the department</p>
<b>Weaknessess</b>
<p>Pre-Disaster Level</p> <p>Lack of training to the officials about DRR and CCA Non-implementation of project specifications at site Lack of knowhow of retrofitting and training thereof Lack of sensitization at lower levels – supervisory and contractors level. The department is overburdened in routine works and DRR and CCA may not be a priority.</p> <p>Post Disaster Level</p> <p>In case of big disaster existing capacity of the department may be inadequate to respond to the situation. The dependence of the department on contractor</p>

## Opportunities

### Pre Disaster Level

The officers and staff down the line can be trained and oriented for the job. In a climate change scenario, extreme precipitation events, GLOFs are likely to increasing leading to damages to ill constructed roads directly or through landslides. Since roads are lifeline to the livelihoods of the people of the state, protecting the infrastructure is imperative. Therefore the officials of the public works department need to be aware of the frequency and intensity of projected extreme events -The corresponding requirement of strengthening the existing infrastructure -Climate friendly design norms for building new planned infrastructure

### Post Disaster Level

Networking and tie-up with CPWD, BRO, Army etc. can be done in advance. List of equipment and machinery, manpower available in private sector can be inventoried for possible use during disasters

## Threats

### Pre Disaster Level

Climate change and extreme weather variability  
Retrofitting of structures a huge and costly affair.  
Enforcement of hazard resistant features in new constructions can add to the existing risk.  
The department hasn't constituted Hazard Safety Cell (an MHA directive).

### Post Disaster Level

Orientation and sensitization is not adequate in the state.  
The department has not constituted HSC as desired by MHA.

<b>Police Department</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Maintenance of law and order after any disaster event</li> <li>• To have search and rescue teams(district and local SAR teams of volunteers and their coordination)</li> <li>• To have a departmental contingency plan.</li> <li>• To have an emergency communication system</li> <li>• To have defined role for Civil Defence, Fire Services, Home Guards etc.</li> <li>• Appointment of one officer as "Officer-in-charge –Police at the district level.</li> <li>• Immediately after the disaster, dispatch officer to systematically identify and assist people and communities in the threatening situations.</li> <li>• Providing transport facilities to seriously injured people.</li> <li>• Establishment of control room in the affected area to provide accurate information</li> <li>• Traffic control in the event of crisis</li> <li>• To make security arrangements in the affected area to prevent looting etc.</li> <li>• To provide guards at supply depots such as cooperative food stores and distribution centres.</li> <li>• Identification of anti social elements and take necessary precautionary measures for confidence building.</li> <li>• To provide security arrangements for visiting VVIPs and VIPs</li> <li>• In conjunction with other Departments, establish a public information centre so that authenticated information could flow to the people.</li> <li>• To have proper inter departmental coordination.</li> <li>• Monitoring the needs and welfare of people sheltered in the relief camps.</li> <li>• Coordinate with military service personnel in the area</li> </ul>
<b>Strengths</b>
<p>Large human resource network available throughout the state with different levels of personnel. Adequate and dependable communication network throughout the state.</p>
<b>Weaknessess</b>
<p>Lack of training to the officials about DRR and CCA No earmarked Battalion for disaster purpose Regular training programmes with special reference to disaster management and CCA using latest techniques &amp; tools. Not trained in DM and CCA. Police stations are not disaster resistant Inappropriate and inadequate equipments to meet out the DM challenges Inadequate means of communication</p>

## Opportunities

Tremendous opportunities for DRR and CCA

All the human resources of this sector need to be given specialised training at least up to Constable level for search and rescue operations.

Police control rooms can further be strengthened with some additional tools of communications which does not fail during crisis.

Can manage disasters effectively if fully trained and equipped.

Police control rooms may be developed as alternative EOC at the level of State, district or local level.

## Threats

Climate change and extreme weather variability Buildings may not be safe so they are susceptible to big disasters.

The power failure may reduce the effectiveness of police wireless network.



<b>Department of Health</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Providing efficient and quick treatment</li> <li>• Preventing outbreak of epidemics</li> <li>• Stock emergency medical equipment which may be required after a disaster.</li> <li>• Assess type of injuries/illnesses expected and drugs and other medical items required, and accordingly ensuring that extra supplies of medical items be obtained quickly.</li> <li>• To sensitise all hospital staff about the hazards and their likely damages and effects, and information about ways to protect life, equipment and property.</li> <li>• To establish a mobile hospital immediately in the area at a safer place.</li> <li>• To check emergency power arrangements to ensure that it is operational and that a buffer stock of fuel exists.</li> <li>• To prepare an area of hospital for receiving large number of casualties.</li> <li>• To orient field staff with DDMAP, standards of services, procedures including tagging etc.</li> <li>• To have a well rehearsed Hospital Disaster management Plan</li> <li>• Up-gradation of Medical Infrastructure at various levels.</li> </ul>
<b>Strengths</b>
Professional and skilled manpower Infrastructure up to village level
<b>Weaknesses</b>
<p>Lack of training to the officials about DRR and CCA Structures may not be hazard resistant Lack of orientation among all stakeholders towards this sector Staff may not be adequately trained to handle such emergencies, mock drills and no protocols are there to face big crisis. Inadequacy of equipments Non-availability of mobile hospitals. No quick reaction teams for field duty. No portable medical kits Non availability of sector specific contingency plan No linkages with climate change and disease prevalence in Himachal is part of health deptt. training programmes. Though vector climate sensitive diseases such as malaria is not heard of, but in a changing climate scenario, preparedness of deptt. needs to be in place, and therefore such a module needs to be part of the overall training programme The state may need to take stock of the likely impacts of climate change on disease profile of the state in the future and design strategies in advance to combat the same. Additionally, the infrastructure accessibility to transfer patients in the times of hydro meteorological disasters is another area where the deptt needs to work with other departments including public works and the state department of disaster management.</p>

## Opportunities

Tremendous opportunities for DRR and CCA

Tremendous opportunities not only to disaster risk reduction and CCA but also to mobilize resources for overall development through corporate social responsibility and public private partnership. Hospital safety issues and concerns can be addressed in the on-going programmes such as NHRM etc. by way of DRR and CCA integration.

## Threats

Climate change and extreme weather variability

Sector may be the victim of the disaster itself if sufficient measures are not taken well in time.

<b>Irrigation and Public Health</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Appointment of Nodal Officers for ESFs at State and District level</li> <li>• Restoration of water supply to the affected area.</li> <li>• Monitoring of flood situation</li> <li>• Monitor and protect irrigation infrastructure</li> <li>• Restore damaged infrastructure</li> <li>• To establish communication with EOC at State HQ, District Control Room and departmental and field officers within the Division.</li> <li>• To make provisions to acquire tankers and establish other temporary means of distributing water on and emergency basis.</li> <li>• To make a plan for water distribution to all transit and relief camps, affected villages and cattle camps.</li> <li>• To keep a minimum level of stock for emergencies</li> </ul>
<b>Strengths</b>
Network and trained manpower upto village level.
<b>Weaknesses</b>
<p>The infrastructure may be exposed to various hazards and may not withstand disaster shock. The lift water supply schemes may become non-functional due to damage and power failures. Drying up of water resources or excessive silt in the streams may affect water availability. Lack of training to the officials about DRR and CCA</p>
<b>Opportunities</b>
<p>The DRR and CCA integration may be done in on-going programmes. Hazard proofing of existing infrastructure and schemes can be done. Rain water/snow harvesting can be popularized. Contingency plans can be prepared. Nodal Officers for ESFs can be appointed at various levels. Tremendous opportunities for DRR and CCA</p> <p>Developing major irrigation assets, would require knowledge of climate trends of the area, projected climate change scenarios of temperature, rainfall, probability and intensity of droughts, extreme rainfall, rate of glacial melt, evapotranspiration rates now and projected for the future etc. These are some of the criteria that may have to be integrated as the design criteria for the irrigation projects and hence for the infrastructure to be developed for the projects.</p> <p>Similarly, for the flood control works to be sustainable, extent of flooding, likely areas to be flooded for various strengths of rain fall or GLOFs need to be understood.</p>

<b>Threats</b>
Climate change and extreme weather variability Lack of sensitization towards CCA and DRR at various levels. The water supply schemes drawn from longer distances can take longer time for restoration.

<b>Home Guards and Civil Defence</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Assisting Police in maintenance of law and order, crowd control etc.</li> <li>• Search and Rescue (SAR)</li> <li>• Community training SAR, MFA and public awareness.</li> </ul>
<b>Strengths</b>
Dedicated and trained volunteers. Well spread network
<b>Weaknessess</b>
Lack of regular staff and infrastructure required the role to be performed. Lack of training to the officials about DRR and CCA
<b>Opportunities</b>
Further strengthening of network by providing modern state of art, training, equipment and facilities. Large network of human resource may be utilized for taking DRR and CCA activities at community level.
<b>Threats</b>
Volunteers may be affected during disaster and may not report for duty. Climate change and extreme weather variability

<b>Department of Fire and Emergency Services</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Responding to all disasters</li> <li>• Mobilising staff and fire units</li> <li>• Effective management of resources by communication and mobilization of additional resources</li> </ul>
<b>Strengths</b>
Professionally skilled manpower and equipments to meet out emergencies created by disasters
<b>Weaknessess</b>
<p>Lack of modern equipments for search and rescue operations.  Insufficient and less manpower strength than the proposed sanctioned strength.  Inadequate number of fire stations. Fires stations may not be earthquake safe.  Lack of training to the officials about DRR and CCA</p>
<b>Opportunities</b>
<p>The Fire and Emergency Services should be modernized, staffed and equipped with modern equip-ment.  Density of fire stations should be increased.</p>
<b>Threats</b>
<p>In absence of appropriate actions, the department may not be in a position to respond effectively and timely.  Climate change and extreme weather variability</p>

<b>Food and Civil Supplies</b>
<b>Main role of the Department</b>
To ensure food supplies to the affected population. To ensure proper distribution of the supplies
<b>Strengths</b>
Large network of fair price shops up to grass root level. Availability of buffer stock for relief
<b>Weaknessess</b>
Godowns of HP State Civil Supplies and of FCI may not be safe from earthquake point of view. No Reserve supplies are available beyond one month at godowns level. Lack of training to the officials about DRR and CCA
<b>Opportunities</b>
If godowns are retrofitted for earthquakes, the supplies in case of disaster can be sustained Tremendous opportunities for DRR and CCA
<b>Threats</b>
Damage to the stocks in the event of disaster. Climate change and extreme weather variability

<b>Department of Education</b>
<b>Main role of the Department</b>
<p>Education department can play an important role in creating awareness and preparedness up to the grass root level.</p> <p>To incorporate the DM in the Curriculum</p> <p>To have disaster specific preparedness, awareness and awareness in educational institutions</p>
<b>Strengths</b>
<p>Large human resource and infrastructural support up to grass root level.</p> <p>Infrastructure can be used for providing temporary shelters at the time of emergency.</p> <p>NCC/NSS and Scouts and Guides volunteers at each level</p>
<b>Weaknessess</b>
<p>Buildings which are generally not earthquake resistant can't withstand the tremors.</p> <p>Lack of training to NCC/NSS and Scouts &amp; Guides volunteers in DM.</p> <p>Lack of training to teachers in DRR and CCA.</p>
<b>Opportunities</b>
<p>Tremendous opportunities for DRR and CCA</p> <p>The teachers can be trained in School Safety issues under SSA and RMSA trainings.</p> <p>Volunteers if given proper training can be used as important resource for carrying rescue operations.</p> <p>The new constructions under SSA and RMSA and other programmes should be hazard resistant.</p> <p>Retrofitting of weak structures.</p> <p>Large network of teachers can be used for imparting training upto grass root level</p>
<b>Threats</b>
<p>Sustainability of the building structure in the event of disasters like earthquake/fire etc.</p> <p>Climate change and extreme weather variability</p>

<b>Department of Social Justice, Empowerment and Women Welfare</b>
<b>Main role of the Department</b>
To study the impacts of disasters on women, adolescent girls and children. To understand the special needs of women, adolescent girls and children and to evolve strategies to cater special needs of this group. Training of Anganwadi and ICDS workers in MFA and Psychological Counseling.
<b>Strengths</b>
Huge network of Anganwari worker, Self Help Groups is available up to the village level throughout the state.
<b>Weaknessess</b>
No training and capacity building of this large human resource network. Lack of training to the officials about DRR and CCA
<b>Opportunities</b>
Community Based Disaster Management (CBDM) can be strengthened by utilizing the Anganwari and SHG. Anganwari workers can also be trained for counselling purpose after the disaster. Quick Disaster Response Teams can also be constituted by involving Anganwari and SHG workers at the village level. Important resource for imparting immediate first aid during the crisis at the village level. Tremendous opportunities for DRR and CCA
<b>Threats</b>
Workers itself may be vulnerable to disasters because of the structural vulnerability of the buildings. Climate change and extreme weather variability



<b>Department of Information and Public Relations</b>
<b>Main role of the Department</b>
<p>To provide and collect reliable information on the status of disaster and disaster victims for effective communication of disaster.</p> <p>To coordinate with EOC's at the airport and railways for required information for International and national relief workers.</p> <p>To acquire accurate scientific information from the Ministry of Science &amp; Technology on IEC of DM.</p> <p>To coordinate with all TV and radio networks to send news flashes for specific needs of donation</p> <p>To respect the socio-cultural and emotional state of the disaster victims while collecting information for dissemination.</p>
<b>Strengths</b>
Good outreach to the masses with the help of medium like films, exhibitions etc. Coordination with media
<b>Weaknessess</b>
<p>Lack of trained manpower.</p> <p>Lack of organisational structure for DRR and CCA related issues.</p> <p>Lack of funds to have campaigns on disaster awareness.</p> <p>Lack of training to the officials about DRR and CCA</p>
<b>Opportunities</b>
<p>DRR and CCA issues should be clubbed with other campaigns.</p> <p>I &amp; PR Staff and Media should be sensitized and oriented towards DRR and CCA.</p> <p>Tremendous opportunities for DRR and CCA</p>
<b>Threats</b>
<p>Lack of direct control over media.</p> <p>Climate change and extreme weather variability</p>

<b>Department of Town and Country Planning</b>
<b>Main role of the Department</b>
Hazard mitigation measures both in urban and rural areas. To frame and implement the development plans, land use regulations, development control regulations etc. in different parts of the State for safe and sustainable growth.
<b>Strengths</b>
Professional manpower and expertise of the department.
<b>Weaknessess</b>
Non- implementation of various tools like land use planning, zoning regulations etc. Inadequate manpower. Resistance from community to TCP. Lack of training to the officials about DRR and CCA Training programme that evaluates the impacts of climate change on habitats in HP has not been included in the training modules. The module also needs to integrate the vulnerability of the systems and likely adaptation strategies, costs, and other management aspects
<b>Opportunities</b>
Tremendous opportunities for DRR and CCA Can sensitize community and policy makers about needs of TCP. Developmental plans are based on HRVA. All housing developments in the state take place mostly along the slopes of the hills. In a changing climate context, the department needs to develop its capacities towards - Identify the vulnerable areas that are susceptible hydro-meteorological disasters - Understanding the likely impacts of climate change on such regions and hence on urban and rural habitats - Design its building regulation norms and align it with the imperatives of the likely climate change impacts such as intense heat, frequent and intense rainfall, landslides, floods etc
<b>Threats</b>
Vulnerability will keep on increasing if the present status continues Climate change and extreme weather variability

<b>Department of Urban Local Bodies and UD Department</b>
<b>Main role of the Department</b>
<p>To promulgate building bye-laws and implementation thereof.</p> <p>To provide shelters and food to the displaced persons.</p> <p>Disposal of unclaimed bodies.</p> <p>Removal of debris.</p> <p>Maintenance of sanitation and hygiene.</p> <p>To coordinate with volunteers and NGO's</p> <p>To deal with mass disposal of carcasses.</p> <p>To deal with livestock and family pets.</p> <p>To define procedure for condemning damaged buildings.</p>
<b>Strengths</b>
<p>ULBs are run by public representatives and have community support.</p> <p>Good network in the cities</p>
<b>Weaknessess</b>
<p>Hardly any control over the construction practices.</p> <p>Lack of trained manpower.</p> <p>Inadequate resources.</p> <p>Improper disposal of solid waste.</p> <p>Lack of training to the officials about DRR and CCA</p>
<b>Opportunities</b>
<p>Can reduce the vulnerability by having proper construction codes and practices.</p> <p>Availability of large human resource to be used for relief and rescue purpose.</p> <p>ULBs can involve community and take DRR and CCA issues to the household level.</p> <p>DRR and CCA should be integrated in all the schemes.</p> <p>City Disaster Management Plans should be formulated clearly defining roles and responsibilities.</p>
<b>Threats</b>
<p>Haphazard and illegal construction can lead to a major disaster.</p> <p>Lack of political will to enforce building bye- laws.</p> <p>Scientific disposal of solid waste.</p> <p>Climate change and extreme weather variability</p>

<b>Department of Transport</b>
<b>Main role of the Department</b>
To arrange transport for SAR, victims and relief supplies. Restoration of the affected routes.
<b>Strengths</b>
Large fleet of vehicles – Government and private
<b>Weaknessess</b>
Lack of contingency plans and networking with private sector. Difficult terrain of the state. Lack of training to the officials about DRR and CCA
<b>Opportunities</b>
The department can make transport planning and contingency plans with the integration of CCA aspects. Inventorisation of private sector transport service providers. Procedures for hiring private transport services can be established.
<b>Threats</b>
Disasters like earthquakes and landslides may hamper the smooth flow of movement and affect the working of the department. Climate change and extreme weather variability

<b>Department of Tourism and Civil Aviation</b>
<b>Main role of the Department</b>
Involvement of industry in disaster management – tourists tracking system, building level emergency plan. Safe construction practices for hotels and tourist destination.
<b>Strengths</b>
Huge resource base in private sector including manpower and other infrastructure and facilities.
<b>Weaknessess</b>
Lack of training to handle the crisis situation. Lack of contingency plan to track the tourists in case of disasters. No emergency plan at building level. Lack of training to the officials about DRR and CCA
<i>Opportunities</i>
Tremendous opportunities not only in Disaster Risk Reduction and CCA but also to mobilize resources for overall development through corporate social responsibility and public private partnership.
<b>Threats</b>
Sector may be the victim of the disaster itself if no preparedness measures are taken. Climate change and extreme weather variability

<b>Department of Industries</b>
<b>Main role of the Department</b>
<p>Preparation of on-site and off-site emergency plans at factory level.  Regular meetings of the crisis management committees.  To make people aware of their vulnerability and the need for prevention, mitigation and preparedness measures.  To mobilize human and financial resources as well as material for utilization during disaster</p>
<b>Strengths</b>
Huge resource base in private sector including manpower and other infrastructure and facilities
<b>Weaknessess</b>
<p>No plans to meet out the crisis situation at on-site and off-site.  Poor awareness and preparedness level.  Lack of training to the officials about DRR and CCA.</p>
<b>Opportunities</b>
<p>Can contribute in the early recovery.  Should take steps for industrial safety.  Should promote eco- friendly industry.  Should promote clean development mechanism.</p>
<b>Threats</b>
<p>In the absence of proper planning, sector may be victim of a big disaster.  Innocent population may be victim of industrial disaster  Climate change and extreme weather variability</p>

<b>Department of Rural Development and Panchyati Raj</b>
<b>Main role of the Department</b>
<p>To ensure hazard resistant and sustainable development in Panchayats.          To have the inventory of resources for countering disasters.          To maintain and operate a village level warning system. To organize village disaster management committees and village task force.          To formulate village level disaster management plans and their integrating with development plans.          To have emergency support functions and their coordination mechanism          To integrate rural develop programmes with disaster reduction and mitigation activities.</p>
<b>Strengths</b>
<p>Availability of functionaries up to the village level.          Community based organizations.          Good rapport with the public.          Important role in the development of rural areas.</p>
<b>Weaknessess</b>
<p>Lack of training to the officials about DRR and CCA.          Lack of awareness amongst masses.          Poor construction practices.          There are no rules and regulations for the rural constructions.</p>
<b>Opportunities</b>
<p>Community Based Disaster Management (CBDM) and Community Based Disaster Reduction (CBDR) can be efficiently implemented.          Mason training can revolutionize the safety culture.          Schemes like MGNAREGA, IYA and other Govt. schemes can very effectively utilized for vulnerability reduction          All the activities done through the various programmes are highly climate sensitive and therefore need enablers for long term sustenance of the assets created through these programmes in a changing climate scenario.</p>
<b>Threats</b>
<p>Lack of orientation may result in disaster losses          Climate change and extreme weather variability</p>

<b>Himachal Urban Development Authority (HIMUDA)</b>
<b>Main role of the Department</b>
Promoting safe and planning housing in the State.
<b>Strengths</b>
Skilled and professional manpower
<b>Weaknessess</b>
Lack of orientation of DRR and CCA. Shortage of manpower.
<b>Opportunities</b>
Can priorities mitigation if proper trainings are given to masons and related work force in safe construction practices.
<b>Threats</b>
The old housing stock in the State. Poor maintenance of infrastructures in HIMUDA colonies in the State. Climate change and extreme weather variability



<b>Department of Agriculture</b>
<b>Main role of the Department</b>
<p>To have contingency crop planning.          To promote crop insurance to transfer risk.          To have mechanism for the damage assessment of crops and equipment.</p>
<b>Strengths</b>
Large infrastructure, human resource and volunteers up to the Block level
<b>Weaknessess</b>
<p>Lack of orientation to field level staff on DRR and CCA.          Inadequate irrigation facilities.          Poor acceptance of crop insurance policies by the public.          Non-promotion and conservation of local seed base.</p>
<b>Opportunities</b>
<p>Field level staff can be used to further educate the masses at the grass root level if proper trainings are given to them.</p> <p>Local seed should be promoted and preserved.</p> <p>Effort should be made to bring more and more area under assured irrigation schemes.          The state being in the Himalayan region, has a fragile landscape, protecting agriculture from the extreme climate events is one of the main concerns of the state to ensure food security and livelihoods. Therefore the department of agriculture may need to focus on (a) Assessing the likely impacts of climate change on all the types of crops grown in the state (b) Assessing the impact of climate change on soil nutrient capacity and hence productivity (c) Identify crops suitable in a changing climate scenario (d) Identify enabling steps for growing appropriate cultivars (e) Protect and preserve indigenous biodiversity which is resistant</p>
<b>Threats</b>
<p>Loss of agriculture land and top soil.          Climate change and extreme weather variability</p>

<b>Department of Horticulture</b>
<b>Main role of the Department</b>
To have contingency crop planning. To promote crop insurance to transfer risk. To have mechanism for the damage assessment of crops and equipment
<b>Strengths</b>
Trained manpower at Block level.
<b>Weaknessess</b>
Lack of modern infrastructure to deal with hazards such as hailstorm. Climate change adaptation challenges are overwhelming. Poor response to insurance schemes. Lack of training to the officials about DRR and CCA.
<b>Opportunities</b>
Further strengthening of the department by adopting modern techniques to face meteorological disasters. Crop quality and quantity can further be improved by adopting modern techniques. Anti-hail suppression system should be installed For maximising the capacity of the state to grow horticulture crops in a changing climate, the state officials planning the horticulture production in the state need to understand: (a) The implication's of climate change on horticulture produce such as the key commercial fruits, bee keeping, and flow-er cultivation (b) How best adaptation can happen and maximise production
<b>Threats</b>
Loss of crop land. Climate change and extreme weather variability.

<b>Department of Animal Husbandry</b>
<b>Main role of the Department</b>
<p>To have the contingency plan for the effective disaster management in relation to the animal live-stock in the event of any disaster.</p> <p>To make arrangements for fodder, water etc to face any crisis.</p> <p>To make arrangements of injured cattle.</p> <p>To have arrangements for the protection and care of abandoned/lost cattle.</p> <p>To make stock emergency medical equipment.</p> <p>To make arrangements for establishing cattle camps, and to ensure the medicines required for their treatment.</p>
<b>Strengths</b>
<p>Huge network up to village level.</p> <p>Professional and trained staff.</p>
<b>Weaknessess</b>
<p>Lack of preparedness.</p> <p>Lack of disaster resistant Govt. owned sheds /buildings.</p> <p>Lack of proper storage of medicine/vaccination etc.</p> <p>Lack of appropriate fodder banks.</p> <p>No proper carcass disposal</p> <p>Lack of training to the officials about DRR and CCA</p>
<b>Opportunities</b>
<p>Doctors and other technical staff can be utilized for creating awareness at the grass root level.</p> <p>DRR and CCA concerns can be addressed in on-going programmes.</p> <p>Contingency planning can be prepared</p>
<b>Threats</b>
<p>Improper disposal of carcass may lead to epidemic outbreak</p> <p>Climate change and extreme weather variability</p>

<b>Department of Youth Services and Sports</b>
<b>Main role of the Department</b>
Mobilization of volunteers for public education, awareness, Search and Rescue.
<b>Strengths</b>
Large human resource. Well spread network of volunteers. Young blood
<b>Weaknessess</b>
Lack of training, coordination, infrastructural facilities. Lack of organizational set up. Financial crunch Lack of training to the officials about DRR and CCA
<b>Opportunities</b>
If proper training is given to these volunteers and young blood, they can be a very effective and useful human resource for emergency situations
<b>Threats</b>
Volunteers may be affected by any disasters or they may report for emergencies Climate change and extreme weather variability

<b>Forest Department</b>
<b>Main role of the Department</b>
<ul style="list-style-type: none"> <li>• Developing departmental disaster management plans and their integration with developmental plans.</li> <li>• Methods /techniques of disaster mitigation and management with a special focus in forest fires, landslides, flash floods which are more prone to frequent forest fires.</li> <li>• Identification of areas which are vulnerable for forest fires incidence</li> </ul>
<b>Strengths</b>
Good network upto Panchayat level and huge man force
<b>Weaknessess</b>
<p>Lack of contingency planning.  Lack of capacity to fight forest fires.  The department has failed to mobilize and generate support  Lack of training to the officials about DRR and CCA  The need for protection of plant and animal biodiversity, and for maximizing the value of the forest ecosystem services is imperative, that the forest department officials are aware of the (i) extent of likely impacts of climate change on forest vegetation, biodiversity and forest produce, (ii) the options for adaptation,e.g. identification of vegetation appropriate for warmer temperatures, enabling projects to help shift /preserve biodiversity to conducive climates (biodiversity corridors), (iii) extent of likely intensity of extreme events to plan for protection of watersheds within forests etc.</p>
<b>Opportunities</b>
<p>Contingency planning based on community based disaster risk management.  Integration of DRR and CCA in on- going programmes.  Generating support of community and their involvement.  The forest department is in the process of implementing the Green India mission and it has already become the 1st state to sell C credits through the CDM mechanism. However, it might be worthwhile to include in the CC training module the climate change and its impacts on forests species, forest produce etc. Especially establish the linkages of climate and soil with the suitability of forest species that can be planted in different heights. The merit of long term observation plots that can act as markers for establishing cc impacts on forest species and help develop adaptation plans to conserve and regenerate depleted forests.</p>
<b>Threats</b>
<p>Huge forest area for management.  Inaccessibility due to terrain and lack of modern equipment to fight fires.  Climate change</p>

# 6. Mapping of Institutes for DRR and CCA training

The explicit/implicit interrelations/interdependence has to be identified in all training institutes in the state. Their educational/training expertise is to be fully exploited and then they as well as their regular trainees are to be sensitized on DRR/CCA. Departments, where training is not a regular feature, their regular meetings/conferences are to be used for exposure to DRR/CCA. In this connection, a mapping has been done as per Table 7 below:

## Department : Directorate of Agriculture

### Courses Offered :

Training imparted in the following institutes for Senior and Middle level officers:

- State Agriculture Management Extension Training Institute, Mashobra, Shimla
- University of Horticulture and Forestry, Nauni
- HPKVV, Palampur and
- KVK station

Agriculture extension: FTC Sundernagar

Office administration, procedures, rules, gender sensitization and disaster management: HIPA (Himachal Institute for Public Admin.)

Training Topics:

Topics for Senior level officers at the Directorate and District level: Knowledge of improved Agricultural techniques, Integrated pest & disease management, Efficient water management practices, Commercial crops for improving crop productivity and generating employment, Course on Organic farming quality and quantity produce of agriculture, Course on Financial & administrative rules, Course on Computer application internet, e-mail etc, Course on State & central sector schemes, Course on Contingent plan, Course on RTI Acts.

Topics for Middle Level Officers:

Operationalization of ATMA and SREP, market led extension, organic farming, and balance use of fertilizer. Sustainable agriculture development, IPM and bio-control, INM, Soil and water conservation weed management, IWSM, drought management strategies, safe and judicious use of pesticides, quality control of seeds and fertilizer, application of remote sensing and GIS in agri development, principle and practices management of cereals, effective application of insecticides. Agriculture extension work-

ers: Latest techniques on crop production, vegetable cultivation. Organic farm management practices, weed control in vegetable crops, integrated nutrient management and balance use of fertilizer, IPM bio control and pest management, safe and judicious use of pesticides, soil and water management, soil sampling, testing and soil health cards.

## **Department : Directorate of Animal Husbandry**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized trainings/ courses on DRR and CCA

## **Department : Home Guards and Civil Defence**

### **Courses Offered :**

Home Guard volunteers are deployed with Police to maintain law and order, traffic and patrolling duties, guarding of vital installations, manning of treasuries/sub-treasuries, maintain of Law and Order during fairs and festivals and besides security duties at temples and zonal hospitals. In addition to this women Home Guard volunteers are also deployed for nursing training in the Hospitals.

## **Department : Economics and Statistics**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA
- Deptt. has conducted "Baseline Survey on Assessment of Existing Knowledge Level, Awareness and Preventive Practices of Disaster Management in Himachal Pradesh" in 2012
- Deptt. also published "Compendium of Environmental Statistics, HP, 2012"

## **Department : Directorate of Higher Education**

### **Courses Offered :**

Trainings under National School Safety Programme:

- Training of Master Trainers (10 Master trainers per State).
- Training of Trainers Programme (15 trainers per district).
- Training of teachers (500 teachers, officials etc per district).

## **Department : Directorate of Elementary Education**

### **Courses Offered :**

Trainings under National School Safety Programme:

- Training of Master Trainers (10 Master trainers per State).
- Training of Trainers Programme (15 trainers per district).
- Training of teachers (500 teachers, officials etc per district).

## **Department : Directorate of Energy**

### **Courses Offered :**

- Department has opened Quality and Safety Cell in 2013 for the safety, control and water management of hydro-projects

#### **Satluj Jal Vidyut Nigam (SJVN)**

Training imparted by Hydel Training Institute, Jhakri

Training Topics:

Water resource development: GPS - Field Survey, Repair, Water Harvesting for Drought Management, Integrated and Conjunctive Use of Surface; MIS for Monitoring & Evaluation of Projects, Lift Irrigation Schemes; Drip & Sprinkler Irrigation Systems; Watershed Development and Management; Hydrological and Structural Safety of Dams;

Environment management:

Water & Wastewater management, Underground Sewerage Systems- Design, CDM Projects- Conceptualization to Corporate Environmental Management & Carbon Markets , Bio Medical Waste Management– Handling and Safe Disposal options Environmental Issues in Mining Sector- Legal and Statutory Requirements (As per MoEF Guidelines); Corporate Social Responsibility- A Triple Bottom Line Framework (Social, Economical and Environmental Concerns); Environmental Management Technology in Chemical Industries; and Municipal Reforms in Environment Services ; Latest Trends in EIA- Process & Procedures as per MoEF Guidelines; Wastewater Treatment; Environment, Health & Safety Management; Maintenance of Air Pollution Control Equipment; Safety in Storage, Handling and Transportation of Hazardous Materials; Sewage Treatment Plants- Reuse and Recycle Options; Occupational Health & Safety Management; Environment Management in Process; Municipal Solid Waste Management- Collection, Handling, Disposal & Recovery Options; Environmental Management through Cleaner Production; Underground Sewerage Systems- Design, Operation & Maintenance Occupational Health and Safety; Environmental Compliance Management in Distilleries and Sugar Industries; Environmental Management Systems for Cement Industries.



## **Department : Directorate of Food, Civil Supplies and Consumer Affairs**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA

## **Department : Fire Services**

### **Courses Offered :**

The basic training to Firemen is imparted at State Fire Training center which is located in Baldeyan at a distance of about 22 Kms from Shimla town. This Centre imparts training to the permanent staff of Fire Department and Home Guard volunteers. The training imparted are of various levels such as Fire Fighting, Firemen, Refresher, Drivers/Pump Operator, B.A Set and Disaster Management Courses. The duration of the training vary as per level of course.

A few senior level officials of Himachal Pradesh have been trained at NFSC Nagpur and few officials have been trained for short duration basic training courses at other states

## **Department : Forest**

### **Courses Offered :**

Training imparted by:

Basic Forestry and Watershed management Trainings: Are being carried out at Forestry Training Institute at Chail Forestry Training Institute at Sundernagar and at ICFRE, Dehradun FRI, Bhopal Training on ecotourism being carried out by: Wildlife Institute of India (WII), Centre for Environmental Education (CEE), National Museum of Natural History, HP Gyan Vigyan Samiti, and Forest and Training Schools of SFD

Training Topics:

Basic Forestry and forest, management wildlife management and fire management: Training is being carried out on Forest laws, Forest offence cases and procedures, Nursery and plantation techniques, Nursery techniques, Basic Forestry Principals and Fundamentals for Forest workers, Forest accounting and procedures, Seed nursery and technology; Joint Forest Management, Training on management

of wild life sanctuaries, Procedures for private sales; Range management information systems; Zoo management; Gender Sensitization; Micro planning' Orientation Course for Range Officers; Wild Life census; Forest Fire Prevention & Awareness; Management & Conservation of NTFP/Medicinal Herbs; Participatory management/ techniques; Formation & management of Self Help groups; Eco-Tourism; Nature Awareness training Camps; Orientation course for forest guards. Watershed management: includes watershed concepts and components, delineation and demarcation of watershed on ground and on maps, need for integrated water shed Managements, traditional and modern approaches of watershed management, peoples participation, formation of constitution and functioning of watershed development

## **Department : Health and Family Welfare**

### **Courses Offered :**

Training carried out by:

- HP State Institute of Health and Family Welfare (HPSIHFV)

Training Topics:

Training is conducted on:

- Administrative & Financial Management & Hospital Management for Deputy Directors, Chief Medical Officers/Principal STCs& Senior Medical Superintendents.
- Hospital management, Administration & Financial management, and Refresher Course on National Health Programmes such as NRHM, RNTCP, JSY, NPCDCS, NVBDCP, NPCB, NMHP and NPCTC etc conducted for Block Medical officer & Senior Medical officer "Civil Hospitals & Regional Hospitals".
- Induction training & refreshers course in clinical subjects; Training In advance techniques in all areas of medicine and other health related subjects conducted for Medical officer at PHC or CH or RH or ZH level

## **Department : Directorate of Horticulture**

### **Courses Offered :**

Training imparted by the following institutes:

Orientation Programme

- SAMETI, Mashobra, Shimla
- Horticulture & Floriculture
- YS Parmar University of Horticulture and Forestry and its regional research stations

Mushroom

- Directorate of Mushroom Research (ICAR)-
- Himachal Institute of Public Administration- Office procedures, Financial Administration
- State Agriculture Management Extension Training Institute – Induction and General Office administration

## HIPA

### Training Topics:

Orientation Programme– about the department, programmes, weather based crop insurance, Pest management, Agri and horti produce marketing, disaster management of fruit crops

### Horticulture:

Advances in nursery prod techniques- Invitro propagation for disease free plant material, Nursery raising of all fruit crops of economic importance, Orchard management- Canopy management, lay out, soil and water management including micro irrigation techniques, Integrated nutrient and pest management, New promising varieties of fruit crops and training on productivity improvement, Establishing bud wood banks and their role in productivity improvement, Advances in Integrated nutrient and pest management and organic farming, Precision farming of horticulture crops, Organic certification, IPR, patent laws, High tech cultivation of flowers, Advances in apiculture, problems and techniques, Advances in post harvest management of horticulture, Cultivation of medicinal and aromatic plant, Post harvest processing techniques, Climate change and its impact on horticulture

### Floriculture:

Greenhouse culture for various agro-climatic conditions, Greenhouse cultivation for commercial cultivation of rose, carnations, lilliums, chrysanthemums, alstroemeria, marigold, aster, Antirrhinum, gerbera, bulbous plants; Training on growing substrates for commercial floriculture; Advances in producing quality plantation stock; Training on quality seed production; Nutrient management and pest & disease management; Efficient irrigation technologies; Post harvest handling of cut flowers; Marketing.

### Bee keeping:

Fundamentals of bee lifecycle and its different types; Hive and other modern bee equipment; Bee keeping as an industry; Economics of bee keeping; Stationary and migratory bee keeping; Bee as pollinator and their role in enhancing crop productivity; Bumble bee as alternate/backup pollinator crops; Conservation of insect pollinators for maintaining biodiversity; Importance of queen in honey prod. And pollination; factors affecting honey production; Management practices for increasing hive prod; Breeding practices for avoiding mice menace; Feeding bees, detecting bee diseases, preparation of colonies for pollination; Maintaining quality of honey production; Protecting bees from pesticides; Harvesting honey, storage and marketing

## **Department : Directorate of Ind., Geological wing and DIC**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM

## **Department : Department of Environment, Science and Technology**

### **Courses Offered :**

Training to be carried out by staff from: TERI; ASCI Hyderabad, National Disaster Management Authority; IIRS, ISRO; RFLHD ; NIRD; HIPA; IITs, IIMs, IRMA etc.,

#### Training Topics:

Proposed training: Senior technical staff: Climate Change, Mitigation and Adaptation. Climate Change Modelling. -Vulnerability Assessment. Wetland Management. Biodiversity Conservation. Disaster Management. - Remote Sensing & GIS. Recent Advances in Agriculture & Industrial Biotechnology. - E-Governance Management. - Awareness of Right to Information Act, 2005 Special training: Rain Water Harvesting; Structures for Masons/Contractor; Solar Passive Design & Techniques for Architect & Planner; Environment audit of buildings for School Children; Disaster Management for school Children and Professionals; Remote Sensing for scientist/ Professionals; Edusat for School children; Building of scientific temper through Children Science Congress Climate Change and Environmental Planning and Administration: Climate Change Modelling; clean development mechanism, greenhouse gas inventory, vulnerability assessment, Environment Impact Assessment; Project Management (Skills; Environmental Laws; Basic GIS Course ; Courses enhancing scientific temper; Environment Monitoring; Soil & land pollution management; Disaster Management. Other training: Medicinal and Aromatic Plants; Biotechnology, Technologies on value addition and processing of Medicinal & Aromatic Plants; Agromonomical practices of MAP for endemic HP Species; Applied Biotechnology in Agriculture /Horticulture; Biotechnological approaches for Rural Development; Administrative skills for effective administration including; Financial Rules (2 weeks); Designing of Training and Social Mobilization Skills; Himalayan Eco-system conservation techniques including wetland management, glacier protection; Rain water harvesting, solar passive structure on green buildings.

## **Department :HP Institute of Public Administration**

### **Courses Offered :**

The Disaster Management Centre, HIPA has organized a total 132 training programs for the Government employees as well as to the representatives of Panchayati Raj Institutions, Urban Local Bodies, Government Agencies, NGOs, Mahila Yuvak Mandals and other public/private agencies etc in the State wide which a total of 4739 participants have been imparted training of 437 days.

## **Department :Irrigation and Public Health**

### **Courses Offered :**

Training imparted in the following institutions for senior, middle and field level staff:

- PHE Training cells in Himachal Pradesh for refresher courses
- Central Public Health & Environment Engineering Organization,
- National Environmental Engineering Research Institute(NEERI),
- Indian Water Works Associations(IWWA),
- National Water Academy(NWA) and
- Kerala Water Authority(KWA)

Training topics:

Senior level and middle level (Chief engineer, Superintendent engineer, executive engineers): Governance of urban water supply, Irrigation and sanitation systems, Recent water treatment Technologies, Water quality management, Maintenance and management of water supply, Irrigation and sewerage systems, Decentralized planning, development and governance in Rural water supply as per the guidelines of GOI in NRDWP, Decision making Decision Support System (DSS) and Management Information System(MIS), Project Monitoring and Management, Quality Assurance, and E- procurement, Disaster management, Project monitoring and management , Construction and contract Management & Safety in Construction.

Junior level (Jr engineers and office support staff): RTI Act, Water supply & Distribution Management, Quality in construction, Disaster Management, Construction Management & Safety in Construction, Rules and Acts pertaining to the department, Inventory Management, Office Procedure/ Service Matters, Conduct Rules, Contracts, Stores-Acquisition & Maintenance, Cash and Cash Accounts, Reports and Returns, Working in e-iph modules, RTI, Stress Management, Gender equalities, Consumer Protection Act, Human rights/ citizen charter etc.

Field level staff: Training regarding supervision of the execution of pump house, sump wells, storage tanks and other structures. Maintenance of cement consumption register and record keeping of all the

material to the works, maintenance of history card of hand pump, training on procedures of warabandi agreed to by the KVSs of the schemes, and training on assembly, fittings, installation, maintenance and repair of plumbing pipe fixtures, fittings for water supply and sanitary, drainage systems

## **Department : Directorate of Labour and Employment**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. has prepared a list of MAH units

## **Department : Directorate of Land Records and Consolidation**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Directorate of Language, Art and Culture**

### **Courses Offered :**

- Deptt. never organized training/ courses on DRR and CCA
- Deptt. organizes traditional cultural programmes on HP culture

## **Department : Planning**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Department of Finance**

### **Courses Offered :**

Training carried out at HIPA

Training Topics

An Introduction to Planning Process in Government; Preparation of Budget & Nominal rolls; Preparation of Excess & Surrender Statements; Reconciliation of Accounts with Accountant General & diversion of funds; Procedure for effecting purchases of stock, store and stationery articles & issue thereof; Annual Physical verification of stores; How to declare store as unserviceable and procedure for condemnation. Handling of cash & writing of cash book; Audit& inspections-CAG Reports, PAC Matters and submission of replies thereof. ¾ Retention/destruction of record pertaining to Accounts;

## **Department : Department of Home**

### **Courses Offered :**

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA

## **Department : Department of Information Technology**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Information and Public Relations**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Public Works Department**

### **Courses Offered :**

Training exists on Quality Control for achieving quality parameters of works in the State. Material Testing Laboratories at State level and Zonal Laboratories are under his control. On quality control checks. Training on Standardization of Designs and Drawings for Buildings, Bridges and Assurance of common Technical Instructions, training on placing order, Codes & Specifications, Schedule of Rates etc.

## **Department : Directorate of Rural and Panchayati Raj**

### **Courses Offered :**

Trainings conducted under the world Bank Mid Himalayan Water Shed Development Project (MHWS-DP) by Himachal Pradesh Natural Resource Management Society (HPNRMS): The aim of this project is to reverse the process of degradation of the natural resource base, improve their productive potential, sequester C and improve livelihoods and incomes of rural households residing in selected watersheds using socially inclusive, institutionally and environmentally sustainable approaches. Through this programme, trainings are given to villagers on development of Gram Panchayat Plans, micro planning, skill development, livelihood trainings, marketing etc., Self Help Groups, Common Interest Groups, Users Groups and community Based Organizations are trained on community empowerment, training on vermin composting, backyard poultry, etc.

Trainings conducted by State Institute of Rural development, Mashobra, Shimla

Training Programme on basic concepts of lab to land:

That includes community mobilisation, formulation of VDP (Village Development Plans) and training on government programmes. Training programmes on structural aspects and convergence: concepts of MGNREGA including people's initiative; identification of new shelf of projects, options on convergence and execution through line departments, structural aspects of major rural development projects under MGNREGA. Training Programmes on social audit, MIS & convergence: concepts of MGNREGA including social audit, MIS and convergence with departmental schemes, Training Programmes on Latest guidelines & Labour budget under MG-NREGA: concepts of MGNREGA including latest guidelines, instructions and fund flow management and labour budget Watershed training programme (IWMP): concepts, guidelines and implementation of water shed programmes with ref to new common guidelines, training on preparation of DPR, structural aspects of major rural develop projects, options of convergence and linkages of IWMP with income generation. Training programme on total Sanitation Campaign: training on Concepts of MVSSP (Multiple Virtual Storage/System Programme), SOLID and liquid waste management and sustainability; structural aspects of toilet design, IEC and options of convergence Training Programme on NRLM (National Rural Livelihood Mission): concepts of NRLM, guidelines, procedures, experiences of its implementation, activity identification and linkages with financial



institutions, skill development and marketing Refreshers trainings on all schemes/programmes: concepts of rural development and Panchyati Raj programmes/schemes and office procedures, financial admin and functioning of departments.

Training carried out by Panchayati Raj Department

Basic Training Programme for Gram Panchayat Representatives & Panchayat Secretaries/Sahayks: Training on basic knowledge and understanding about the administrative functioning of GPs and GS; Basic issues related to maintenance of finance & accounts, judicial functioning, and civil works management; Key provisions of selected developmental schemes of the government; development of community leadership, public dealing, and effective communication; Critical social issues in HP; Key provisions of RTI and Social Audit Training Module For The Elected Representatives Of Panchayat Samiti , Zilla Parishad: Introduction to Panchayati Raj, Acts and rules, different committees of Panchayati samiti/Zilla Parishad, district plan formulation, convergence issues, devolution of power, flagship and rural development schemes, RTI Training Module Regarding Financial Management for Elected Representatives of PRIs: Revenue earning mechanisms of gram Panchayat; taxation mechanisms, preparing budgets, and others

## **Department : Directorate of Women and Child Division Block**

### **Courses Offered :**

- Department is running one state home at Mashobra in Shimla Distt. These inmates get free residence and free diet. For their rehabilitation they get various skill trainings in the state home so that after leaving the state home they can earn and be rehabilitated.
- Vishesh Mahila Uthaan Yojna: The Supreme Court of India had issued direction to Union Of India and all the states and Union territories to formulate schemes for rehabilitation of physically and sexually abused women through technical and vocational training. Women are provided vocational training under this scheme in selected ITI's of the State.
- Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABLA): The Scheme aims at covering adolescent girls in the age group of 11-18 years, with main focus on Out of School adolescent girls, who are provided life skill education and vocational training under this scheme along with supplementary Nutrition.

## **Department : Tourism and Civil Aviation**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Town and Country Planning**

### **Courses Offered :**

Training provided by: Universities/Central/State Govt. Departments & Professional bodies

Senior level officials: Training is provided on Spatial Planning and Allied Disciplines including Environmental Planning, Heritage Conservation, Land Space Architecture, and Urban Design, Transport planning, Rural Planning, GIS & Remote Sensing and Geo-Informatics.

Training imparted by HIPA

Middle level officials: Principles and Techniques of Urban Planning and Development Laws, Disaster Management, RTI Act-2005, H.P. Public Service Guarantee Act, 2011 and H.P. Apartment & Property Regulation Act, 2005, Gender budgeting, E-governance, Office Procedure & financial Management, Socio-economic Research, GIS & Remote Sensing and Heritage Conservation and re-generation.

Training imparted by HIPA and TCP department

Junior level officials: Disaster Mitigation & Management, Basics Computer Training on M.S. Word / M.S Excel/ Internet, Technical Procedure i.e. Revenue matters, Drafting, Estimation, Valuation, Field Surveys & Mapping, Acts, Rules, Regulations and standing orders.

Training imparted by TCP department

Field surveyors: Basics Computer Training on M.S. Word / M.S Excel/ Internet, Field Surveys & studies, Research Methodology & operational Research, Acts, Rules, Regulations and standing orders

For elected rep of ULBs Solar Passive Design Regulations, Rain Water Harvesting Regulations, Barrier Free Environment Regulations, Heritage conservation, guidelines, documentation / information system, H.P. Apartment & Property Regulation Act, 2005 and Competition Act, 2002( No.12 of 2003)

Deptt. also organizes training/courses for tourism stakeholders on Capacity Building Service Providing (CBSP) under GOI-CBSP Scheme

## **Department : Directorate of Transport**

### **Courses Offered :**

Deptt. never organized training/ courses on DRR and CCA

## **Department : Directorate of Urban Development**

### **Courses Offered :**

## **Department : Directorate of Youth Services and Sports**

### **Courses Offered :**

Organization of Work Camps/Youth Leadership Training Camps:

Under this programme, youth are involved in social activities such as leveling of playfields, plantation of trees, construction of mule path etc. and to imbibe in them the spirit of eradication of social evils and involve them in the activities of bringing social reforms and national reconstruction. These camps were organized at the District level in all districts. Youth leadership training camps are also organized in each district.

## **Department : Aryabhata Geo-informatics & Space Application Centre (AGiSAC)**

### **Courses Offered : NA**

## **Department : G. B. Pant Institute of Himalayan Environment and Development(Himachal Unit) Mohal, Kullu**

### **Courses Offered : NA**

**Department : Institute of Himalayan Bio-resource  
Technology(IHBT)**

**Courses Offered : NA**

**Department : Institute of Integrated Himalayan Studies(IIHS),  
Himachal Pradesh University, Shimla**

**Courses Offered : NA**

**Department : Snow and Avalanche Study Establishment,  
Manali**

**Courses Offered : NA**

**Department : Himalayan Forest Research Institute, Shimla**

**Courses Offered : NA**

**Department :Central University of HP**

**Courses Offered : NA**

**Department : Dr. Rajendra Prasad Government Medical  
College**

**Courses Offered : NA**

**Department : Chitkara University**

**Courses Offered : NA**

**Department :CSK HP Krishi Vishva Vidyalaya  
Dr. YS Parmar University of Horticulture and Forestry**

**Courses Offered : NA**

**Department :HP University**

**Courses Offered : NA**

**Department :Himachal Pradesh Agriculture University,  
Palampur**

**Courses Offered : NA**

**Department :IIT, Mandi**

**Courses Offered : NA**

**Department : HP Technical University**

**Courses Offered : NA**

**Department : Indian Institute of Advanced Studies (IIAS)**

**Courses Offered : NA**

**Department : Indira Gandhi Medical College**

**Courses Offered : NA**

**Department :Jaypee University of IT**

**Courses Offered : NA**

**Department :Jawaharlal Nehru Government Engineering College**

**Courses Offered : NA**

**Department :National Institute of Technology, Hamirpur**

**Courses Offered : NA**

# 7. Training Needs in DRR and CCA

## 7.1 Identification of Gaps in Training Needs

Based on the TNA questionnaire responses analysis, it is concluded that there is certainly a need for a concerted training to assimilate climate change concerns in the planning process of the government as well as towards implementation of strategies to ameliorate the impacts of climate change, as the state needs to bridge the following gaps:

- The State Action Plan on Climate Change is already in place in Himachal Pradesh with specific strategies towards amelioration of climate change impacts and towards mitigation of the driver of change
- Considering the above, all departments have not yet introduced climate change as a strategic area of training
- Though all the officials interviewed are aware about climate change but their departments are not geared up to handle the impacts of climate change on the resources they are managing and the cascading vulnerabilities of systems and population associated with the resources.
- This is because the training programmes of the departments are not actually taking into account the likely impacts of climate change and the ensuing vulnerabilities and hence are not geared to develop or implement adaptation strategies to combat climate change or take advantage of climate change in the state.
- Disaster management trainings are still reactive in nature, as they are not taking into account the projected impacts of climate change on hazards (especially hydro-meteorological events)
- Recent training needs assessment conducted for SDMA and DDMA suggest actions for recovery rather than actions towards preparedness to combat the exacerbated Hydro-meteorological hazards in a changing climate scenario
- The Trainings carried out by Horticulture department, HIPA, SIRD and DES&T and even

SJVN have started introducing climate change as a subject area but it has not penetrated all levels of training and are not designed to address key CC concerns in the different sectors

- Cash crops are highly sought after but they are sensitive to climate and hence planning of cropping pattern in agriculture and horticulture needs to follow the agro climatic zone approach to optimize farm inputs and maximise productivity and ensure food security of the state. Knowledge about indigenous climate hardy crops and new CC resilient cultivars being developed need to be in the know of the farmers including traditional and new techniques of soil and water management, seed protection etc.
- Similarly, frequent and more intense hail, excess rain fall and resultant landslides, flash floods due to cloud bursts etc are a matter of concern in the state and the public works department and irrigation and flood control department has to be constantly on a disaster recovery mode.
- Issues such as heat stress and buildings is though touched upon in some of the training programmes of the DEST as a training on green buildings but this does not form a part of the training for the Urban Development department
- Finally, the planning and the Finance departments have not yet taken into cognizance the Environment Performance Index (EPI) developed by the Planning Commission (Chandrasekharan et al., 2013). The EPI includes climate change as one of the criteria. The planning commission recognizing the influence of climate change and other environmental factors contributing towards natural resources depletion and unabated pollution in many sectors of the economy, suggests that it may be taken as an indicator for allocation of Central assistance for state plans in the future.
- Therefore, climate proofing actions may be considered as one of the criteria that need to be fulfilled by each programme to access central funds and the planning department and finance department need to look at that to priorities the same in their plans and allocations.

## 7.2 Training required by Departments

All departments irrespective of their roles would require to be trained in the following aspects of disaster risk reduction/DM. The training modules would be developed for different categories of employees depending upon their roles. The main areas where training inter alia would be provided are as under:-

- Awareness about the provisions of the Disaster Management Act, 2005 & NAPCC/SAPCC including Hyogo framework
- Orientation and awareness on Disaster Management & Climate Change Adaptation and allied aspects.
- Preparation of DMPs and integration of CCA component in it.



- Preparation of Response Plans
- Training to perform the ESF assigned to the departments.
- Training on integration of DRR & CCA into development plans and policies
- Training on mitigation measures and plans
- Community awareness and IEC on DRR & CCA.
- Damage and Needs Assessment
- Conduct of mock drills
- Training of all the new entrants into Government Services at the training institutes and academies such as HIPA, PTC Daroh, Medical Colleges, DIETs, B.Ed institutions, Revenue Training Institute, Patwar Schools etc.

### 7.3 Sector specific training needs to perform Climate Induced Hazards/CCA.

After having analyzed literature review and questionnaire responses on DRR/CCA, a sector-specific action-plan has been evolved as per Table 8 below:

Policy and Planning				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	All the Members of the Legislative Assembly, All the Administrative Secretaries	Basic Orientation about CC, CCA, SAPCC, NAPCC and Policies, institutional set-up etc. Mainstreaming & Integration of DRR & CCA into development schemes. Rainwater Harvesting and Energy Conservation. Scenario Exercise for various Climate Induced Hazards.	Half Day	State HQ by the SDMA with collaboration with State Centre on Climate Change/DEST
Level II	HODs and other Officers of the Secretariat.	Basic Orientation about CC, CCA, SAPCC NAPCC and Policies, institutional set-up etc. Mainstreaming & Integration of DRR & CCA into development schemes.	Half Day	State HQ by the SDMA with collaboration with State Centre on Climate Change.
Level III	District Level	Basic Orientation about CC, CCA, SAPCC NAPCC and Policies, institutional set-up etc. Mainstreaming & Integration of DRR & CCA into development schemes.	One Day	State HQ by the SDMA with collaboration with State Centre on Climate Change.

Construction /Infrastructure Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Engineer-in-Chiefs, Chief Engineers, Chief Architect, Town Planners, and HODs of other allied departments involved in Infrastructure development activities.	General Orientation about extreme weather events, Climate Resilient/ Climate friendly designs/Green Road Construction/ Infrastructure in Himalayan Region, Alternative Energy Options in HP, Strengthening of existing buildings/ infrastructures/dams NBCs, Seismic Resistant Construction, building Bye-laws, Energy Conservation building code, Best Practices at National and International Level. Environment Impact Assessment for Construction Projects. Mainstreaming DRR & CCA in Construction & Infrastructure Sector/Schemes. Rainwater Harvesting and Energy Conservation. Traditional Practices for Construction in H.P. Green Energy Promotion.	One Day	Bureau of Energy Efficiency, TERI, IITs, Ministry of New & Renewable Energy, CBRI
Level II	S.E./E.E./Senior level, Town Planners officials from other allied departments	First orientation to all of them as in Level I, followed by training on planning/designing and execution aspect related to the construction industry and Mainstreaming DRR & CCA into Construction and Infrastructure Sector. Rainwater Harvesting and Energy Conservation.	3 Days	Bureau of Energy Efficiency/ IREDA TERI, IITs, NITs, Ministry of New & Renewable Energy, CBRI.
Level III	A.E./J.E./Junior Level Professionals from other allied professionals.	General orientation to all of them as in Level I & II followed by field demonstration and execution.	5 Days	HIPA/NIT or officers trained at level II for departmental trainings.
Level IV	Construction Supervisors Masons, Blacksmiths, hydro-power workers.	Basic and safe construction practices with hands on training and retrofitting etc. Soil Testing, Basic Search & Rescue.	10-20 Days	At Block HQs

Management and Coordination Sector(District Administration)				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Office of the Collectorate & SDMs and Panchayati Raj Institutions	Sensitization and orientation on Climate induced hazards, Climate Change adaptation, Natural Resources depletion Mainstreaming & Integration of CCA & DRR into District Level Developmental Plans and Disaster Management Plan and Loss and Damage, Enhancing Community Centered Governance in Himachal Pradesh. Preparedness for Climate induced hazards in the changing climate scenario in District level. Flood Forecasting System and Early Warning System. Decision Support System for climate induced hazards. Rainwater Harvesting and Energy Conservation.	5 Days	HIPA/NIDM/DST/UNDP/SDC
Level II	Tehsildars and Naib Tehsildars	As per Level I	5 Days	NIDM/HIPA
Level III	Kanungos, patwaris and Official of District, Subdivision and Tehsil	General orientation on Climate Induced Hazards.	1 Day	HIPA/RTI Jogindernagar

Social & Community Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Directorate and District Level Officers of Social Justice and Empowerment and ICDS	General orientation on Climate induced disasters and Migration. Mainstreaming DRR & CCA in social sector schemes. Panchayat Level Preparedness	1 Day	SDMA/HIPA
Level II	Aanganwadi workers and Field staff of Social Justice and Empowerment and ICDS.	Training of Aanganwadi Workers, Self Help Groups, Mahila Mandals. on crosscutting issues of mobility, migration, gender equality, health, security, Micro-insurance,	3 Days	In block levels to be arranged by the Department concerned.

Health Sector/Public Health				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Principal of Medical Colleges, CMO and MS of District Hospitals, Joint Directors, Dean of Vet. Colleges, DDs and ADs in AH Deptt and equivalents in other officers at Directorate level.	General Orientation on Climate induced Hazards Mainstreaming & integration of DRR & CCA into Health Sector. Training/Orientation on Managing Hospitals during blackout/ Extreme events. Develop & Implement cold wave warning & response systems. Training/ Orientation and Capacity Building on Climate Induced Diseases. Mass Casualty Management, Rainwater Harvesting and Energy Conservation.	2 Days	SIHFW/ WHO India /NIDM/HIPA.
Level II	Senior specialists, BMOs, MOs at District Level/ Senior Vet. Officers and Vet. Officers, Paramedics/Para veterinary Staff.	As in Level I	2 Days	SIHFW Training Institute at Primalhal, Shimla.
Level III	Pharmacist & Nursing Staff. Male & Female Health Workers	First Aid and Basic Life Saving Skills, Triage, Rainwater Harvesting and Energy Conservation.	2-3 Days Training	District Hospitals

Agriculture Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Directorate and District Level Officers	General Orientation on Climate Induced Hazards, Climate Change Adaptation, Risk Transfer, Micro-Insurance and Coping with Climate Change. Training Program on Climate Resilient Crops & Integrated Water Resource Management as a tool for CCA. Mainstreaming DRR & CCA in Livelihood Sector Schemes. Community vulnerability and adaptive capacity assessments. Improving community Resilience to climate change through the development of sustainable rural livelihoods. Understanding barriers to adaptation and opportunities to adapt. Vulnerability assessments of regions and agricultural activities, Improving agricultural production under erratic rains and changing climatic conditions (Training farmers and field extension staff on agricultural husbandry practices/ Training farmers on storage, utilization and value-adding to their crops and animals products) Rainwater Harvesting and Energy Conservation.	2 Days	NIDM/HIPA/ICAR/MIA/NIAR
Level II & III	Sub-division level Officers & Field Functionaries./ Agriculture Unions/Mandi Samiti Officials	As in Level I and Capacity Building including financial incentives for farmers to take on climate change adaptation such as use of new seed varieties and cultivation practices (minimum tillage, organic farming etc). Capacity building to be extended including training workshops, strengthening of self helps groups, and strategic alliances between the government and research organizations. Information Systems and data management to be strengthened.	2 Days	NIDM/HIPA/ICAR/MIA/NIAR/Horticulture University Nauni, Palampur

IEC and Media Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Directorate and District Level Officers	Basic Orientation and Sensitization on Climate induced hazards and related issues. Designing an effective IEC Campaign; Documentation and Reporting.	2 Days	HIPA/NIDM
Level II	Field Functionaries & Mass Media	As in Level I	1 Day	HIPA
Level III	Print & Electronic Media	Basic Orientation and sensitization on Climate induced hazards and related issues.	1 Day	At District level to be organized by the DDMA.

Voluntary/NGOs Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	All Volunteers	Basic Orientation on Climate induced hazards and Preparedness for climate induced hazards, Himalayan Community Resilience to Hydro-meteorological hazards. Natural resource management, Water Conservation and Sustainable development. Search & Rescue, involvement in various programs of government for Building Awareness among communities and local population. Rainwater Harvesting and Energy Conservation.	3 Days	HHGs, BTCs at local level to be arranged by the DDMA

Public Representative Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	All the PRs	Basic orientation and sensitization on Climate induced hazards, Climate Change Adaptation, Role of the Institution, Integration of Climate Change Adaptation component in Development plan. Mainstreaming & Integration of CCA & DRR into Various sectors and Developmental schemes. Trainers Training in Mainstreaming Disaster Preparedness and Climate Change Adaptation in Local Government Units. Rainwater Harvesting and Energy Conservation.	2 Days	HIPA/SIRD/District/Block HQ

Education Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Head of Institutions-Universities & Departments	General orientation and Sensitization on Climate induced hazards and Climate Change Adaptation, Energy Conservation, Rain Water Harvesting, Solar Passive design, Alternative Energy options and Environmental audit of buildings for School Children. Higher Education's Role in Adapting to a Changing Climate (Green Infrastructure and Buildings), Climate Change Adaptation and Disaster Risk Reduction in the Education Sector. Rainwater Harvesting and Energy Conservation.	1 day	In the Respective Institution
Level II	College Principals and Other Teaching Faculties.	As in level I	1 Day	In the Respective Institution.
Level III	School Principals and Headmasters	As in Level I	1 Day	DIETS
Level IV & V	School Lecturers/ Teachers/Management Committees	As in Level I and Teaching of Climate Change in School Curriculum and safe construction practices.	3 days	DIETS
Level VI	School Students including NCC/ NSS and Non Teaching Staff. (Driver, Helper etc)	Basic Disaster Management, First Aid and Search & Rescue	1 Day	Concerned School with assistance/ guidance from Indian Red Cross Society.

Forestry Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	State level Officers	Basic Orientation and Sensitization on Climate induced hazards and CCA related issues. Climate change adaptation awareness, Environmental Impact Assessment Geographic Information System (GIS), Adaptation cost assessment, Land cover and land use diagnostics, Hazard mapping, Watershed Protection, Mainstreaming CCA and DRR in Forestry Sector. Training/Orientation Program on Sustainable Management of Biodiversity, Ecosystem based adaptation and DRR. Rainwater Harvesting and Energy Conservation.	3 Days	FRI/HIPA/ICFRE/IIFM
Level II	District Level Officers	As in Level I	3 Days	FRI/HIPA/IIFM
Level III	Range level Officers	Level I + hands on training	3 Days	Departmental Training Institute.

Transport & Tourism Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Directorate and Distt. Level Officers	Basic Orientation and sensitization on Climate induced hazards and CCA, Sustainable Tourism Management and Eco-Tourism, mainstreaming' adaptation in the tourism industry. Rainwater Harvesting and Energy Conservation. Promotion of Multi-Hazard Resistant Construction of Bus Stations, Amusement parks, Cafeteria etc.	2 Days	HIPA
Level II	Field Level Functionaries	As in Level I	2 Days	HIPA
Level III	Hoteliers/Tour Operators/Taxi Unions	General Orientation and Sensitization on CCA and IEC, Energy Conservation, Rain Water Harvesting, Solar Passive design, Alternative Energy options and Environmental audit of buildings for Hotels/Guest houses. Rainwater Harvesting and Energy Conservation. Basic Search & Rescue.	1 Day	To be arranged by the department at the local level.



Water Sector				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Directorate and Distt. Level Officers	Basic Orientation about Hydro-Meteorological Hazards/ Climate Induced Hazards. Climate Change and Adaptation in Water Resources Sector, Soil and Water Conservation, Insurance, Flood Management and Protection, Sustainable Urban Drainage and Landuse Planning. Training Program and Orientation on Integrated Water Resource Management as a tool for DRR and Climate Change Adaptation. Management of Surface water sources/regulation of water resources and Conservation of wetlands. Methods & approaches for Integrating Climate related risks into water management. Rainwater Harvesting and Energy Conservation. Flood Forecasting System. Sustainable Urban Drainage in Land Use Planning. Conservation of existing springs/ natural water sources.	3 Days	NIT Hamirpur/ State Centre on Climate Change/ NIDM/HIPA
Level II & III	Senior Engineer, JEs and other Technical Staff	As in Level I	3 Days	NIT Hamirpur/ State Centre on Climate Change/ NIDM/HIPA

Search & Rescue Sectors				
Level	Category	Components	Duration of Training	Preferrable Training Institute
Level I	Director Generals, IG, DIGs, SPs	General Orientation about Climate Induced Hazards and Technologies/tools available for search & rescue, general role of the department in climate induced hazards etc. Rainwater Harvesting and Energy Conservation.	Half Day	SDMA/NIDM/ NDRF/SDRF
Level II	Addl SPs, DSPs, Commandants Home Guards and Fire Officers	As in Level I and Conduct of Mock-drills in climate induced hazards.	1 Day	NIDM/NDRF/ SDRF
Level III	Inspector, Sub Inspectors and ASIs and equivalents in HHGs and Fire deptts	As in Level II+ Practical in SAR, first aid and conduct of mock drills.	3 days	NIDM/NDRF/ Civil defence college Nagpur/PTC Pandoh to be trained as Master Trainers.

An analysis has been carried out on various sectors which indicates that the trends are not favorable and the climate risk management actions are not sufficiently met due to lack of knowledge and resources, but still the steps are being taken at different levels to adapt to the existing trends and mitigate the adverse impacts to the possible extent.

# 8. Strategy for DRR and CCA Training in HP

The climate variability and climate change poses huge risks to life and threat to endanger the sustainability of the country's fast growing economy. The Himalaya has the largest concentration of glaciers outside the Polar Regions and some of the prominent rivers of the Northern India originate from these Himalayan reservoirs. Geological history of the earth indicates that the glacial dimensions are constantly changing with the change in climate. Monitoring of seasonal snow cover depicts the melting and the retreat of snow in the month of December at an altitudinal range of more than 4,800 mts., in Baspa valley implying thereby that global warming has actually started affecting the snow glacier melt and runoff patterns in the Himachal Himalaya as well. (Kulkarni et al.)

Being the most eco sensitive and fragile nature, the impacts of Climate Change manifest most, leading to significant impact on agriculture and horticulture production, water resources, forests and these impacts are likely to adversely affect large percentage of population depending on these natural resources/activities in future as well. There is in fact a greater need for sustained efforts for the adaptation measures in the State.

## 8.1 Capacity Development Process

### Defining Capacity Development

Capacity development as the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time.

The capacity development process consists of five steps that are embedded into a policy analysis and programming process (Figure 16).

Capacity development is much more than supporting training programmes and the use of national expertise- these are necessary and on the rise, but we must include response and support strategies for accountable leadership, investments in long-term education and learning, strengthened public systems and voice mechanisms between citizen and state and institutional reform that ensures a responsive public and private sector that manages and delivers services to those who need them most.

It is our collective responsibility and response to capacity development that gives meaning and shape to the principle of national ownership, and translates it into more sustainable and meaningful development outcomes.

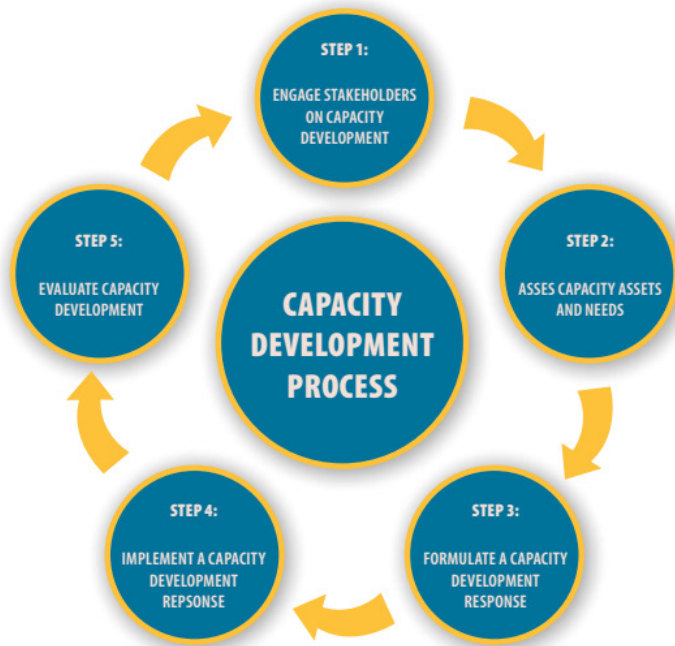


Figure 16: Capacity Development Process

FIGURE 1. THE UNDP CAPACITY DEVELOPMENT (CD) PROCESS

## 8.2 Capacity Development Action Plan

### 8.2.1 Introduction

The development of the Action Plan/framework has been a consultative process involving stakeholders drawn from key public and private organizations and institutions involved in disaster risk reduction and climate change initiative in the state. This was done so as to ensure that it incorporates all constructive views and suggestions from all key stakeholders; builds on the current achievements and strengths and contributes significantly to the sustainable socio-economic development of the state. The Action Plan is tailored to contribute significantly to the implementation of the disaster risk reduction and climate change action plans to be developed by the other subcomponents by ensuring availability of the required capacities. In this regard, the development of the Capacity Development Action Plan/framework has taken into account the current initiatives as well as the challenges and constraints experienced in the implementation of climate change actions.

In undertaking this assignment, various methodologies and tools were developed and utilized. The key design considerations were made on how the data and information collected was to be analyzed, reported and utilized. The selection of the tools used in this capacity assessment was based on the available time and resources allocated for this assignment and included (i) Desk reviews, (ii) Focus group discussions, (iii) Facilitated workshops, (iv) Interviews and (v) Self assessments.

## 8.2.2 Capacity Development Guiding Principles

The implementation of this capacity development action plan shall be achieved through sectoral and cross sectoral capacity development programmes with inbuilt mechanisms for synthesis, networking and sharing of lessons learned aimed at improving the value of the capacity development initiatives. The development and implementation of these sectoral and cross sectoral programmes shall be guided by the following capacity development principles:

(i) Capacity development requires ownership: To be equally valid to all relevant stakeholders, capacity development needs to be based on a joint vision. Important elements on this include the ability and mandate of participants to set goals and to formulate strategies; basic consensus on assumptions and the capacity development strategy; best entry points for interventions; and clarity on the sequence and timing of activities.

(ii) Capacity development requires collaborative agreements: Capacity development must address organizational and/or behavioral change. Changes to an existing structure or managerial arrangement can become important political issues, and therefore require collaborative agreements to clarify roles and responsibilities among the stakeholders involved, partner contributions, and the means to address such changes.

(iii) Capacity development is a continuous process: Capacity development does not start at a certain point in time with the establishment of capacities needed for a particular task and stops when the task is accomplished. To sustain capacity development achievements, stakeholders need to create learning mechanisms that allow information to accumulate continuously and knowledge to be shared.

(iv) Capacity development requires relevant and valid information for effective decision-making: Shared decision-making relies on a level of understanding of issues among stakeholders. Up-to-date, relevant, and accessible information is essential for informed decision-making.

(v) Capacity development requires incentives and resources: Climate change intervention projects must have a set of built-in incentives and access to adequate levels of resources in order to catalyze capacity development actions.

(vi) Capacity development needs to be part of early project design: Capacity development should receive adequate attention from all stakeholders at the planning stage of climate change intervention projects so as to ensure the development of a holistic vision and strategic direction that enjoys broad legitimacy.

(vii) Capacity development needs to build on existing structures and mechanisms: Capacity development initiatives should be based on national and sector development policies, strategies, governance structures and mechanisms and should also take into account societal values and norms.

(viii) Capacity development needs a baseline: Capacity development targets a future state or desirable

outcome. To monitor and measure changes, it is necessary to assess the state of capacities at the start of an intervention. An assessment of capacities during climate change intervention project design phase is needed to facilitate a comparison of stages reached with a prior situation.

(ix) Capacity development needs benchmarks: Being a process, capacity development can be best measured in degrees and steps toward a desired outcome. This can be achieved by establishing benchmarks that provide a framework for the initial planning of capacity development processes and their monitoring.

(x) Capacity development needs to be specific and attributable: To become measurable, capacity development interventions have to relate to a particular development outcome (capacity for what?). Specific recipients at individual, organizational or system-wide level (whose capacity?) should be targeted as much as possible.

## 8.2.3 Capacity Assessment

### 8.2.3.1 Understanding Capacity Development

Capacity has been defined as “the ability of individuals, institutions and systems to make and implement decisions and perform functions in an effective, efficient and sustainable manner” (GEF 2001; UNDP 2006b). In simple terms “capacity is the ability of individuals, organizations and systems to achieve results or the ability to perform effectively and efficiently”. Capacity development has been defined by many practitioners as the process through which individuals, organizations and societies obtain, strengthen and maintain the capabilities to set and achieve their own development objectives over time. It is about improving performance of individuals, organizations and systems.

Capacity assessment, on the other hand, is the process of analyzing the desired capacities against existing capacities. This process generates an understanding of capacity assets and needs that can serve as input for formulating a capacity development action plan. An essential feature of capacity assessment is a common understanding of what capacity and capacity development means. This is not as straightforward as it sounds. To some, it is synonymous with workshops and training; to senior managers it can mean organizational development; to non-governmental organizations it is associated with empowering individuals and grassroots organizations; and to international agencies and donors it is about national institutions, governance and economic management.

#### (a) Capacity Assessment and Development Levels

Capacity has been shown to reside in three different levels that include (i) systemic level; (ii) organizational level; and (iii) individual level (Lusthaus et al. 2000). The systemic, organizational and individual capacities combine to create an enabling environment within which a State can take decisions in relation to given obligations, perform specific functions and undertake particular actions in response to

these obligations. These three different levels of capacity development are indeed equally important and strictly interdependent because capacity development interventions at one level are likely to have an impact on other levels as well. Likewise, if investments in capacity are made only at one of these three levels, neglecting the others, the results might not be long-lasting and sustainable as they might be confined to a small group of individuals or organizations. The three levels provide a structure that allows capacity development to be examined and analyzed.

## **8.2.4 Capacity Development Strategic Areas of Focus**

The following five cross cutting and functional capacity development strategic result areas of focus that are most commonly encountered in performance focused organizations were analyzed.

### **8.2.4.1 Capacities for Stakeholder Engagement**

The complexity of available information materials and the few media practitioners involved in DRR and CC contribute to low public awareness. Awareness materials on climate change adaptation and disaster risk reduction are scarce at state level and almost absent at local level. This is further complicated by the lack of a communication strategy for DRR and CC resulting into erratic awareness programmes that are inadequate and usually ineffective. Public awareness programmes that are not followed by concrete actions or demonstrations attract less interest from the public and decision makers. Furthermore, inadequate integration of climate change and disaster risk reduction and other environment and natural resources management issues into formal education programmes and curricular limits public appreciation of the impact of these issues.

### **8.2.4.2 Capacities to Generate, Access and Utilize Information and Knowledge**

Climate change, environment and natural resources management issues have been given low priority in the state research and disaster management plans. Furthermore, the poor research-extension linkage as well as weak mechanisms for technology generation and dissemination has also lead to limited application of research findings. In addition to this, manpower for research has been affected by the government policy of scaling down expenditure to maintain macroeconomic stability. This stringent control of national expenditure has continued to restrict recruitment of new manpower in all government sectors leading to reduction of managerial and technical capacity. Furthermore the staffing and facilities of existing training institutions are limited and cannot adequately provide the diverse skills required given the broad nature of climate change adaptation, disaster risk reduction, environment and natural resource management issues.

### **8.2.4.3 Capacities for Strategy, Policy and Legislation Development**

The sector and cross sectoral planning, coordination and collaboration among public, private and civil society institutions and organizations involved in addressing DRR and CC issues is generally weak. Ineffective inter-institutional planning and coordination mechanisms; hosting of various DRR and CC focal points in different departments; un-harmonized institutional mandates; and weak vertical and horizontal information flow between them are some of the causes of weak inter-institutional planning and collaboration.

### **8.2.4.4 Capacities for Management and Implementation**

Overall, DRR and CC -specific human resource and infrastructure to support implementation of DRR and CC programmes and projects is very poor. Budget constraints experienced by government departments and institutions responsible for addressing climate change, environment and natural resources management affect their ability to attract, train and retain adequate manpower. In addition to this, infrastructure for marketing, social services, administration, research, communication and data and information collection and management is generally lacking. The low human population in some fragile areas, such as rangelands coupled with the population-based development policy linking population numbers to investment in infrastructure has alienated these areas in terms of infrastructure development.

The DRR and CC issues have not been given high priority in terms of financial allocation, understandably due to other more pressing and urgent concerns such as health and education. Accessing available resources at the global level has equally been affected by the inability of relevant sectors to prepare timely and acceptable proposals for mobilizing financial resources from funding agencies.

### **8.2.4.5 Capacities for Performance Monitoring and Evaluation**

Monitoring and evaluation of DRR and CC programmes and projects are weak and unable to provide timely information for actors to make appropriate decisions. Climate change, environment and natural resource monitoring stations such as weather, water and soil degradation are inadequate and ill equipped. Weak climate change, environment and natural resource monitoring mechanisms and absence of clear monitoring and evaluation indicators limit the use of available databases for decision making, policy formulation and planning functions.



## 8.2.5 Capacities for Climate Change Adaptation and Mitigation

Himachal Pradesh is facing many environmental challenges that include deforestation, soil erosion, land degradation, desertification, loss of biodiversity, water scarcity and pollution from industry. These challenges are exacerbated by floods, droughts and other related risks associated with climate change, thereby threatening state security and increasing societal and national economic vulnerability.

Adaptation, in the context of climate change, is defined as “adjustment in natural or human system in response to actual or expected climatic stimuli or their effects which moderate harm or exploit opportunities. Adaptation aims “to reduce the vulnerability of human or natural systems to the impacts of climate change and climate-related risks by maintaining or increasing adaptive capacity and resilience. Mitigation, on the other hand, is defined as activities that contribute to the “stabilization of greenhouse gas (GHG) concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”.

### 8.2.5.1 Climate Change Adaptation and Mitigation Capacity Gaps

Analysis of the current status within a cross section of public, private and civil society organizations and institutions involved in addressing climate change issues reveal a number of climate change adaptation and mitigation capacity challenges in the areas of: (i) interactive assessments of climate vulnerability, impacts, adaptation and mitigation practices/coping strategies and sensitivity of development activities to climate change; (ii) participatory and transparent prioritization of climate change issues, areas, sectors, and communities/populations; (iii) development and implementation of climate change adaptation and mitigation programmes and projects; (iv) coordination of adaptation and mitigation actions of different climate change actors to avoid duplication and create economies of scale in responding to climate change challenges; (v) collection, analysis and dissemination of knowledge and information in support of climate change adaptation and mitigation actions; (vi) identification of specific risks to a given adaptation and mitigation issue/action, evaluation of the full range of options for addressing the risks, and selection and implementation of risk reduction measures; and (vii) performance measurement, monitoring, evaluation and reporting of climate change adaptation and mitigation actions. In order to address these challenges, therefore, there is an urgent need to strengthen the systemic, organizational and individual level capacities and competencies for adapting to and mitigating against climate change.

## 8.2.6 Capacity Development Recommendations

### 8.2.6.1 Individual Level Capacity Development

#### (a) Climate Change Staff Requirements

Individuals, as the tissues of organizations and societies, represent the first layer of capacity. For societies and organizations to transform and grow, they need individuals with skills, knowledge and experience. At the individual level, capacity development takes place through demand-driven processes of learning and knowledge acquisition and sharing, experiencing, participation in communities of practice, on-the-job training, mentoring and coaching as well as other learning techniques that empower and place the individual in a central and active position.

The findings on the status of the human resource in the key government departments and institutions showed that one of the major challenges to the implementation of DRR and CC programmes and projects is inadequate availability of staff with the right skills, knowledge, motivation and attitude. Given this state of affairs, it is recommended that serious effort should be made to put in place the required staff complements in the key government departments and institutions. The recruitment of the required staff should be geared towards attracting highly qualified and competent staff that can be developed further to assume higher responsibilities.

In order to be able to attract, retain and effectively utilize human resources with specific knowledge, skills, attitudes and motivations, the key government departments and institutions as well as private and civil society organizations will need to put in place a well designed grade, promotion and reward system. In order to become and remain productive, these staff involved in DRR and CC would require both formal and on-the-job training. DRR and CC activities are, by their very nature, highly skill-intensive. Some of these skills are initially acquired by formal academic training. However, to maintain up-to-date knowledge and skills in their areas of specialization, staff must receive further specialized training on regular basis throughout their career. In order to meet the DRR and CC staff requirement, the key government departments and institutions as well as private and civil society organizations will, therefore, need to develop and operationalize appropriate apprentice-to-professional staff development programmes to address specific training needs at various stages of their career development.

#### (b) Short-term Capacity Development

In order to maintain up-to-date knowledge and skills of DRR and CC staff in their respective areas of specialization, there is a need to develop and operationalize an appropriate short-term capacity development programme. The short-term training courses under this programme should be offered to DRR and CC staff to enable them acquire new knowledge, skills, techniques, methods and attitudes of dealing with the challenges of disaster. The aim of the short-term training courses should be to improve the staff productivity, job satisfaction, motivation and leadership as well as maintaining their scientific, managerial and professional competencies. The short-term training courses should be needs-based,

specific and goal-oriented and should take a variety of forms ranging from structured courses to informal activities.

To remain effective, key government departments and institutions as well as private and civil society organizations must continually develop their human resources through short-term training courses. However, this is a very expensive undertaking and, therefore, emphasis should be on local training so as to ensure cost-effectiveness and sustainability. This approach requires the creation and maintenance of a local pool of DRR and CC trainers within the public, private and civil society organizations to foster human resource development on a continuous basis through short-term courses and workshops. This would require training of trainers (ToT) in DRR and CCA.

### (c) Long-term Capacity Development

Academic and professional training enable staff to gain certificates required for advancement as prescribed in schemes of service. This type of training usually takes one to four years, depending on the type of training and is offered at training institutions such as universities and colleges either within or outside the country. The public, private and civil society organizations should, therefore, develop and implement appropriate long-term DRR and CC capacity development programmes. Since training in universities, colleges and institutions have minimum requirements for admission, the ability to undertake postgraduate training should be important criteria in the recruitment of new staff. Opportunities for postgraduate training should be made available for young staff early in their careers but after a period of at least one to two years of apprenticeship. While postgraduate training is essential for developing and implementing DRR and CC programmes and projects, it should not be seen as a substitute for on-the-job training. Structured on-the-job training prior to postgraduate training helps provide a relevant context for specialization in higher degree programmes.

Postgraduate training can be offered within and outside the state. However, training in the state should be preferred in DRR and CC disciplines where facilities, standards and supervision capacity are adequate and where the relevance of the training is high. In view of this, government departments and institutions as well as private and civil society organizations should develop and strengthen relations and partnerships with local universities so as to influence their content of postgraduate training and to collaborate in the required theses research. This approach has a double advantage of solving the identified DRR and CC priorities while at the same time providing opportunities for the staff to earn their postgraduate degrees and improve their performance and motivation.

In cases where postgraduate training is undertaken outside the state, ways of improving the relevance of the training through special arrangements with the relevant universities and funding organizations should be established. These arrangements should include (i) postgraduate candidates returning back to organization after taught course work to collect data for their dissertations and theses on priority DRR and CC topics; and (ii) postgraduate candidates completing some of the course work at overseas universities and return to do their dissertations and theses at a local university. Over the long-term, these arrangements would strengthen the national and state level postgraduate DRR and climate training capacity while at the same time responding to issues of cost-effectiveness and relevance of training.

Postgraduate training opportunities at the Master's level should be made available to all trainable DRR and CC staff. DRR and CC staff with Masters degrees should then advance in their organizational schemes of service depending on their individual performance. Training at Doctorate level should not be offered to all staff with Masters Degrees. The Doctoral level training should be limited to cases where specialization is required for guiding and leading DRR and CC programmes and projects. However, staff wishing to undertake Doctorate training locally and who are willing to use their usual research activities as basis for their theses should be encouraged and supported to do so as long as there is only a minimal cost to their institutions and organizations. However, in some areas of DRR and CC it may be desirable to consider the need to quickly develop enough PhD holders to provide leadership in highly specialized areas of DRR and CC and to assist in the training, supervision and mentoring of the younger research scientists.

### **8.2.6.2 Organizational Level Capacity Development**

Developing capacity of organizations means fostering change within their complex system of policies, systems, procedures, regulations and organizational culture. Poorly managed public, private and civil society organizations can undermine the performance of its personnel, even when it is highly qualified. The availability of financial or non-financial incentives may also depend on rules and practices within organizations as a whole. Given this understanding, therefore, there is a need to ensure that: (i) The mandates of organizations involved in addressing DRR and CC issues are clearly defined, well publicized and mutually compatible. In addition to this, the set mandates should be allowed to evolve over time without being changed or transferred too often from one organization to the other. (ii) Sufficient human, financial and infrastructural resources are made available to enable the organizations fulfill their mandates and missions. Since DRR and CC is an emerging issue, there is a danger that it may not be properly acknowledged in the organizational management structure and may, therefore, not receive adequate resource allocation. (iii) Organizations establish effective and efficient management practices and processes by creating stable management structures with clearly defined responsibilities at each level; creating well-defined, yet flexible, rules and procedures; making higher management accountable for their successes or failures; and providing efficient access to information and appropriate equipment.

#### **(a) Government Departments and Institutions**

Various collaborative DRR and CC initiatives between public, private and civil society organizations are on-going. Given the fact that such initiatives need to be up-scaled, strengthening the coordinating structures at the departments and institutions is of paramount importance. In view of this, it is recommended that: (i) Functional DRR and CC Units/Focal Points should be established within the government departments and institutions with clear mandates and operating structures to facilitate effective and functional mainstreaming of climate change issues into the departments and institutions programmes and projects. (ii) The operating structures should show the hierarchical arrangements of the decision-making tree as well as how DRR and CC activities of the Units/Focal Points are organized, controlled, integrated and coordinated including clear lines of authority, responsibility, accountability and communication functions. (iii) Appropriate mechanisms should be established to enable the Units/Focal Points

function as links from where DRR and CC information can be availed to other Departments, collaborators and stakeholders to strengthen their capacity for implementing mitigating and adaptation actions. (iv) The Disaster Management Secretariat should prepare generic terms of reference that can guide the government departments and institutions in developing specific roles and responsibilities of their Units/ Focal Points. This would provide coherence and facilitate the identification of performance indicators through which the Secretariat could use to track performance to ensure DRR and CC is being addressed by respective departments and institutions. (v) The Units/Focal Points should be staffed with adequate staff with the right skills and knowledge and allocation of adequate financial resources and facilities to enable them deliver on their obligations in a timely and effective manner. (vi) The leadership of the Units/Focal Points should be senior enough and with adequate authority to facilitate effective and functional mainstreaming of climate change issues into the departments programmes and projects. The Units/Focal Points staff should have clear job descriptions, duties and career progression.

#### (b) Universities and Research institutions

Universities and research institutions are the developing tools of know-how and technology transfer, besides conducting studies, offering consultancies and raising awareness. However, the know-how in the field of DRR and CC is very limited among these institutions in Himachal Pradesh. In addition to this, there is shortage of trainers and instructors able to undertake training which is a vital necessity to address the increasing demand for soft and hardware systems technology and to mitigate the problem of high staff turnover. In view of this, it is recommended that: (i) The know-how in the field of DRR and CC in the State's universities and research institutions should be strengthened. In addition to this, the current shortage of trainers and instructors capable of undertaking training necessary for addressing the increasing demand for soft and hardware systems, technology and to mitigate the problem of high staff turnover should be urgently addressed. (ii) Technical capacity to evaluate and implement DRR and CC policies and measures. Analytical tools for climate change, such as models and emission factors should be determined to support negotiating skills within regional and international fora. (iii) The necessary scientific and technical infrastructure to monitor and detect changes in the baseline condition should be strengthened so as to assist in the provision of quantitative and qualitative information for use in informing policy making and implementation of appropriate interventions. (iv) The universities and research institutions should develop appropriate programmes for generating the required knowledge, information and technologies to address DRR and CC challenges and for use in evidence-based policy formulation, decision making and planning. In addition to this, these institutions should develop capacities in the areas of: • Data collection, processing and analysis relating to DRR and CC. • Monitoring, evaluation, risk assessment in the field of GHG's and the relevant scenarios of climate change. • Development and application of impact models and methodologies of assessment in GHG's inventories and vulnerability and adaptations. • Training in models adoption and modification to suit current situation for the different sectors. • Advanced application of information technologies.

#### (c) Private Sector Organizations

Private sector organizations provide vital products and services to the public and, therefore, any adverse effect as result of disasters will affect their ability to provide these services. By mainstreaming DRR and CC into their business operations, the private sector will not only be able to improve their effi-

ciency but also provide the products and services on a sustainable basis. Strategic partnerships with the private sector could provide additional human and financial resources. In order to improve the private sector contribution in addressing the DRR and CC challenges in Himachal Pradesh, it is recommended that: (i) Favourable enabling policy and regulatory environment to facilitate the integration of DRR and CC into business operations should be established to stimulate private sector investments in DRR and climate change adaptation and mitigation. The private sector should establish beneficial strategic partnerships with the public sector and Civil Society Organizations/Non-governmental Organizations to provide additional human and financial resources, including the technical skills for addressing DRR and CC challenges.

#### (d) Civil Society Organizations

Strategic partnerships with the CSOs/NGOs could provide additional human and financial resources. In order to improve the CSOs/NGOs contribution in addressing the DRR and CC challenges in Himachal Pradesh, it is recommended that:

(i) Favourable enabling policy and regulatory environment to facilitate full participation of the CSOs/NGOs in addressing DRR and climate change adaptation and mitigation should be established. The CSOs/NGOs should establish beneficial strategic partnerships with the public sector and the private sector to provide additional human and financial resources, including the technical skills for addressing DRR and CC challenges. (ii) The CSOs/NGOs should establish functional DRR and CC Units/Focal Points with clear mandates and operating structures to facilitate effective and functional mainstreaming of DRR and CC issues into their programmes and projects. The leadership of the Units/Focal Points should be senior enough and with adequate authority to facilitate effective and functional mainstreaming of DRR and CC issues into the CSOs/NGOs programmes and projects.

### 8.2.6.3 Systemic Level Capacity Development

It is recommended that: (i) The role of the organizations addressing DRR and CC in the establishment of the enabling environment should be the identification of the main facilitating or constraining factors or dimensions in their operating environments and then lobby and advocate for suitable reforms to be put in place so as to create the desired enabling environment. (iii) In carrying out the lobbying and advocacy, the public, private and civil society organizations should collect, analyze and provide data and information on the constraining aspects and dimensions of the current enabling environment to justify why and in what way the particular aspects or dimensions are constraining their performance. This information will then be used as evidence to enable the policy makers to make informed decisions geared to the creation of the desired enabling environment.

## 8.2.7 Capacity Development Action Plan

As has been outlined in the preceding sections, capacity development in the context of DRR and CC is viewed as the “the actions needed to enhance the ability of individuals, organizations and systems to make and implement DRR and CC decisions and perform functions in an effective, efficient and sustainable manner”. Capacity in this context, therefore, implies the ability to achieve results or the ability to perform effectively.

The cross cutting capacity development strategic result areas of focus include (i) Capacities for stakeholder engagement; (ii) Capacities for climate change adaptation and mitigation; (iii) Capacities to generate, access and utilize information and knowledge; (iv) Capacities for strategy, policy and legislation development; (v) Capacities for management and implementation; and (vi) Capacities for performance monitoring and evaluation. The capacity development strategic result areas of focus are sector neutral and are common to public, private and civil society organizations involved in addressing DRR and CC issues.

Table 9: Short and long term individual level capacity development modes for public, private and civil society organizations and institutions

Individual level capacity development modes	1.0 Orientation/ Induction
Objective	1.1 To acquaint staff with the organization’s/climate change unit’s/focal point’s mandate/core functions, goals, rules and regulations. 1.2 To enable staff become acquainted with DRR and CC programmes and projects within a short time. 1.3 To meet other staff and facilitate effective staff socialization and team building.
Duration	Few days to one month
Target	All new DRR and CC staff
Location	DRR and CC public, private and civil society institutions and organizations
Expected outcome	Faster integration, orientation and assimilation of staff into the institution and organization.

Individual level capacity development modes	2.0 On-the-job coaching and mentoring
Objective	2.1 To enable new and existing staff to learn techniques and methods for dealing with DRR and CC issues. 2.1 To coach and mentor young technical staff on DRR and CC scientific and research processes.
Duration	Continuous
Target	All but emphasis on young DRR and CC staff
Location	DRR and CC public, private and civil society institutions and organizations
Expected outcome	Improved performance/ productivity, job satisfaction and motivation.

Individual level capacity development modes	3.0 Study tours, workshops and conferences
Objective	3.1 To broaden staff experience and exchange views on DRR and CC technologies, techniques and methods. 3.2 To enable staff to acquire new skills, knowledge and attitudes of dealing with DRR and CC issues.
Duration	Few days to one month
Target	All depending on the identified specific needs and problems
Location	Within and outside the state and in other relevant institutions and organizations
Expected outcome	Broadened staff experience and improved performance and productivity.

Individual level capacity development modes	4.0 Technical short courses
Objective	4.1 To acquire practical skills, techniques and methods of dealing with specific DRR and CC issues. 4.2 To update scientific and technological knowledge and fill specific DRR and CC knowledge and skills gaps.
Duration	Few weeks to six months
Target	All depending on the identified specific needs and skills and knowledge gaps
Location	Within and outside the state and in other relevant institutions and organizations
Expected outcome	Enhanced skills and knowledge, improved leadership and better career prospects



Individual level capacity development modes	5.0 Postdoctoral and research attachment fellowships
Objective	5.1 To upgrade staff skills in specialized DRR and CC areas in which local experience and facilities are lacking. 5.2 To improve DRR and CC knowledge, skills and professional contacts/linkages and strategic alliances.
Duration	Few months to one year
Target	DRR and CC MSc or PhD degree holders
Location	Local or overseas universities or other relevant institutions and organizations
Expected outcome	Improved research and technical skills, knowledge and professional collaboration, partnership and strategic alliances

Individual level capacity development modes	6.0 Programming and management training
Objective	6.1 To develop capacity for planning, management and mainstreaming of DRR and CC. 6.2 To improve capacity for planning, development and management of DRR and CC-specific resources 6.3 To improve DRR and CC-specific supervisory, management and leadership skills. 6.4 To develop skills in performance management, monitoring and evaluation
Duration	Few days to one month
Target	Top and middle level planners, administrators, research managers, and programme coordinators
Location	Within and outside the state and in other relevant institutions and organizations
Expected outcome	Improved planning, managerial, leadership, and motivation skills and knowledge.

Individual level capacity development modes	7.0 Long-term postgraduate training
Objective	7.1 To increase knowledge and upgrade skills and research capability. 7.2 To enable staff to achieve academic advancement.
Duration	One year to four years
Target	BSc or MSc degree holders
Location	Local or overseas universities or other relevant institutions and organizations
Expected outcome	Improved research capability, leadership and better career prospects

## Action Proposed - Budget (Rs. Million) - 25,000

Table 10: Time bound Action Plan- 2014-2019

### 1. Mainstreaming DRR and CCA into Development

Implementation Period -

Budget (Rs. million) - 4000

Agriculture
<ul style="list-style-type: none"><li>• Ensure all construction is earthquake resilient.</li><li>• Agriculture extension centres must be flood and earthquake resistant.</li><li>• Ensure the seeds storage is disaster resistant.</li><li>• Identification of land which is resistant to floods and other disasters.</li><li>• Boring of tube wells at strategic places.</li><li>• Assess disaster risks due to any new construction or maintenance activity.</li><li>• Protection of embankments of the rivers.</li><li>• Ensure that the enough measures have been taken to prevent the soil erosion.</li><li>• Perform an analysis of the vulnerability and adaptation potential of the agricultural sector and HP's water and soil resources.</li><li>• Assess and summarize national policies and strategies for adaptation in the agricultural sector and water and soil resources.</li><li>• Conduct a socioeconomic assessment of the impact of climate change on the agricultural sector.</li><li>• Perform studies to identify climate change adaptation measures and projects in HP Agricultural sector, especially in rural agricultural areas with small family farms.</li><li>• Develop a system to manage agro-climatic risks and agricultural emergencies.</li><li>• Implement a Genetic Improvement Program to develop new plant varieties that can be adapted for new climate change scenarios.</li><li>• Foster and promote the efficient use of water in agriculture.</li><li>• Reduce use of chemicals for agri-horti productions.</li><li>• Increase the State's irrigated surface area by 50% through a new water shed- dam construction program.</li><li>• Expand irrigation and water policies to include small reservoirs, artificial groundwater replenishment, relining of Kulhs &amp; canals.</li><li>• To promote organic farming in the State.</li></ul>

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- Establish all the BSNL offices or any establishment is earthquake resilient.
- Earthquake and flood resistant technology in the construction of BSNL towers or setups.
- Fire resistant cables and instruments.
- Assess disaster risks due to any new construction, installation or maintenance of towers or any other setup.
- The flood specific designing of the towers and poles which are located in the flood prone areas or low lying areas.
- Installation of alternate sources of energy for the power back up.
- Fire resistant switches and network devices

### **Education Department**

- Ensure that new school constructions are done after taking risk and vulnerability analysis of the area.
- Ensure that all new constructions are disaster resilient and old constructions are retro-fitted for disaster resilience through structural mitigation activities (following national building codes/laws).
- Assess disaster risks due to any new construction or maintenance activity.
- Improve inter-departmental coordination to reduce risk of negative impacts of development activities by the department.
- Ensure multi-stakeholder coordination to improve safe & non-discriminatory access of all eligible persons and in particular the vulnerable groups.
- Ensure that policies and program include measures of DRR and CCA.

### **Health Department**

- Ensure efficient and resilient systems for public health management and service delivery are in place.
- Ensure all constructions and infrastructures are disaster resilient

### **Food and Civil Supplies and Food Corporation**

- Ensure that all godowns, constructions are earthquake resilient and safe from flood water (constructed at high platforms) and fire etc.
- Ensure that old godowns and constructions are retrofitted to make them disaster resilient through structural mitigation activities (following national building codes/laws).
- Ensure that petrol, diesel, kerosene, LPG distribution centres are safe from any possible disasters and have adequate measures in place to prevent any kind of man-made or accidental disasters.
- Assess disaster risks due to any new construction or maintenance activity.
- Improve inter-departmental coordination to reduce risk of negative impacts of development activities by the department.

### **Industries Department**

- Ensure that all new projects, industries are established only after assessment of disaster risk arising out of the new developments, and that, measures are taken to minimize these risks.
- Ensure that all new projects & industries are disaster resilient and are safe from any accidental, man-made mis-happenings.
- Ensure that provision of land for development projects and industries is done only after through assessment of environmental, social, economic impacts on the local community.

### **Police Department**

- Assess the risk to law and order for any emergency situation.
- Ensure effective and adequate force is available to maintain the law and order in case of any emergency
- Train the force to tackle the possible human right violation that can emerge during any emergency situation.
- Assess the vulnerable groups (children, women, aged) and make an action plan to protect them.
- Detect the extremist and anti national activities that can take advantage during disaster and take preventive measures to combat such elements.
- Assess the vulnerable areas and people ( e.g. children are vulnerable to recruit in armed groups by anti national elements) and make an action plan to safeguard them.
- Organize mass campaign to promote humanism, work ethics to reduce the risk of exploitation of poor and other vulnerable groups.

### **Panchayati Raj Department**

- Ensure all construction is earthquake resilient.
- All weathered roads.
- Earthquake and flood resistant technology in the construction of houses.
- The panchayati raj department must take all the CCA and DRR measures before drawing the Resettlement policy frame work, where the land is acquired for the welfare of panchayat.

### **Transport Department**

- Ensure that all vehicles are in good working condition before coming on the road.
- Ensure that there is disaster risks arising out of motor vehicles are assessed and measures are taken to minimize those risks.
- Ensure that measures are taken to minimize pollution from motor and vehicle.

### **Animal and Fisheries Department**

- Ensure all construction is earthquake resilient.
- Treatment centre must be flood and earthquake resistant.
- Ensure the medicine storage is disaster resistant.
- Ensure the construction of hospitals takes place at strategic and away from flood prone areas. Artificial insemination centres must be strategically located and flood resistant. Various DRR and CCA policies must be made for the animals to reduce their sufferings.
- Fodder storage at safe places, Supply of life saving vaccines in advance and safe storage for them, fodder banks must be established at safe places with earthquake resistant structures.
- Installation of plants must be disaster resistant.
- Assess disaster risks due to any new construction or maintenance activity.
- Ensure that the enough measures have been taken to prevent the soil erosion.
- Protection of embankments of the ponds and rivers.

### **PWD Department**

- Ensure all construction is earthquake resilient
- Museums and govt. buildings must be flood and earthquake resistant.
- Adoption of Modern technology suitable to the climate of the area.
- Constructing new buildings on high plinth in the flood prone areas or flood resistant structures.
- Retrofitting of lifeline buildings at block level, panchayat level and district level

### **Department of Power**

- Ensure all construction is earthquake resilient.
- Repairing and retrofitting of the old power generation units and adopting disaster resilient technology in the process.
- Adoption of Modern technologies.
- Measures to protect the water logging, soil erosion etc. due to the construction of the power units
- Strategic planning while constructing such units to avoid water logging and soil erosion.

### **Fire Department**

- Ensure to install fire safety measures like fire alarm, hydraulic pump, sprinkler etc.
- Ensure that the fire fighters are equipped with effective and modernized weapons, safety measures like fire proof gloves and suits etc.
- Train the fire fighters to tackle CBRN and other disaster specifically.
- Identify the vulnerable areas, buildings etc and make an action plan to reduce its risk.
- Assess the risk vulnerability of the areas and promote fire safety measures according to the need.
- Conduct regular mock drill, training and awareness camp on fire safety measures and CCA and DRR to the fire fighters and among the masses.

### **Urban Development**

- Include the CCA and DRR measures in planning like construction of sewerage and drainage system to mitigate the impact of urban flooding, development of rules and regulations for earthquake resistance buildings, risk and vulnerability analysis of the buildings and retrofitting the weak buildings according to building by laws etc.
- Ensure that the new constructions are disaster resilient and assess the hazard vulnerability of the buildings.
- Assessment of the adverse impact of the projects on environment and inclusion of prevention and mitigation measures to reduce the risks like installation of chemical leak detector etc.
- Relocation of the slums to less vulnerable areas
- Construction of earthquake and flood resistance houses and on high plinth in the flood prone areas and construction of low cost flood proof sanitation facility.

### **Information and Public Relation Department**

- Ensure the extension offices are earthquake and flood resilient.
- Ensuring there is power back up for the printing, recording and communications.
- Hi tech/ disaster resilient instruments for communication.
- Ensuring Hoardings, pamphlet etc. are water proof and can withstand harsh climate.

### **Environment, Science and Technology**

Assess the disaster vulnerable areas, undertake extensive research in scientific technology to reduce the Disaster risk like use of satellite technology for land survey and forecasting of flood and designing of early warning system, flood monitoring system etc.

- Design of microzonation and risk assessment in disaster prone areas
- Establish coordination to reduce the disaster risk, like Geology, metrology to assess, monitor the flood risk and to disseminate early warning
- Provide grants to the persons and institution involved in survey, research and designing of scientific technology to reduce the Disaster Risk and support the universities and other institutions carrying DRR and CCA programmes.
- Provide technical education and training to the stakeholders on the use of scientific and technology in DRR and CCA.
- Evaluation of the effects of climate change on different phases of the water cycle.

### **Planning Department**

- Formulate risk reduction measures like installation of early warning systems at all levels.
- Assess the vulnerability of the state and coordinate with the committees working on five year plan and annual plan in introducing risk reduction measures in the plans e.g. find out the risk of existing embankments and incorporate the reparation, retrofitting and construction of disaster resilient embankments in the plans. Assess the hazard vulnerability of the areas and allocate resources for the formulation of plan to carry out risk reduction measures.
- Assist the committees and externally aided projects working on DRR and CCA.

## Department of Irrigation and Public Health

- Perform an analysis of the vulnerability and adaptation potential of water resources.
- Updating of hydrological balances in the most critical areas.
- Determination of the availability of water in the future for consumption by humans, agriculture and electricity generation, considering the effects of climate change and demand forecasts.
- Forecasting of hydrological trends (flows) based on climate evolution predictions.
- Design of a state level aquifer monitoring program.
- Progress toward commitments set out in the State Strategy for Integrated Watershed Resources Management and development.
- Study of water resources and how efficiently they are used, in order to adapt them to climate change in HP.
- Application of calibrated hydrologic balance models to various unregulated watersheds.
- Encourage the construction of rain water harvesting structures.
- Implement the processes for technical improvements for the effective irrigation.
- Carry out a multidisciplinary study of glaciology and meteorological aspects of rich biodiversity in remote geographical regions, through research.
- Set up a multipurpose centre equipped for researching water resources and biodiversity in order to advance research in the State.
- Enhance rain water harvesting installations coverage in time bound manner.
- Regulate and target to reduce water storage systems in industrial, commercial activities.
- Ensure all water structures are earthquake resilient.
- Identification of safe areas for laying pipelines or boring wells, hand pumps or establishing tap system.
- Construction of flood and earthquake resistant toilets and sewage system.
- Identification of safe solid waste management sites.
- Take measures to reduce erosion risks.
- Assess disaster risks due to any new construction or maintenance activity.
- Protection of embankments of the rivers.
- The hand pumps should be installed on raised platforms.
- The toilet should be constructed on elevated grounds or raised platform.
- Ensure natural drainage is not blocked by development activity of other departments/Projects.
- Take measures to reduce erosion risks and blockage of these channels by new roads and other construction.



## 2. DRR and CCA Priority Actions

Implementation Period -

Budget (Rs. million) - 8000

### Agriculture, Horticulture and Soil Conservation

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Seed and fertilizers storage at safe places, the block agriculture office must provide the technical advisor to the farmers, Regular supply of pesticides and fertilizers from the state to the district, block and Panchayat level.
- The crop demonstration programme.
- Awareness on the fertilizer management, promoting the bio-fertilizer programme by the soil conservation department.
- Training in adopting new agriculture practices, farmer's exposure visit to centers of excellence, institutes, training in cropping practices and use of modern technology.
- Agriculture office must initiate for the Silt Detention Dams.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.
- Develop new crop types
- Enhance seed banks
- Avoid monoculture and encourage farmers to plant a variety of heat-and drought-resistant crops
- Avoid tying subsidies or taxes to type of crop and land
- Increase efficiency of irrigation
- Disperse information on conservation management practices
- Liberalization of agricultural trade
- Promote agricultural drought management practices
- Land consolidation
- Avoid Land use change especially agriculture land

### **Animal and Fisheries Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Renovation of the fish ponds and ox-bow lakes.
- Animal Breeding Programme and Vaccination must be done after doing the awareness programmes in the Panchayats since most of the people remain unaware of the schemes.
- Training and exposure to fish farmers in scientific aquaculture, Renovation of water bodies through Panchayats, Awareness on marketing for the fish farmers
- Setting up of model farms in the districts and the exposure visit of the Panchayats so that they gain knowledge
- Poultry farms and cattle farms should be clean and availability of water and fodder should be throughout the year
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

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- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Training of departmental staff in DRR and CCA knowledge.
- Identification of safe areas before installing the BSNL towers or setting-up a unit.
- Ensuring that the power back up is there for the continuation of the work.
- Computerization of rural and remote extension offices.
- Insertion of CCA and DRR features in telecom training which is provided by the BSNL.
- Taking initiative in starting SMS services to update the society on weather forecast.
- Sending alert messages during emergencies.
- Location of equipments, wires at safe places to rectify the technical problems in time.
- Functioning of BSNL office from safe building in order to provide the unhindered telecom services to the people.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.

- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Building Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Identification and assessment of all department's building at the Panchayat level, block level and district level.
- The demonstration of the earthquake and flood resistant structures at the block, district and panchayat level.
- Availability of construction material at block, panchayat and district level.
- Training to govt. employees at block and panchayat level in CCA and DRR knowledge.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure departments' performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Education Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Ensure DRR and CCA be part of curriculum in all schools, colleges.
- Ensure that school buildings are constructed with appropriate standards and guidelines and provide safety during school time and safe exit in case of emergencies.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

## Energy Department

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Identification and assessment of power generating units at the panchayat level block level and district level.
- To promote the schemes on non- conventional energy sources.
- Installation of bio gas units or wind mill at safe places in the villages.
- Taking measures to check the soil erosion and water logging when laying canal for the purpose of electricity generation.
- The department must identify the power units which are located in disaster prone areas and arrange proper route connectivity. for relief, emergency logistic and also provide alternate connectivity to reduce damage.
- Based on latest or previous emergency or crisis experience the department should frame an outline of future action plan including disaster risk reduction preventive measurements.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.
- Improve estimates of potential savings and energy efficiency on a State and regional scale, by consumption sector. To achieve this, the potential for reducing greenhouse gas emissions through implementation of the 2009-2014 Action Plan of the National Energy Efficiency Mission will be quantified. The objective of this plan is to limit increase in energy consumption in sectors such as transport, industrial, cement mining, public and residential. In addition, this program's potential for reducing baseline emissions will be established.
- Strengthen the National Energy Efficiency mission based on results of the potential for savings and energy efficiency. The purpose of this is to intensify energy efficiency initiatives in sectors such as construction, commercial, residential, industrial and transport and to evaluate their potential for future mitigation.
- Study the potential for renewable energy generation. To do this, the potential for limiting the increase of greenhouse gas emissions will be calculated and quantifies. This potential is a result of new investments being made in this field that have resulted from actions taken to promote the development of non-conventional renewable energies in the State and also of regulatory modifications.

- Ongoing monitoring of the evolution of the current and projected baseline, for the purpose of tracking the natural evolution of growth in demand, as well as the new energy supply options that are available.
- To undertake Cumulative Environment Impact Assessment (CEIA) studies
- Encourage the installation of solar systems for heating water or generating electricity in the public, commercial, residential and industrial sectors, to make maximum use of HP's solar resources.
- Provide the necessary infrastructure and safety features for the large-scale use of bicycles, pooled transport as an everyday means of transport in urban areas.
- Promote run of river projects
- Minimum discharge regulation enforcement
- Dam safety measures in all hydropower dams/ reservoirs structures
- Conserve energy-efficient use of energy
- Create awareness, education, increase voluntary compliance
- Promote solar energy use
- Improve estimates of potential savings and energy efficiency on a State and regional scale, by consumption sector. To achieve this, the potential for reducing greenhouse gas emissions through implementation of the 2009-2014 Action Plan of the National Energy Efficiency Mission will be quantified. The objective of this plan is to limit increases in energy consumption in sectors such as transport, industrial, cement mining, public and residential. In addition, this program's potential for reducing baseline emissions will be established.
- Strengthen the National Energy Efficiency mission based on results of the potential for savings and energy efficiency. The purpose of this is to intensify energy efficiency initiatives in sectors such as construction, commercial, residential, industrial and transport and to evaluate their potential for future mitigation.
- Study the potential for renewable energy generation. To do this, the potential for limiting the increase of greenhouse gas emissions will be calculated and quantified. This potential is a result of new investments being made in this field that have resulted from actions taken to promote the development of non-conventional renewable energies in the State and also of regulatory modifications.
- Ongoing monitoring of the evolution of the current and projected baseline, for the purpose of tracking the natural evolution of growth in demand, as well as the new energy supply options that are available.
- Establish the Centre for Renewable Energies to create policies that guide and create incentives for investors. Implement a government-backed fund for investments in renewable energies and energy efficiency.
- Encourage the installation of solar systems for heating water or generating electricity in the public, commercial, residential and industrial sectors, to make maximum use of HP's solar resources.

- Provide the necessary infrastructure and safety features for the large-scale use of bicycles, pooled transport as an everyday means of transport in urban areas.
- Evaluate the potential energy generation scenarios in Himachal that take into account the expected impacts of climate change on water resources. This information will be central to any assessment of different alternatives and opportunities that, in the future, could allow for the establishment of a more diverse and sustainable energy matrix.
- Assessment of the Power sector's hydrological vulnerability and its effect on HP energy security. This will be carried out by developing future hydroelectric generation scenarios.
- Transmission and evacuation plan
- Target energy conservation through market based instruments
- Target solar energy coverage in urban rural areas.
- Bio-energy waste to energy pilot model projects.
- Discourage energy intensive industrial development.
- Regulating diversion of river flows, courses for power generation.
- Target to achieve minimum discharge required for downstream floral-faunal sustenance.
- Target revival of water mills. Design of economic instruments to address of one priority pollutant and incentives for cleaner production based on economic efficiency criteria.

### **Fire Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Assess the vulnerable points in the infrastructure, especially hazardous industries and take measures like timely repairs etc.
- Maintenance of fire fighting equipments etc and installation of fire alarm and water pumps like hydraulic, sprinkler etc.
- Scope the budget for the maintenance of fire fighting equipments and structural measures etc under different categories.
- Define standards to measure departments' performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure to keep the force alert and sufficient preparedness is there for emergency response.

## Industries Department

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination
- Ensure that department staff, officers are aware of potential risks to industries during disasters; and are taking preparedness actions at their level.
- Ensure that department staff, officers are aware of potential risks that might arise out of any accidental or man-made disaster in the industries; and are taking preparedness actions at their level.
- Ensure that all the workers employed in an industry have a sufficient induction period for training prior to the actual job and they are aware of safety and precaution measures in case of any emergency.
- New industries should be established in such a manner that clustering of similar chemical- based units are evolved together in the same geographical area.
- Process safety code of management practises based on principles of safety in design according to sound engineering practises; built, operated and maintained properly and periodically reviewed for conformity.
- Ensure that all Major Accidental Hazard installations have taken third-party insurance policies for providing relief to accident victims due to a chemical accident On-Site (Public Liability Insurance Act, 1991)
- Formulate guidelines on transportation, storages and in all other identified areas for instituting self-regulation models in industries.
- An incident command and technical coordination system for industrial/chemical disastrous situations should be identified, made available, tested and incorporated in the district and state DM Plans.
- Ensure that an effective and simplified communication network is available as a dedicated fail-safe communication system to the important stakeholders.
- Ensure that district representatives of Indian industry associations and federations shall volunteer for R&D work and also for further transcending information to industries in augmenting safety measures.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response

## Climate Change in General

- Incorporate climate change in long-term planning
- Inventorize existing practices and decisions used to adapt to different climates
- Disaster relief to hazard-reduction programs
- Promote awareness of climate variability and change

## IPH

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Establish mechanisms for the delivery of safe drinking water, Chlorine tablets, and bleaching powder in the relief camps/shelters in disaster probable areas.
- Establish a contingency fund in the department.
- The Department must try to construct hazard specific sanitation so that the available services can be utilized in a proper manner.
- Identification of suitable land for solid waste management and awareness in the community on this subject.
- Most of the diseases during the emergency are water born vector diseases, keeping community healthy and hygiene could only be possible through safe drinking water supply and eco-friendly sanitation facility.
- The department must also stress for the provision for management of issues like disposal of solid/liquid waste.
- Raise prior awareness amongst the community about how to treat water sources, using chlorine tablets, store safe water etc.
- While construction of sanitary facility or hand pumps the department should also keep genders and disabled community in their technical operation.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.
- Assess the vulnerable points in the infrastructure, especially embankments and take measures like timely repairs etc.
- Maintenance of sluice gates etc and construction of channels.
- Scope the budget for the maintenance of embankments, sluice gates, lock gates etc under different categories.



- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.
- Use river basin planning and coordination
- Maintain options to develop new dam sites for irrigation and water supply
- Control of water pollution

### **Planning Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop early warning information.
- Incorporate the risk reduction measures in the entire plan.
- Inclusion of risk reduction measures in the ongoing developmental projects.
- Establish and practice protocols for Early Warning approval and dissemination.
- Store the material resources at safe places.
- Awareness on the inclusion of risk reduction measures so that all concerned departments can incorporate the risk reduction measures in all the developmental works.
- Training in adopting modern and disaster resilient technology to the departmental staffs, community people etc.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Police Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies to develop early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Assess the vulnerable areas, people to safeguard their interest.
- Maintenance of law and order to protect the rights of the citizen.
- Scope the budget for the maintenance of law and order.
- Define standards/ benchmarks to measure departments' performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakehol

ers engaged with the department on potential disaster risks and measures to reduce the risk.

- Conduct regular mock drill and ensure sufficient preparedness is there for emergency response.

## **Environment, Science and Technology**

- Develop a State Plan for Climate Change Education and Awareness by incorporating the subject into curriculum at all educational levels.
- Creation of the 2015-2025 Regional Action Plan for Mitigation of GHG Emissions and its related Sectoral Plans.
- Development of mitigation scenarios for the next 15 or 20 years, which includes creating scenarios up to 2025 or 2030 for those sectors making significant contributions to State's GHG emissions. These future scenarios will be based on the new energy sector baseline and will include the most up-to-date State specific supply and demand conditions.
- Creation of the State Fund for Research on Climate Change and Bio-diversity.
- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Design technology to detect the probability of disasters and to disseminate information, disaster resilient technology and equipments to be use in search and rescue.
- Initiation of microzonation and risk assessment in disaster prone areas and generate information and data for the development of mitigation and response plan by using Remote sensing and GIS applications.
- Establish and practice protocols for Early Warning approval and dissemination.
- Training in adopting and use of modern and disaster resilient technology among the community.
- Carry out extensive research on the intensity and frequency of the disasters in the past and prepare a strong database to find out the probability of an occurrence of any disaster if possible and find out the risk and hazard vulnerability of an area.
- Provide scholarships and assistance to the young researchers to promote the risk reduction research.
- Assess the vulnerable points in the infrastructure, and take measures like timely repairs etc.
- Scope the budget for the maintenance of infrastructure etc under different categories.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Transport Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination
- Ensure that department staff, officers are aware of potential risks of non-functioning of vehicles and motors during disasters; and are taking preparedness actions at their level.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Urban Development**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop urban flooding early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Vulnerability and risk analysis of the buildings and identifying the weak buildings and doing the retrofitting to such buildings. Also identifying such buildings which are needed to be destroyed.
- Protection of Life line buildings and important structures like roads and bridges, water supply systems and ensuring they are disaster resistant.
- Construction of sewage and drainage system to reduce the risk of urban flooding in the vulnerable areas.
- Poverty alleviation measures like generation of employment opportunity to reduce the risk to vulnerable groups.
- Scope the budget for the maintenance of life line buildings etc under different categories.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Induction of earthquake and other disaster resistant technology in different projects at different levels.

- Encourage and assist the local government in implementing disaster risk reduction measures in developmental works.
- Ensure sufficient preparedness is there for emergency response.
- Develop scenarios to model the impacts of climate change on major infrastructure in low-lying and river bed areas susceptible to climate-related damage.
- Assess the economic impact of preventive measures to prepare for extreme events and of repairs or reconstruction that could result necessary from such events.
- Adapt the design for new bridges and hydraulic infrastructure so that these would account for changes to HP's hydrology caused by climate change.
- Improve the capacity to predict and respond to hydrological emergencies caused by destructive rises in river levels due to the new hydrology caused by climate change.
- Incorporate the results of climate change impact studies into zoning plans to avoid the expansion of urban areas into rural and riverside areas that are already susceptible to climate change risk.
- Improve the link between the process for developing urban planning instruments and the incorporation of background information from available studies on rural areas and watersheds.
- Check infrastructure development related to tourism activities in areas prone to disasters.
- Develop building energy efficiency design guidelines- (retrofitting as well as new constructions)
- Plan urban growth
- Reduce subsidies/incentives for undertaking development in and around sensitive lands
- Use set-backs for housing development
- Discourage permanent river bank line stabilization
- Discourage urban shift towards river bed areas
- Enhance rain water harvesting system
- Enhance capacity to manage solid waste, waste water
- Encourage community based system for waste management

### **Information and Public Relation Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Disseminating the early warning to the villages through the media and telecommunication systems. For this the department must have liaisoning with the private and govt. media, private telecommunication companies, film industries etc.

- Training of staff in CCA and DRR knowledge, maintenance of websites regularly.
- The department must ensure the right information is being exchanged between the community and govt.
- The department must ensure the information on public schemes is being shared with the public through the websites and other means, disseminating the information on preparedness, DRR and CCA to the villages/community through the media and telecommunication systems. For this the department must have liaisoning with the private and govt. media, private telecommunication companies, film industries etc. The documentary or any research on hazard and vulnerability must be shared with other departments.
- Office plan for its operation during emergency times, the department must ensure the media goes to the interior to gather any information, while doing any research the media and other PR agencies must involve the panchayats.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Panchayati Raj Department**

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Training of departmental staff in CCA and DRR knowledge.
- The Panchayati raj department must ensure there is inclusion of CCA and DRR in the various projects and schemes.
- The Panchayati Raj office besides doing capacity building in various areas must strive for strengthening the panchayats in CCA and DRR.
- The panchayati raj department must train or arrange training for the elected representatives in relevant subjects including CCA and DRR so that it becomes easy for them to adopt new agriculture practices or any other technology which is implemented by various departments.
- Allocation of separate fund for disaster management, so that the essential reconstruction work can be started early after any emergency situation.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.

- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response

### Health Department

- Establish coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination.
- Ensure effective integration of health concerns with determinants of health like sanitation & hygiene, nutrition, and safe drinking water through the district health plan.
- Prepare and Implement inter-sectoral State and District Health Plans including drinking water, sanitation & hygiene and nutrition.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.
- Create probable climate change impact scenarios that could be used to establish the needs for health infrastructure and personnel.
- Establish criteria for adapting to contingencies and other needs in the Health sector.
- Carry out an economic assessment of preventive measures and infrastructure and personnel needs.
- Strengthen the capabilities of health personnel to address prevention and care of adverse effects caused by climate change.
- Identify vulnerable areas or those with the greatest health risks due to different factors. The affected population should also be considered.
- Improve monitoring of environmental health indicators. Trends in these indicators as well as any stark changes can reveal effects of climate change.
- Interact with other sectors in order to identify the current or future effects of climate change on the health of the population.
- Create and develop capacities to address the potential introduction of yellow fever, dengue, malaria and vectors such as mosquitoes.
- Adapt monitoring systems and emergency plans by including in risk management practices, any climate change related health effects.

- Improve medical health services
- Greater accessibility to medical health services
- Development of a robust perspective model linking climate and incidence
- Improved surveillance and monitoring systems
- Improved infrastructure and to avoid breeding
- Develop Integrated Environmental Management Plans
- Public Awareness and Education programmes

### **Food and Civil Supplies and Food Corporation**

- Coordinate with the Supply Department in establishing coordination and liaison with other relevant departments, ESF nodal and support agencies, community level committees, other districts, state and national agencies especially to develop flood and drought early warning information.
- Establish and practice protocols for Early Warning approval and dissemination
- Ensure that food supplies are safe from any adulteration and any sort of intended poisoning or damage.
- Ensure that the expired gas cylinders are replaced from the system.
- Coordinate with Supply Department to ensure that all safety measures are in place for proper storage, transportation and distribution of supplies.
- Define standards/ benchmarks to measure department's performance on risk reduction activities and emergency response capacities.
- Build awareness among the departmental staff, communities and the key stakeholders engaged with the department on potential disaster risks and measures to reduce the risk.
- Ensure sufficient preparedness is there for emergency response.

### **Tourism Department**

- Incorporate the results of climate change impact studies into tourism plans to avoid the expansion of urban areas into rural and riverside areas that are already susceptible to climate change risk.
- Check infrastructure development related to tourism activities in areas prone to disasters.
- Assess the economic impact of preventive measures to prepare for extreme events and of repairs or reconstruction that could result necessary from such events.
- Promote programme related to traditional culture based tourism.
- Eco tourism expansion.
- Roads/transport networking.

- Regulating interferences with eco sensitive zones.
- Enhance, conserve natural assets closely associated to tourism activities
- Regulate hydraulic stress and ecosystems degradation
- Creating adequate infrastructure for meeting pressure in peak events
- Promoting ecotourism, traditional-culture based activities
- Efficient solid waste and waste water treatment system, recycling provisions

### **Forest Department**

- Perform an analysis of the vulnerability and adaptation potential of the Forest sector resources.
- Assess and summarize national policies and strategies for adaptation in the Forest sectors.
- Conduct a socioeconomic assessment of the impact of climate change on the Forestry sector.
- Perform studies to identify climate change adaptation measures and projects in Forest sector of HP, especially in alpine areas.
- Implement a Genetic Improvement Program to develop new plant varieties that have been adapted for new climate change scenarios.
- Foster and promote the efficient use of rain water in forests.
- Forest fire management and control.
- Target annual basis forest area enhancement- community participation.
- Target CAT plan implementation and physical achievement.
- Target to create nurseries with new varieties.
- Enhance forest nurseries, seed banks
- Encourage diverse management practices
- Encourage participatory forest management, incentives to the communities
- Ensure efficient timely implementation of CAT plans
- Establish flexible criteria for interventions
- Restoration of degraded sites
- Avoid excessive diversion of forest land for long term
- Reduce habitat fragmentation and promote development of migration corridors



### 3. Capacity Building Actions

Implementation Period -

Budget (Rs. million) - 4200

**Agriculture, Horticulture, Soil Conservation, PW Department, Animal, Fisheries Department, Education Department, Planning Department, Police Department, Transport Department, Urban Development, Information and Public Relation Department, Panchayati Raj Department, IPH, Health Department, Bharat Sanchar Nigam Limited, Power & Energy Department, Fire Department, Food and Civil Supplies and Food Corporation**

- Maintain the roaster of all resources (Human, Programs, Finances and Materials) of the department that could be used for DRR and CCA activities.
- Coordinate with SDMA, DDMA and other agencies for nomination of the department staff in the specialist trainings being organized from time to time by different agencies.
- Organize periodic mock drills of the Department Staff and key stakeholders for different contingency situations.
- Take part in state, district and block level mock drills and capacity building programs organized by State authorities from time to time.
- Train community level volunteers in emergency management and prepare them to support the department led response during the emergency. Provide emergency stock and equipments to them.
- Analyze past experiences of the Department to know what went well and what could have been done better for risk reduction and emergency response by the department. Document it as lessons learnt annually and after every disaster.
- Develop a minimum inventory list required for achieving desired performance standards and develop a plan to acquire it over next few years.
- Create mechanism for regular Inspection and maintenance of equipment and acquisition of new equipment as per your minimum inventory list for disaster risk reduction.

## Industries Department

- Maintain the roaster of all resources (Human, Programs, Finances and Materials) of the department that could be used for disaster risk reduction and emergency response activities.
- Ensuring formation of emergency response plans in all the agencies working under the department
- Train community level volunteers in emergency management and prepare them to support the department led response during the emergency. Provide emergency stock and equipments to them.
- Coordinate with DDMA and other agencies for nomination of the department staff in the specialist trainings being organized from time to time by different agencies.
- Ensure that all people/staff in the department, and in the industries, development projects are well aware of national guidelines on management of chemical and industrial disasters and are able to use them in preparedness and emergency time.
- Organize educational programmes in the form of symposia & exhibitions to aware all stakeholders on chemical and industrial disaster management.
- Use electronic and print media to increase further awareness on safety and precautions in case of chemical and industrial disasters.
- Train / aware communities on the do's and don'ts (how to react on receipt of specialized self-protection warning from industries, department) in case of industrial/chemical disaster.
- The civil defence and home guards can be effectively utilised in chemical/industrial emergency management after some basic training.
- Organize periodic mock drills of the Department Staff and key stakeholders for different contingency situations.
- Take part in block and district level mock drills and capacity building programs organized by District authorities from time to time.
- Analyze past experiences of the Department to know what went well and what could have been done better for risk reduction and emergency response by the department. Document it as lessons learnt annually and after every disaster.
- Develop a minimum inventory list required for achieving desired performance standards and develop a plan to acquire it over next few years.
- Create mechanism for regular Inspection and maintenance of equipments and acquisition of new equipment as per your minimum inventory list for disaster risk reduction.

## Environment, Science and Technology

- Assess current capacities for meteorological monitoring.
- Carry out a technical and economic assessment of the potential improvement and expansion of existing meteorological networks in HP.
- Upgrade the existing meteorological network in order to allow for real-time monitoring of climate behaviour.
- Create and install a network of stations to record environmental parameters, for the purpose of expanding the database of glaciology information
- Install a Glacier Monitoring Network.
- Develop a Strategy for the Oversight and Management of Glaciers that takes into consideration probable climate change scenarios.
- Identify actions or measures to minimize or mitigate the effect of climate change on glaciers as part of the administration and management of water resources.
- Identify situations or risk-factors associated with anthropogenic modifications to glaciers that could affect urban areas, industrial developments.
- Analyze the internal structure of large ice masses and the existing volume of frozen water in order to model and predict the future recession of glaciers.
- Review the current membership of the State Steering Committee on Climate Change, with the aim of incorporating other important sectors such as health, public works, industry-mining and transport, among others.
- Review the institutional arrangements in different sectors for combating climate change, and implement recommendation of the institutional assessment as per outcomes of Environment Master Plan.
- Strengthen State Centre on climate Change through staff, training and capacity building.
- Design instruments to promote the development, transfer and adoption of technologies for climate change mitigation and adaptation.
- These instruments should complement measures included in the respective regional and sectoral plans.
- Provide incentives for the development of alternative energy projects and evaluate mechanisms to facilitate their implementation.
- Implement the Integrated Climate Change Project, which seek to create technologies for climate change mitigation and/or adaptation in the agriculture and forestry sectors.
- Implement an environmental labeling system to inform consumers about the performance and emission levels of new vehicles, including CO<sub>2</sub> emissions.
- Develop incentives for the promotion of more energy-efficient transportation, such as hybrid or electric vehicles.
- Support the Mechanism, an instrument that supports the development and transfer of technology and sustainable development.
- Natural capital cost accounting targeted at the forestry sector.
- Analysis of monitoring and institutional mechanisms for appropriate instream flows, sharing of international experience on good practices for cumulative environmental

impact assessment.

- Poverty and social impact analysis/ monitor and evaluate innovations in benefit sharing.
- Sharing of international experience on water policy.
- Assessment of economic instruments to promote cleaner sources of growth and to reduce pollution from existing industrial plants.
- Strategic Environment Assessment of Sustainable Tourism Practices.
- Develop the regional level Adaptation Plan and the respective Sectoral Adaptation Plans for the period 2015-2045.

#### 4. Functional Continuity Actions

Implementation Period -

Budget (Rs. million) - 1000

**Agriculture, Horticulture, Soil Conservation, Building Department, Animal, Fisheries Department, Education Department, Planning Department, Police Department, Environment, Science and Technology, Transport Department, Urban Development, Information and Public Relation Department, Panchayati Raj Department, IPH, Health Department, Bharat Sanchar Nigam Limited, Energy Department, Fire Department, Food and Civil Supplies and Food Corporation and Industries Department**

- Define Rules and regulations for functioning of the department especially during disaster time.
- All department staff shall nominate his/her buddy to take on the additional activities of his/her buddy, in case of any eventuality and/or absence of the member.
- Define protocols for normal time activities in non affected areas and emergency activities in disaster affected areas, sharing of the work load for above arrangement, special measures like additional budgets, human resources etc for disaster times.
- Identify safe building/location for operational work and meetings of the key department staff, if the department offices and working premises become in accessible due to disaster.
- Secure important files and information of the department. Create backups, wherever possible.
- Develop mechanism for quick sharing of information among department staff. If working on mobile networks, develop alternative mechanism/s for exchange of information especially during emergencies like Ham radio, community networks etc.

## 5. Emergency Preparedness Actions

Implementation Period -

Budget (Rs. million) - 8000

### Agriculture, Horticulture and Soil Conservation

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensuring there is sufficient stock of seeds and other agriculture resources in disaster prone areas. Also there is availability of preventive measures.
- Functioning of Rainfall measurement centers to be checked and ensuring there is sufficient stock of equipments and tools for the repairing of non functional machines and equipments.
- There must be monitoring and research on the required rainfall for the crops every day, this will help in forecasting the situation of drought.
- Identifying the crops which are vulnerable to flood, drought, water logging, pests and developing the alternate cropping system to mitigate the risk of crop destruction.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### Animal and Fisheries Department

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Vaccination before the seasonal disasters such as flood to be held regularly.
- Supply of life saving vaccines in advance and safe storage for them.
- Identification of the safe place in the Panchayat with the help of community and field staff of the department.
- Fodder storage at safe places.
- Ensuring that the protection has been provided to the fish ponds.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Bharat Sanchar Nigam Limited**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- To ensure the safety of own building and property.
- Regular monitoring of the line department's telecom infrastructure.
- The BSNL Company must ensure that the temporary construction work or retrofitting has been done to the vulnerable buildings.
- The BSNL department must have the arrangements (vehicles, cables, generator and equipments) to check and rectify the problem.
- Power backup for the continuation of the uninterrupted telecommunication signals.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Building Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensuring there is sufficient stock of construction material in disaster prone areas. Also there is availability of preventive measures.
- Identification of the safe building (govt.) in the panchayat and block. The safe places must be identified as per the disasters (flood, earthquake).
- The executive engineer must ensure the temporary construction work has taken place before the disaster forecast (flood, storm etc).
- Identifying the buildings which are vulnerable to flood, earthquake, water logging and developing the plan to avoid any damage to the building.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### Education Department

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensure that all furniture of the schools, colleges are strong enough and can be used as hiding places in case of earthquake.
- Ensure that all classrooms have 2 big doors (entry and exit).
- Ensure that all staircases are sufficiently big to provide escape routes.
- Place sign boards, marks indicating nearest exit routes, safe places, first aid, and other necessary services.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### Energy Department

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensuring there is sufficient stock of construction material in disaster prone areas. Also there is availability of preventive measures.
- Availability of vehicle to transport the electric equipments.
- The executive engineer must ensure the temporary construction work has taken place before the disaster forecast (flood, storm etc).
- Ensuring the availability of equipments like cables, wire, transformers, generators etc. at key locations.
- Identifying the power units which are vulnerable to flood, earthquake, water logging and developing the plan to avoid any damage to the building.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Fire Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Identify the most vulnerable areas to fire and other disasters and create awareness and training among the people on fire safety measures, prepare the force for emergency search and rescue operation.
- Implementation of fire safety measures in the private, government and own buildings and establishments.
- Provide regular training in primary health care and in evacuation, search and rescue to the fire brigades to make them alert.
- Periodically inspect the vulnerable areas like hazardous chemical and other industries.
- Stockpile and preposition sufficient number of fire fighting equipments and vehicles to combat any emergency.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.
- To involve in disaster management activity, identify the voluntary workers from NGOs, Educational institutions and provide them training.

### **Food and Civil Supplies and Food Corporation**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Coordinate with the Supply Department to ensure enough food and other necessary supplies are available in disaster prone areas.
- Ensure availability of at-least one spacious godown in each block to keep enough food and necessary supplies.
- Ensure that enough food stock is available in the PDS shops in each Panchayat, and that the stock can be used in emergency situations also.
- Coordinate with Supply Department and Transport Department to ensure enough vehicles are available during the disaster time for transport of food materials. This arrangement can be done in advance.
- In Coordination with Supply Department prepare action plan for emergency transportation and distribution of food supplies.
- Prepare action plan for adequate safety (and relocation if required) of food materials stored in the godowns in case of flood or other disasters.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.



- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.
- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensure enough food and other necessary supplies are available in disaster prone areas.
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- Prepare action plan for emergency transportation and distribution of food supplies.
- Prepare action plan for adequate safety (and relocation if required) of food materials stored in the godowns in case of flood or other disasters.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

## IPH

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Identify disaster affected areas in the district and install/repair sufficient number of hand pumps to ensure regular supply of pure drinking water among the community.
- Measures to protect the solid waste management sites.
- Review the stock of hand pump repair tool kits and bleaching powder at every quarter and ensure pre positioning of sufficient stock in the department.
- Promote usage of low cost sanitary toilets in the disaster affected areas in the district.
- Preposition sufficient stock of hand pump and low cost sanitary toilet models to be distributed and used in the relief camps and shelters.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this, placement of the items at safe places.
- Periodically inspect the embankments for cracks, holes and other potential wear and tear.
- Stockpile and preposition sufficient number of sandbags to repair the cracks in the embankment

### **Police Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Identify the most vulnerable areas to fire and other disasters and prepare the police force for emergency search and rescue operation.
- Provide regular training in primary health care and in evacuation, search and rescue to the police force to make them alert.
- Ensure adequate number and trained forces are available with adequate and modernized weapons and equipments.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials on the safety of life, human rights violation, material, equipments and for this placement of the items at safe places.
- Identify the important establishment of police force in the vulnerable areas and take necessary steps to protect them.
- Identify the vehicles for road and water transportation and prepare to send them in affected areas during any emergency time.

### **Environment, Science and Technology**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Develop the capacity to produce the strong data base and develop the scientific technology for damage assessment.
- Identify the most vulnerable areas to flood and other disasters and prepare for emergency response.
- Prepare necessary data in coordination with national organizations, geological survey, ISRO, NRSA etc. and analyzing it and develop an action plan for response.
- Stockpile and preposition sufficient number of resources to repair the equipments and infrastructure.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Transport Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Coordinate with DDMA, state and national level and other support agencies for any specific preparedness instructions, supplies, mock drills, trainings etc.
- Create mechanisms for quick dissemination of EW information to all people.
- Ensure that sufficient numbers of vehicles are available to be deployed in emergency response if required.
- Keep the list of drivers, conductors, vehicles etc. updated for use in emergency.
- Identify the safe routes for transportation of goods and materials.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Urban Development**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Identify the most vulnerable areas to flood, earthquake and other disasters and pre-prepare for emergency search and rescue operation.
- Periodically inspect the life line buildings and ensure they are earthquake resistance, repair the needed one and destroy them when needed.
- Ensure the drainage, sewerage and other sanitation measures are working effectively.
- Ensure adequate stock of basic needs like drinking water.
- Ensure that the people in the vulnerable areas are relocated to safer sites.
- Stockpile and preposition sufficient resources to repair the buildings.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Arrange the equipments for search and rescue in urban area.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Industries Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Coordinate with DDMA, state and national level and other support agencies for any specific preparedness instructions, supplies, mock drills, trainings etc.
- Create mechanisms for quick dissemination of EW information to all people.
- Provision of adequate quantity of foam and any other suppressant for control of vaporization of spill or leak of compressed gas.
- Ensure availability of a sufficient quantity of fire extinguishers at various locations
- Availability of well-equipped emergency medical rooms with requisite number of ambulance van(s) sufficient to shift On-Site casualties.
- Include local welfare associations and Panchayati Raj institutions in the emergency preparedness programme.
- A kit containing antidotes to various toxicants and resuscitation drugs need to be prepared.
- Ensure that list of most vulnerable groups and communities are updated.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Information and Public Relation Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- To ensure the safety of own building and property.
- To disseminate the information regarding the do's and don'ts of disaster among the general public.
- To collect the information from the Metrological department and disseminate the signs of any alertness and warning.
- To collect the weather bulletins and disseminate the same to keep the general public aware of the actual situation during flood.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places

### **Panchayati Raj Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- The state and district panchayati raj officer must ensure that he has the demographic data, resources and geographic profile of the panchayat in detail.
- The panchayati raj department must ensure the elected representatives of the panchayats, panchayat samitis and zila parishad get their individual funds and other official funds regularly and on time.
- The state and district panchayati raj officer must help the panchayats for arranging any technical guidance or for any other purpose.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

### **Planning Department**

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensuring there is sufficient stock of material resources and infrastructure in the disaster prone areas.
- Ensuring there is sufficient equipments and tools for the repairing of non functional machines and equipments.
- Identifying the ongoing projects which are vulnerable to any disaster and take structural mitigation measures to reduce the risk.
- Identify the sites which are safe to evacuate the people in case of any emergency.
- Identify the less vulnerable areas and formulate plan to relocate the people living in vulnerable areas.
- Stockpile and preposition other necessary repairing material at safe place for the immediate repairs.
- Keep the equipments, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places

## Health Department

- Identify potential emergency situations. Make references to contingency specific action plans for the same.
- Ensure that vaccination of all children, pregnant women etc. is done before the seasonal disasters such as flood.
- Ensure that life saving vaccines is available in enough quantity in advance and are stored safely.
- Ensure stockpiling and preposition of medicines, vaccines, equipments etc. before the flood season.
- Ensure that no doctors, staffs are on leave during emergency situation.
- Keep the equipment, telephone, telex, wireless etc. functional and ready.
- Awareness to the officials for the safety of life, material, equipments and for this placement of the items at safe places.

# Database of Training Institutes with courses

Department	Directorate of Agriculture
Coordinator/ Nodal Officer	Mr. Keshav Chauhan
Address	Directorate of Agriculture, Krishi Bhawan, Boileauganj, Shimla-171005
Phone/Mobile	0177-2830345, 9418493659
Fax	0177-2830612
Email	krishinidesh@yahoo.com

## Courses Offered:

Training imparted in the following institutes for Senior and Middle level officers:

- State Agriculture Management Extension Training Institute, Mashobra, Shimla
- University of Horticulture and Forestry, Nauni
- HPKVV, Palampur and
- KVK station

Agriculture extension: FTC Sundernagar

Office administration, procedures, rules, gender sensitization and disaster management: HIPA (Himachal Institute for Public Admin.)

## Training Topics:

Topics for Senior level officers at the Directorate and District level: Knowledge of improved Agricultural techniques, Integrated pest & disease management, Efficient water management practices, Commercial crops for improving crop productivity and generating employment, Course on Organic farming quality and quantity produce of agriculture, Course on Financial & administrative rules, Course on Computer application internet, e-mail etc, Course on State & central sector schemes, Course on Contingent plan, Course on RTI Acts.

Topics for Middle Level Officers: Operationalization of ATMA and SREP, market led extension, organic farming, and balance use of fertilizer. Sustainable agriculture development, IPM and bio-control, INM, Soil and water conservation weed management, IWSM, drought management strategies, safe and ju-

icious use of pesticides, quality control of seeds and fertilizer, application of remote sensing and GIS in agri development, principle and practices management of cereals, effective application of insecticides. Agriculture extension workers: Latest techniques on crop production, vegetable cultivation. Organic farm management practices, weed control in vegetable crops, integrated nutrient management and balance use of fertilizer, IPM bio control and pest management, safe and judicious use of pesticides, soil and water management, soil sampling, testing and soil health cards.

Department	Directorate of Animal Husbandry
Coordinator/ Nodal Officer	Dr. Dinesh Raj Gupta
Address	Pashudhan Bhawan, Boileaugan Shimla-171005
Phone/Mobile	0177-2830168, 9418020507
Fax	0177-2830170
Email	dir_ah_hp@nic.in

#### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM.
- Deptt. never organized trainings/ courses on DRR and CCA

Department	Home Guards and Civil Defence
Coordinator/ Nodal Officer	Mr. Anuj Tomar
Address	US Club, Shimla-171001
Phone/Mobile	0177-2752428
Fax	0177-2811360
Email	dgp_hg_hp@nic.in

#### Courses Offered:

Home Guard volunteers are deployed with Police to maintain law and order, traffic and patrolling duties, guarding of vital installations, manning of treasuries/sub-treasuries, maintain of Law and Order during fairs and festivals and besides security duties at temples and zonal hospitals. In addition to this women Home Guard volunteers are also deployed for nursing training in the Hospitals.



Department	Economics and Statistics
Coordinator/ Nodal Officer	Mr. Chandra Mohan Sharma
Address	B-38, SDA Complex, Kasumpati, Shimla-9
Phone/Mobile	0177-2626206, 9418088136
Fax	0177-2626206
Email	chander21@gmail.com

#### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA
- Deptt. has conducted Baseline Survey on Assessment of Existing Knowledge Level, Awareness and Preventive Practices of Disaster Management in Himachal Pradesh in 2012
- Deptt. has conducted "Baseline Survey on Assessment of Existing Knowledge Level, Awareness and Preventive Practices of Disaster Management in Himachal Pradesh" in 2012

Department	Directorate of Higher Education
Coordinator/ Nodal Officer	-
Address	Lal Pani, Shimla-171001
Phone/Mobile	0177-2656621
Fax	0177-2811247, 0177-2812882
Email	dir.edu@rediffmail.com

#### Courses Offered:

Trainings under National School Safety Programme:

- Training of Master Trainers (10 Master trainers per State).
- Training of Trainers Programme (15 trainers per district).
- Training of teachers (500 teachers, officials etc per district).

Department	Directorate of Elementary Education
Coordinator/ Nodal Officer	Mr. K.D. Verma
Address	Lal Pani, Shimla-171001
Phone/Mobile	0177-2657054, 2652805, 9418646794
Fax	-
Email	eleeduhp@rediffmail.com

### Courses Offered:

Trainings under National School Safety Programme:

- Training of Master Trainers (10 Master trainers per State).
- Training of Trainers Programme (15 trainers per district).
- Training of teachers (500 teachers, officials etc per district).

Department	Directorate of Energy
Coordinator/ Nodal Officer	Mr. Manish Mahajan
Address	Sector-4 Rd, New Shimla, Shimla, Him- achal Pradesh
Phone/Mobile	9418458384, 0177-2673553
Fax	0177-2673553
Email	hm_dhareula@yahoo.com

### Courses Offered:

- Department has opened Quality and Safety Cell in 2013 for the safety, control and water management of hydro-projects

Training imparted by Hydel Training Institute, Jhakri

Training Topics:

Water resource development: GPS - Field Survey, Repair, Water Harvesting for Drought Management, Integrated and Conjunctive Use of Surface; MIS for Monitoring & Evaluation of Projects, Lift Irrigation Schemes; Drip & Sprinkler Irrigation Systems; Watershed Development and Management; Hydrological and Structural Safety of Dams;

Environment management: Water & Wastewater management, Underground Sewerage Systems- Design, CDM Projects- Conceptualization to Corporate Environmental Management & Carbon Markets , Bio Medical Waste Management– Handling and Safe Disposal options Environmental Issues in Mining Sector- Legal and Statutory Requirements (As per MoEF Guidelines); Corporate Social Responsibility- A Triple Bottom Line Framework (Social, Economical and Environmental Concerns); Environmental Management Technology in Chemical Industries; and Municipal Reforms in Environment Services ; Latest Trends in EIA- Process & Procedures as per MoEF Guidelines; Wastewater Treatment; Environment, Health & Safety Management; Maintenance of Air Pollution Control Equipment; Safety in Storage, Handling and Transportation of Hazardous Materials; Sewage Treatment Plants- Reuse and Recycle Options; Occupational Health & Safety Management; Environment Management in Process; Municipal Solid Waste Management- Collection, Handling, Disposal & Recovery Options; Environmental Management through Cleaner Production; Underground Sewerage Systems- Design, Operation & Maintenance Occupational Health and Safety; Environmental Compliance Management in Distilleries and Sugar Industries; Environmental Management Systems for Cement Industries.

Department	Directorate of Food, Civil Supplies and Consumer Affairs
Coordinator/ Nodal Officer	-
Address	B-42, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2623749
Fax	0177-2623749
Email	dfs@hp.nic.in

#### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA

Department	Fire Services
Coordinator/ Nodal Officer	Mr. Jagdesh Sharma
Address	US Club, Shimla-1
Phone/Mobile	9418028191
Fax	0177-2657087
Email	-

### Courses Offered:

The basic training to Firemen is imparted at State Fire Training center which is located in Baldeyan at a distance of about 22 Kms from Shimla town. This Centre imparts training to the permanent staff of Fire Department and Home Guard volunteers. The training imparted are of various levels such as Fire Fighting, Firemen, Refresher, Drivers/Pump Operator, B.A Set and Disaster Management Courses. The duration of the training vary as per level of course.

A few senior level officials of Himachal Pradesh have been trained at NFSC Nagpur and few officials have been trained for short duration basic training courses at other states

Department	Forest
Coordinator/ Nodal Officer	Mr. Ajay Kumar Sharma
Address	Talland, Shimla-2
Phone/Mobile	9418013795, 0177-2624857
Fax	0177-2624192, 2624193
Email	-

### Courses Offered:

Training imparted by:

Basic Forestry and Watershed management Trainings: Are being carried out at Forestry Training Institute at Chail Forestry Training Institute at Sundernagar and at ICFRE, Dehradun FRI, Bhopal Training on ecotourism being carried out by: Wildlife Institute of India (WII), Centre for Environmental Education (CEE), National Museum of Natural History, HP Gyan Vigyan Samiti, and Forest and Training Schools of SFD

### Training Topics:

Basic Forestry and forest, management wildlife management and fire management: Training is being carried out on Forest laws, Forest offence cases and procedures, Nursery and plantation techniques, Nursery techniques, Basic Forestry Principals and Fundamentals for Forest workers, Forest accounting and procedures, Seed nursery and technology; Joint Forest Management, Training on management of wild life sanctuaries, Procedures for private sales; Range management information systems; Zoo management; Gender Sensitization; Micro planning' Orientation Course for Range Officers; Wild Life census; Forest Fire Prevention & Awareness; Management & Conservation of NTFP/Medicinal Herbs; Participatory management/ techniques; Formation & management of Self Help groups; Eco-Tourism; Nature Awareness training Camps; Orientation course for forest guards. Watershed management: includes watershed concepts and components, delineation and demarcation of watershed on ground and on maps, need for integrated water shed Managements, traditional and modern approaches of watershed management, peoples participation, formation of constitution and functioning of watershed development

Department	Health and Family Welfare
Coordinator/ Nodal Officer	-
Address	B-6, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2622050
Fax	-
Email	pmis.dhs@gmail.com

### Courses Offered:

Training carried out by:

- HP State Institute of Health and Family Welfare (HPSIHFV)

Training Topics;

Training is conducted on:

- Administrative & Financial Management & Hospital Management for Deputy Directors, Chief Medical Officers/Principal STCs& Senior Medical Superintendents.
- Hospital management, Administration & Financial management, and Refresher Course on National Health Programmes such as NRHM, RNTCP, JSY, NPCDCS, NVBDCP, NPCB, NMHP and NPCTC etc conducted for Block Medical officer & Senior Medical officer "Civil Hospitals & Regional Hospitals".
- Induction training & refreshers course in clinical subjects; Training In advance techniques in all areas of

medicine and other health related subjects conducted for Medical officer at PHC or CH or RH or ZH level

Department	Directorate of Horticulture
Coordinator/ Nodal Officer	Dr. S.S. Verma
Address	Nav Bahar, Shimla-2
Phone/Mobile	9816140287, 0177-2841120
Fax	-
Email	horticul_hp@nic.in

### Courses Offered:

Training imparted by the following institutes:

Orientation Programme

- SAMETI, Mashobra, Shimla
- Horticulture & Floriculture
- YS Parmar University of Horticulture and Forestry and its regional research stations

Mushroom

- Directorate of Mushroom Research (ICAR)-
- Himachal Institute of Public Administration- Office procedures, Financial Administration
- State Agriculture Management Extension Training Institute – Induction and

General Office administration

HIPA

Training Topics:

Orientation Programme– about the department, programmes, weather based crop insurance, Pest management, Agri and horti produce marketing, disaster management of fruit crops

Horticulture: Advances in nursery prod techniques- Invitro propagation for disease free plant material, Nursery raising of all fruit crops of economic importance, Orchard management- Canopy management, lay out, soil and water management including micro irrigation techniques, Integrated nutrient and pest management, New promising varieties of fruit crops and training on productivity improvement, Establishing bud wood banks and their role in productivity improvement, Advances in Integrated nutrient and pest management and organic farming, Precision farming of horticulture crops, Organic certification,

IPR, patent laws, High tech cultivation of flowers, Advances in apiculture, problems and techniques, Advances in post harvest management of horticulture, Cultivation of medicinal and aromatic plant, Post harvest processing techniques, Climate change and its impact on horticulture Floriculture: Greenhouse culture for various agro-climatic conditions, Greenhouse cultivation for commercial cultivation of rose, carnations, lilliums, chrysanthemums, alstroemeria, marigold, aster, Antirrhinum, gerbera, bulbous plants; Training on growing substrates for commercial floriculture; Advances in producing quality plantation stock; Training on quality seed production; Nutrient management and pest & disease management; Efficient irrigation technologies; Post harvest handling of cut flowers; Marketing.

Bee keeping: Fundamentals of bee lifecycle and its different types; Hive and other modern bee equipment; Bee keeping as an industry; Economics of bee keeping; Stationary and migratory bee keeping; Bee as pollinator and their role in enhancing crop productivity; Bumble bee as alternate/backup pollinator crops; Conservation of insect pollinators for maintaining biodiversity; Importance of queen in honey prod. And pollination; factors affecting honey production; Management practices for increasing hive prod; Breeding practices for avoiding mice menace; Feeding bees, detecting bee diseases, preparation of colonies for pollination; Maintaining quality of honey production; Protecting bees from pesticides; Harvesting honey, storage and marketing

Department	Directorate of Ind., Geological wing and DIC
Coordinator/ Nodal Officer	Mr. Indresh Dhiman
Address	Udyog Bhavan, Shimla – 171 001
Phone/Mobile	9418455765, 0177-2657339
Fax	-
Email	geologicalwing@gmail.com

#### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM

Department	Department of Environment, Science and Technology
Coordinator/ Nodal Officer	Mr. S.S. Randhawa
Address	Department of Environment, Science and Technology, Paryavaran Bhawan, Near US Club, Shimla-171001
Phone/Mobile	9418382126, 0177-2622490
Fax	-
Email	ssrandhawa15@gmail.com

### Courses Offered:

Training to be carried out by staff from: TERI; ASCI Hyderabad, National Disaster Management Authority; IIRS, ISRO; RFLHD ; NIRD; HIPA; IITs, IIMs, IRMA etc.,

### Training Topics:

Proposed training: Senior technical staff: Climate Change, Mitigation and Adaptation. Climate Change Modelling. -Vulnerability Assessment. Wetland Management. Biodiversity Conservation. Disaster Management. - Remote Sensing & GIS. Recent Advances in Agriculture & Industrial Biotechnology. - E-Governance Management. - Awareness of Right to Information Act, 2005 Special training: Rain Water Harvesting; Structures for Masons/Contractor; Solar Passive Design & Techniques for Architect & Planner; Environment audit of buildings for School Children; Disaster Management for school Children and Professionals; Remote Sensing for scientist/ Professionals; Edusat for School children; Building of scientific temper through Children Science Congress Climate Change and Environmental Planning and Administration: Climate Change Modelling; clean development mechanism, greenhouse gas inventory, vulnerability assessment, Environment Impact Assessment; Project Management (Skills; Environmental Laws; Basic GIS Course ; Courses enhancing scientific temper; Environment Monitoring; Soil & land pollution management; Disaster Management. Other training: Medicinal and Aromatic Plants; Biotechnology, Technologies on value addition and processing of Medicinal & Aromatic Plants; Agronomical practices of MAP for endemic HP Species; Applied Biotechnology in Agriculture /Horticulture; Biotechnological approaches for Rural Development; Administrative skills for effective administration including; Financial Rules (2 weeks); Designing of Training and Social Mobilization Skills; Himalayan Eco-system conservation techniques including wetland management, glacier protection; Rain water harvesting, solar passive structure on green buildings.



Department	HP Institute of Public Administration
Coordinator/ Nodal Officer	-
Address	Fairlawns
Phone/Mobile	-
Fax	-
Email	-

### Courses Offered:

The Disaster Management Centre, HIPA has organized a total 132 training programs for the Government employees as well as to the representatives of Panchayati Raj Institutions, Urban Local Bodies, Government Agencies, NGOs, Mahila Yuvak Mandals and other public/private agencies etc in the State wide which a total of 4739 participants have been imparted training of 437 days.

Department	Irrigation and Public Health
Coordinator/ Nodal Officer	Mr. Mukul
Address	Engineer-in-Chief, I&PH Department, U.S. Club, Shimla.PIN - 171 001
Phone/Mobile	0177-2655262, 9418069324
Fax	-
Email	hpirrg@rediffmail.com, iph-hp@nic.in

### Courses Offered:

Training imparted in the following institutions for senior, middle and field level staff:

- PHE Training cells in Himachal Pradesh for refresher courses
- Central Public Health & Environment Engineering Organization,
- National Environmental Engineering Research Institute(NEERI),
- Indian Water Works Associations(IWWA),
- National Water Academy(NWA) and
- Kerala Water Authority(KWA)

### Training topics:

Senior level and middle level (Chief engineer, Superintendent engineer, executive engineers): Governance of urban water supply, Irrigation and sanitation systems, Recent water treatment Technologies, Water quality management, Maintenance and management of water supply, Irrigation and sewerage systems, Decentralized planning, development and governance in Rural water supply as per the guidelines of GOI in NRDWP, Decision making Decision Support System (DSS) and Management Information System(MIS), Project Monitoring and Management, Quality Assurance, and E- procurement, Disaster management, Project monitoring and management , Construction and contract Management & Safety in Construction.

Junior level (Jr engineers and office support staff): RTI Act, Water supply & Distribution Management, Quality in construction, Disaster Management, Construction Management & Safety in Construction, Rules and Acts pertaining to the department, Inventory Management, Office Procedure/ Service Matters, Conduct Rules, Contracts, Stores-Acquisition & Maintenance, Cash and Cash Accounts, Reports and Returns, Working in e-iph modules, RTI, Stress Management, Gender equalities, Consumer Protection Act, Human rights/ citizen charter etc.

Field level staff: Training regarding supervision of the execution of pump house, sump wells, storage tanks and other structures. Maintenance of cement consumption register and record keeping of all the material to the works, maintenance of history card of hand pump, training on procedures of warabandi agreed to by the KVSs of the schemes, and training on assembly, fittings, installation, maintenance and repair of plumbing pipe fixtures, fittings for water supply and sanitary, drainage systems

Department	Directorate of Labour and Employment
Coordinator/ Nodal Officer	Mr. A.K. Sood
Address	Himrus Building, Shimla-1
Phone/Mobile	9418473059, 0177-2624157
Fax	-
Email	-

### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. has prepared a list of MAH units

Department	Directorate of Land Records and Consolidation
Coordinator/ Nodal Officer	-
Address	B-39, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2623678, 0177-2623683
Fax	-
Email	-

#### Courses Offered:

Deptt. never organized training/ courses on DRR and CCA

Department	Directorate of Language, Art and Culture
Coordinator/ Nodal Officer	Mr. C.L. Kashyap
Address	B-39, SDA Complex Kasumpti, Shimla-9
Phone/Mobile	9418120265, 0177-2626616
Fax	-
Email	dirculture@gmail.com

#### Courses Offered:

- Deptt. never organized training/ courses on DRR and CCA
- Deptt. organizes traditional cultural programmes on HP culture

Department	Planning
Coordinator/ Nodal Officer	-
Address	Yojna Bhawan, HP Sectt. Shimla-2
Phone/Mobile	0177-2625856, 2621698
Fax	-
Email	-

#### Courses Offered:

Deptt. never organized training/ courses on DRR and CCA

Department	Department of Finance
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

#### Courses Offered:

Training carried out at HIPA

Training Topics

An Introduction to Planning Process in Government; Preparation of Budget & Nominal rolls; Preparation of Excess & Surrender Statements; Reconciliation of Accounts with Accountant General & diversion of funds; Procedure for effecting purchases of stock, store and stationery articles & issue thereof; Annual Physical verification of stores; How to declare store as unserviceable and procedure for condemnation. Handling of cash & writing of cash book; Audit& inspections-CAG Reports, PAC Matters and submission of replies thereof. ¾ Retention/destruction of record pertaining to Accounts;

Department	Department of Police
Coordinator/ Nodal Officer	Mr. Satinder Pal Singh
Address	Nigam Vihar, Shimla-2
Phone/Mobile	98162-49400, 0177-2627361
Fax	-
Email	-

#### Courses Offered:

- Department officials attended trainings at HIPA which were organized by HIPA on DM
- Deptt. never organized training/ courses on DRR and CCA

Department	Department of Information Technology
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

#### Courses Offered:

Deptt. never organized training/ courses on DRR and CCA

Department	Information and Public Relations
Coordinator/ Nodal Officer	Mr. R.S. Negi
Address	Information Bhawan, Shimla-2
Phone/Mobile	9418453335, 0177-2620068
Fax	-
Email	-

#### Courses Offered:

Deptt. never organized training/ courses on DRR and CCA

Department	Public Works Department
Coordinator/ Nodal Officer	Mr. Ajay Garg
Address	Head Office Shimla, Engineer-in Chief, PWD, Nirman Bhawan, Nigam Vihar, Shim- la-171002
Phone/Mobile	9816004654, 0177-2625821
Fax	-
Email	hp_shi6@nic.in

#### Courses Offered:

Training exists on Quality Control for achieving quality parameters of works in the State. Material Testing Laboratories at State level and Zonal Laboratories are under his control. On quality control checks. Training on Standardization of Designs and Drawings for Buildings, Bridges and Assurance of common Technical Instructions, training on placing order, Codes & Specifications, Schedule of Rates etc.

Department	Directorate of Rural and Panchayati Raj
Coordinator/ Nodal Officer	Mr. Keval Sharma
Address	Rural Development Department, B-27, SDA Complex, Kasumpti Shimla-171009
Phone/Mobile	9418626511, 0177-2623805
Fax	Fax: +91-177-2624792
Email	jointdirectorhppr@gmail.com

### Courses Offered:

Trainings conducted under the world Bank Mid Himalayan Water Shed Development Project (MHWS-DP) by Himachal Pradesh Natural Resource Management Society (HPNRMS): The aim of this project is to reverse the process of degradation of the natural resource base, improve their productive potential, sequester C and improve livelihoods and incomes of rural households residing in selected watersheds using socially inclusive, institutionally and environmentally sustainable approaches. Through this programme, trainings are given to villagers on development of Gram Panchayat Plans, micro planning, skill development, livelihood trainings, marketing etc., Self Help Groups, Common Interest Groups, Users Groups and community Based Organizations are trained on community empowerment, training on vermin composting, backyard poultry, etc.

Trainings conducted by State Institute of Rural development, Mashobra, Shimla

Training Programme on basic concepts of lab to land: That includes community mobilisation, formulation of VDP (Village Development Plans) and training on government programmes. Training programmes on structural aspects and convergence: concepts of MGNREGA including people's initiative; identification of new shelf of projects, options on convergence and execution through line departments, structural aspects of major rural development projects under MGNREGA. Training Programmes on social audit, MIS & convergence: concepts of MGNREGA including social audit, MIS and convergence with departmental schemes, Training Programmes on Latest guidelines & Labour budget under MG-NREGA: concepts of MGNREGA including latest guidelines, instructions and fund flow management and labour budget Watershed training programme (IWMP): concepts, guidelines and implementation of water shed programmes with ref to new common guidelines, training on preparation of DPR, structural aspects of major rural develop projects, options of convergence and linkages of IWMP with income generation. Training programme on total Sanitation Campaign: training on Concepts of MVSSP (Multiple Virtual Storage/System Programme), SOLID and liquid waste management and sustainability; structural aspects of toilet design, IEC and options of convergence Training Programme on NRLM (National Rural Livelihood Mission): concepts of NRLM, guidelines, procedures, experiences of its implementation, activity identification and linkages with financial institutions, skill development and marketing Re-

freshers trainings on all schemes/programmes: concepts of rural development and Panchyati Raj programmes/schemes and office procedures, financial admin and functioning of departments.

Training carried out by Panchayati Raj Department

Basic Training Programme for Gram Panchayat Representatives & Panchayat Secretaries/Sahayks: Training on basic knowledge and understanding about the administrative functioning of GPs and GS; Basic issues related to maintenance of finance & accounts, judicial functioning, and civil works management; Key provisions of selected developmental schemes of the government; development of community leadership, public dealing, and effective communication; Critical social issues in HP; Key provisions of RTI and Social Audit Training Module For The Elected Representatives Of Panchayat Samiti , Zilla Parishad: Introduction to Panchayati Raj, Acts and rules, different committees of Panchayati samiti/Zilla Parishad, district plan formulation, convergence issues, devolution of power, flagship and rural development schemes, RTI Training Module Regarding Financial Management for Elected Representatives of PRIs: Revenue earning mechanisms of gram Panchayat; taxation mechanisms, preparing budgets, and others

Department	Directorate of Women and Child Division Block
Coordinator/ Nodal Officer	Mr. Lok Chand Chauhan
Address	-
Phone/Mobile	9418492374, 0177-2623006
Fax	-
Email	-

### Courses Offered:

- Department is running one state home at Mashobra in Shimla Distt. These inmates get free residence and free diet. For their rehabilitation they get various skill trainings in the state home so that after leaving the state home they can earn and be rehabilitated.
- Vishesh Mahila Uthaan Yojna: The Supreme Court of India had issued direction to Union Of India and all the states and Union territories to formulate schemes for rehabilitation of physically and sexually abused women through technical and vocational training. Women are provided vocational training under this scheme in selected ITI's of the State.
- Rajiv Gandhi Scheme for Empowerment of Adolescent Girls (SABLA): The Scheme aims at covering adolescent girls in the age group of 11-18 years, with main focus on Out of School adolescent girls, who are provided life skill education and vocational training under this scheme along with supplementary Nutrition.



Department	Tourism and Civil Aviation
Coordinator/ Nodal Officer	Mr. Surjit
Address	B-28, SDA Complex, Kasumpati, Shimla-9
Phone/Mobile	9418105752, 0177-2625924
Fax	-
Email	tourismmin_hp@nic.in

**Courses Offered:**

Deptt. never organized training/ courses on DRR and CCA

Department	Tourism and Civil Aviation
Coordinator/ Nodal Officer	Mr. Surjit
Address	B-28, SDA Complex, Kasumpati, Shimla-9
Phone/Mobile	9418105752, 0177-2625924
Fax	-
Email	tourismmin_hp@nic.in

**Courses Offered:**

Deptt. never organized training/ courses on DRR and CCA

Department	Town and Country Planning
Coordinator/ Nodal Officer	Ms. Anjali Sharma
Address	Directorate of Town and Country Planning, Yojna Bhanwan, Block No. 32A, SDA Complex, Vikas Nagar,
Phone/Mobile	9418470359, 0177-2624737
Fax	-
Email	-

### Courses Offered:

Training provided by: Universities/Central/State Govt. Departments & Professional bodies

Senior level officials: Training is provided on Spatial Planning and Allied Disciplines including Environmental Planning, Heritage Conservation, Land Space Architecture, and Urban Design, Transport planning, Rural Planning, GIS & Remote Sensing and Geo-Informatics.

Training imparted by HIPA

Middle level officials: Principles and Techniques of Urban Planning and Development Laws, Disaster Management, RTI Act-2005, H.P. Public Service Guarantee Act, 2011 and H.P. Apartment & Property Regulation Act, 2005, Gender budgeting, E-governance, Office Procedure & financial Management, Socio-economic Research, GIS & Remote Sensing and Heritage Conservation and re-generation.

Training imparted by HIPA and TCP department

Junior level officials: Disaster Mitigation & Management, Basics Computer Training on M.S. Word / M.S Excel/ Internet, Technical Procedure i.e. Revenue matters, Drafting, Estimation, Valuation, Field Surveys & Mapping, Acts, Rules, Regulations and standing orders.

Training imparted by TCP department

Field surveyors: Basics Computer Training on M.S. Word / M.S Excel/ Internet, Field Surveys & studies, Research Methodology & operational Research, Acts, Rules, Regulations and standing orders. For elected rep of ULBs Solar Passive Design Regulations, Rain Water Harvesting Regulations, Barrier Free Environment Regulations, Heritage conservation, guidelines, documentation / information system, H.P. Apartment & Property Regulation Act, 2005 and Competition Act, 2002( No.12 of 2003) Deptt. also organizes training/courses for tourism stakeholders on Capacity Building Service Providing (CBSP) under GOI-CBSP Scheme

Department	Directorate of Transport
Coordinator/ Nodal Officer	Mr. Ravinder Mehta
Address	Parivahan Bhawan, Shimla-4
Phone/Mobile	9418077435, 0177-2655632
Fax	-
Email	-

Courses Offered:

Deptt. never organized training/ courses on DRR and CCA

Department	Directorate of Urban Development
Coordinator/ Nodal Officer	Mr. B.R. Dadwal
Address	Directorate Urban Development, Palika Bhawan, Tal-land, Shimla-1
Phone/Mobile	0177-2626516, 9816190097
Fax	2626518
Email	ud_hp@nic.in

Courses Offered:

NA

Department	Directorate of Youth Services and Sports
Coordinator/ Nodal Officer	Ms. Suman Rawat Mehta
Address	Craig Garden, Shimla-2
Phone/Mobile	94184-61098, 0177-2622032
Fax	-
Email	sumanrawatmehta@gmail.com

#### Courses Offered:

##### Organization of Work Camps/Youth Leadership Training Camps:

Under this programme, youth are involved in social activities such as leveling of playfields, plantation of trees, construction of mule path etc. and to imbibe in them the spirit of eradication of social evils and involve them in the activities of bringing social reforms and national reconstruction. These camps were organized at the District level in all districts. Youth leadership training camps are also organized in each district.

Department	Aryabhatta Geo-informatics & Space Application Centre (AGISAC)
Coordinator/ Nodal Officer	-
Address	Aryabhatta Geo-informatics & Space Application Centre (AGISAC), Shree Niketan, Beolia Road, Lower Panthaghati, Shimla-171009
Phone/Mobile	0177-2620047
Fax	-
Email	agisac.hp@hp.gov.in

#### Courses Offered:

NA

Department	G. B. Pant Institute of Himalayan Environment and Development(Himachal Unit) Mohal, Kullu
Coordinator/ Nodal Officer	-
Address	G. B. Pant Institute of Himalayan Environment and Development, Mohal, Kullu - 175 126
Phone/Mobile	(01902) 260208, 260313,
Fax	(01902) 260207
Email	samantss2@rediffmail.com

Courses Offered:

NA

Department	Institute of Himalayan Bio-resource Technology(IHBT)
Coordinator/ Nodal Officer	-
Address	CSIR-Institute of Himalayan Bioresource Technology, (Council of Scientific & Industrial Research), Post Box No. 6 Palampur (H.P.) 176061
Phone/Mobile	+91-1894-230411
Fax	+91-1894-230433
Email	psahuja@ihbt.res.in, director@ihbt.res.in

Courses Offered:

NA

Department	Institute of Integrated Himalayan Studies(IIHS), Himachal Pradesh University, Shimla
Coordinator/ Nodal Officer	-
Address	Institute of Integrated Himalayan Studies, (UGC Centre of Excellence), Himachal Pradesh University, Summer Hill, Shimla- 171005
Phone/Mobile	+91 177 2633017
Fax	+91 177 2633018
Email	-

Courses Offered:

NA

Department	Snow and Avalanche Study Establishment, Manali
Coordinator/ Nodal Officer	-
Address	Snow & Avalanche Study Estt (SASE), Defence Research and Development Organization (DRDO), Ministry of Defence, Himparisar, Sector 37-A, Chandigarh - 160 017 and
Phone/Mobile	-
Fax	-
Email	director@sase.drdo.in

Courses Offered:

NA

Department	Himalayan Forest Research Institute, Shimla
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Central University of HP
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	CSK HP Krishi Vishva Vidyalaya
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Dr. YS Parmar University of Horticulture and Forestry
Coordinator/ Nodal Officer	-
Address	Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Solan- 173230
Phone/Mobile	01792 252363, 01792 252357
Fax	01792 252242
Email	vcuhf@yahoo.com, thakurvs@satyam.net.in

Courses Offered:

NA



Department	Himachal Pradesh Agriculture University, Palampur
Coordinator/ Nodal Officer	-
Address	Himachal Pradesh Agriculture University, Palampur-176072
Phone/Mobile	-
Fax	+ 91 1894230465, + 91 1894230511
Email	registrar@hillagric.ac.in, vc@hillagric.ac.in

Courses Offered:

NA

Department	IIT, Mandi
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Chitkara University
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Dr. Rajendra Prasad Government Medical College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	HP Technical University
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Indian Institute of Advanced Studies (IIAS)
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Indira Gandhi Medical College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Jawaharlal Nehru Government Engineering College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	National Institute of Technology, Hamirpur
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Jaypee University of IT
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

Department	Central Water Commission, Shimla Office
Coordinator/ Nodal Officer	-
Address	Directorate, Central Water Commission, Ministry of Water Resource, Govt of India, Block No.10, SDA Complex, Kusumpty Shimla - 171009
Phone/Mobile	0177-2626211, 2624976, 2624396
Fax	0177-2626211
Email	metcentresml@yahoo.co.in

Courses Offered:

NA

Department	Indian Meteorological Department
Coordinator/ Nodal Officer	-
Address	Meteorological Centre, Bibra House, Cliffend estate, Shimla-171001
Phone/Mobile	-
Fax	-
Email	-

Courses Offered:

NA

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# Annexure

## Annexure I

### Workshop Agenda

Time	Topic	Speaker/Experts
10.00- 10.05 AM	Welcome Address	Dr. R.K. Sood, Professor & Head, DMC, HIPA.
10.05-10.15 AM	Address by Chief Guest	Shri. Tikendra Singh Panwar, Deputy Mayor, Shimla
10.15-10.30 AM	Tea	---
10.30-10.50 AM	Introduction, Background and Purpose of the TNA Workshop.	Ms. Reshmi Theckethil, Coordinator (Capacity Development) UNDP India.
10.50-11.20 AM	Climate Change Scenario and Challenges of Shimla City.	Dr. R.K. Sood, Professor & Head, DMC, HIPA.
11.20-12.05 PM	Climate Resilient Strategy Plans for Himalayan Cities.	Shri. Sunandan Tiwari, Dy. Director, ICLEI South Asia.
12.05-12.50 PM	Climate Change Status of Himachal Pradesh-Issues & Concerns.	Dr. S.S.Randhawa, Sr. Scientific Officer, State Council for Science, Technology & Environment, Govt of H.P.
12.50-1.45 PM	Training Needs Assessment for Stakeholders in Disaster Management in Himachal Pradesh.	Shri. D.C. Rana, Addl. Secretary- Home, Govt of H.P.
1.45- 2.30 PM	Lunch	---
2.30-3.20 PM	Training Need Assessment for Adapatation Planning & Implementation in Himachal Pradesh.	Shri. Kirtiman Awasthi, Team Leader, Indian Himalayan Climate Adaptation Program, Swiss Development Cooperation.
3.20-3.30 PM	Tea	
3.30-5.00 PM	Group Discussion, Presentation & Delineation of Road Map for TNA.	Dr. R.K. Sood (Professor & Head DM Cell) HIPA.
5.00-5.10 PM	Conclusion & Vote of Thanks	Ms. Resmi Theckethil (Coordinator- Capacity Development) UNDP India. Shri. Manas Dwivedi (State Project officer-HP) Director, HIPA Shimla

## List of Participants

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3	Dinesh Kumar Negi	Executive Engineer(Design) Irrigation & Public Health Department	9418023390	
4	Dr. Rajendra Kumar Thapa	Senior Scientific Officer, Department of Science, Technology & Environment, HP Government.	9418500959	rajenderthapa@yahoo.co.in
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25	Dr. Neeraj Mohan	S.V.O, State Vety. Hospital, Shimla.	9418092015	Nrjmohan69@gmail.com
26	Er. B.R. Dadwal	Executive Engineer, Urban Development Department, Himachal Pradesh.	9416190097	baburamdadwal@yahoo.in
27	Ranjana Chauhan	Civil Work Coordinator, SSA/RMSA, Govt of H.P.	9418007539	Chauhanranjana123@gmail.com
28	Ashok Kumar, IPS	AIGP(Hq)	9418094185	Akg_ips@yahoo.com
29	Shamsher Singh	Sr. Assistant	9418210570	Shamsher_negi2000@yahoo.com
30	K.G. Gaur	Jt. Director, Food & Civil Supply	9418127691	Kg1218@gmail.com
31	Mustafa Ali Khan	Policy Specialist, IHCAP, SDC India	9213975028	mustafa@ihcap.in
32	K.D. Verma	Directorate of Elementary Education, HP	9418646794	
33	Arvind Panwar	Consultant, Ngo	9816501897	
34	Sandeep Sharma, IFS	D.F.O, Parbati Shamshi, Kullu	9418490070	
35	Dr. Sonam G Negi	Epidemiologist, State Health & Family Welfare Dept, Shimla	9418060150	drsonamnegi@yahoo.co.in
36	Dr. S.S. Randhawa	Sr. Scientific Officer, State Council for Science, Technology & Environment, H.P.	9418382126	Ssrandhawa15@gmail.com
37	Kirtimaan Awasthi	Team Leader, IHCAP, SDC/Embassy OF Switzerland	9868736372	kirtiman@ihcap.in

38	Reshmi Theckethil	Coordinator, Capacity Development, UNDP India	9560915919	Reshmi.theckethil@undp.org
39	Sunandan Tiwari	Dy. Director, ICLEI South Asia	9891456157	Sunandan.tiwari@iclei.org
40	D.C. Rana	Addl. Secretary, Home, Govt of H.P.	9418184700	Dcranao4@yahoo.co.in
41	V.S Thakur	Vice Chancellor, Dr. Y.S. Parmar University of Horticulture & Forests, Solan(HP)	9816082048	thakurvs@satyam.net
42	Satish Sharma	Assistant Town Planner(HQ), Town & Country Planning Department, H.P.	9459623137	Sharmasatish97@hotmail.com
43	Er. Rajesh Kashyap	A.E. Projects & Water Supply, IPH Dept, M.C. Shimla	9418474747	rajeshkashyapiph@gmail.com
44	Roshan Lal	Under Secretary, Revenue Department, Govt of H.P.	9328814968	
45	Satish Sharma	Dy. Director, Panchayati Raj Department, H.P.	9418929292	Deputy_director@hotmail.com
46	Rajkumar	Principal, P.R.T.I , Mashobra	9418020909	hprt@ yahoo.in
47	Yejin Kim	UNDP India	9818432214	Yejin.kim@undp.org
48	Bhavna Karki	City Project Coordinator, MC Shimla, UNDP India	9459820591	bhavnakarki@gmail.com
49	Pallavi Thakur	CASA India	9459478465	Pallavithakuro5@yahoo.com
50	Navneet Yadav	Consultant, TARU	9816678998	nyadav@taru.org
51	Pankaj Sharma	Research Associate, NBPGR, Phagli, Shimla	9459517152	pankajsharmasnr@gmail.com
52	Rameshwar Singh	Research Associate, NBPGR Regional Station, Shimla	9418141558	rameshwariari@yahoo.co.in
53	Bhawna	Deputy Director cum Project officer DRDA Mandi.	9418454544	podrdamandi@gmail.com
54	Ritika Sood	DEST/Livelihood Specialist	9459029381	ritikasood@gmail.com
55	L.C. Chauhan	Dy. Director, SCOBC&MA	9418492374	
56	Prithvi Raj	District youth Services & Sports Officer, Solan	9418024267	
57	Rajinder Singh	General Manager, Directorate of Industries	9418071320	
58	Dr. Devinder Kashyap	Assistant Director, Higher Education, H.P	9418011730	

59	Dr. Amar dev	Joint Director, Higher Education, H.P.	9418270634	Dr.amardev.dhehp@gmail.com
60	Ms. Harkan- chan Singh	Research Scholar, Disaster Management, Manipal University, Jaipur	9816115320	Hksingh30@gmail.com
61	Manas Dwivedi	SPO-HP	9882824979	futuremanas@gmail.com
62	Desh Bandhu	DMC- HIPA	9816020434	dbkaith@gmail.com

# Annexure II

## TNA Questionnaire

1. Are you familiar with the concepts of 'Climate Change Adaptation (CCA)' and 'Disaster Risk Reduction (DRR)'? If so, do you have any idea how to apply these concepts to your local context? Please explain.

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2. What are the common climate change related changes, risks or disasters you face in your District/ municipality or territory? How do you commonly deal with these? (cite any example)

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3. Are you aware whether your State or District/municipality or Department has any action plan or strategy for climate change adaptation and disaster risk reduction? If yes, please provide a brief description.

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4. Is your department/organization engaged in any District/State level activities to address issues related to climate change and disaster risks? If yes, please elaborate.

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**5. What are the key policy priorities for your department/organization and what key indicators are you working to?**

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**6. Has your department/organization initiated activities to promote effective climate change adaptation and disaster risk reduction? If yes, then please elaborate.**

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**7. Has any Disaster/Climate Change Risk assessment been conducted by your department? If yes, please state the year, title of the report.**

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**8. Have the findings of the assessment been used for designing and implementing plans/programmes/other initiatives? If yes, elaborate how they were used and for which initiatives.**

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**9. Who, if anyone in your department, has overall responsibility for Climate Change and/or Disaster Risk Reduction? If there is no such person, please mention that.**

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**10. Is there any existing mechanism for data collection, and systematic observation & monitoring disaster risks or important weather parameters? If yes, please elaborate.**

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**11. Describe the three key challenges for your department/organization in effectively preparing for natural disasters and mitigating risks from climate change. (such as: knowledge, data/information, technology, funds, time, leadership or other)**

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**12. Has your organization/Department conducted any Training Needs Assessment for climate change resilience, mitigation and adaptability? If yes, please provide details of the assessment.**

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**13. Please describe your department/organization's Institutional Capacity to undertake DRR & CCA trainings/Initiatives in terms of the following:**

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**Resource Persons**

**Infrastructure**

**Funds**

**Training Materials (Manuals/Modules)**

**14. Provide names of training institute(s) (government or others) that provide training to staff members of your organization/department. For each institute, specify the trainings relevant to your Department/organization and state whether DRR or CCA are covered in these trainings.**

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**15. Using (low, medium or high), please self assess by ticking your level of knowledge in relation to the table given below and briefly state why you consider yourself to be at that level.**

S.No.	Topic	Low/Medium/High	Explanation, if any.
1	Contextual knowledge on Disaster Risk Reduction, climate change causes and impacts.		
2	Relevant Policies and Plans related to DRR and CCA		
	Programmes/initiatives/approaches related to DRR and CCA		
	Institutions engaged in DRR and CCA		
	Drivers/influencing factors		
3	Developing and managing a Disaster Risk Reduction and Climate Change adaptation plan to deliver your department's responsibility in these areas.		

**16. Have you been involved in any other Disaster Risk Reduction and climate change related training? If yes, then please provide the name of the agency/institute & details of the training (title, duration, key topics, online/face-to-face, certificate course or not, etc.).**

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**17. Are you familiar with any organizations / NGOs engaged in Advocacy on Disaster Risk Reduction or Climate Change Adaptation? If yes, please provide their names along with specific area of expertise.**

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**18. Please self assess your department's/organization's level of knowledge (low, medium or high) on the topics listed in the table given below and provide reasons/contributing factors for being at that level:**

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S.No.	Topic	Low/Medium/High	Explanation, if any.
1	Contextual knowledge on Disaster Risk Reduction, climate change causes and impacts.		
2	Relevant Policies and Plans related to DRR and CCA		
	Programmes/initiatives/approaches related to DRR and CCA		
	Institutions engaged in DRR and CCA		
	Drivers/influencing factors		
3	Developing and managing a Disaster Risk Reduction and Climate Change adaptation plan to deliver your department's responsibility in these areas.		

**19. In your opinion, what are the top 5 training program topics, which are required for building capacities of your department/organization in Disaster Risk Reduction and Climate Change Adaptation? Please list them and indicate the target group and duration of course for each.**

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**20. In your opinion, what are the top 5 priority sectors in Himachal Pradesh where there is need to develop capacities to effectively include/mainstream DRR and CCA in these sectors? Please list the 5 sectors.**

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**21. Any other suggestions/comments:**

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# Annexure III

## List of Departments/institutions consulted

### Departments:

1. Town and Country Planning Department
2. Irrigation& Public Health (IPH) Department
3. Department of Science, Technology & Environment
4. Information & Public Relations Department
5. Department of Transport
6. Revenue
7. Public Works Department
8. Agriculture Deptt
9. Education Dept (NSSP, SSA/RMSA, Elementary Education, Higher Education)
10. Forest Department
11. Rural Development Department
12. Urban Development Department
13. Health & Family Welfare Dept.
14. Food & Civil Supply
15. Home (Police, HomeGuards)
16. Industries
17. Panchayati Raj Department
18. Animal Husbandary(Vetinary Hospital)
19. CMU (City Municipal Corporation)
20. SCOBC&MA Dept
21. Youth Services & Sports

### Others:

### Training Institutes:

1. Panchayati Raj Training Institute
2. DIET
3. P.R.T.I
4. HIPA

Academic Institutes:

1. Geography Department, HP University
2. Dr. Y.S. Parmar University of Horticulture & Forests, Solan(HP)
3. Manipal University, Jaipur

Technical Institutions:

1. Aryabhata Geo-informatics Space Application Centre
2. National Bureau of Plant Genetic Resources (Regional Office in HP)

NGOs:

1. AVNI
2. CORD
3. WWF-India
4. CASA India
5. TARU

## Annexure IV

**List of training institutions: Currently offering courses in DRR & CCA; Potential Institutes whose capacities could be built to offer DRR & CCA trainings**

Department	Directorate of Agriculture
Coordinator/ Nodal Officer	Mr. Keshav Chauhan
Address	Directorate of Agriculture, Krishi Bhawan, Boileauganj, Shimla-171005
Phone/Mobile	0177-2830345, 9418493659
Fax	0177-2830612
Email	krishinidesh@yahoo.com

Department	Directorate of Animal Husbandry
Coordinator/ Nodal Officer	Dr. Dinesh Raj Gupta
Address	Pashudhan Bhawan, Boileaugan Shimla-171005
Phone/Mobile	0177-2830168, 9418020507
Fax	0177-2830170
Email	dir_ah_hp@nic.in

Department	Home Guards and Civil Defence
Coordinator/ Nodal Officer	Mr. Anuj Tomar
Address	US Club, Shimla-171001
Phone/Mobile	0177-2752428
Fax	0177-2811360
Email	dgp_hg_hp@nic.in

Department	Economics and Statistics
Coordinator/ Nodal Officer	Mr. Chandra Mohan Sharma
Address	B-38, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2626206, 9418088136
Fax	0177-2626206
Email	chander21@gmail.com

Department	Directorate of Higher Education
Coordinator/ Nodal Officer	-
Address	Lal Pani, Shimla-171001
Phone/Mobile	0177-2656621
Fax	0177-2811247, 0177-2812882
Email	dir.edu@rediffmail.com

Department	Directorate of Higher Education
Coordinator/ Nodal Officer	-
Address	Lal Pani, Shimla-171001
Phone/Mobile	0177-2656621
Fax	0177-2811247, 0177-2812882
Email	dir.edu@rediffmail.com

Department	Directorate of Elementary Education
Coordinator/ Nodal Officer	Mr. K.D. Verma
Address	Lal Pani, Shimla-171001
Phone/Mobile	0177-2657054, 2652805, 9418646794
Fax	-
Email	eleeduhp@rediffmail.com



Department	Directorate of Energy
Coordinator/ Nodal Officer	Mr. Manish Mahajan
Address	Sector-4 Rd, New Shimla, Shimla, Himachal Pradesh
Phone/Mobile	9418458384, 0177-2673553
Fax	0177-2673553
Email	hm_dhareula@yahoo.com

Department	Directorate of Food, Civil Supplies and Consumer Affairs
Coordinator/ Nodal Officer	-
Address	B-42, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2623749
Fax	0177-2623749
Email	dfs@hp.nic.in

Department	Fire Services
Coordinator/ Nodal Officer	Mr. Jagdesh Sharma
Address	US Club, Shimla-1
Phone/Mobile	9418028191
Fax	0177-2657087
Email	-

Department	Forest
Coordinator/ Nodal Officer	Mr. Ajay Kumar Sharma
Address	Talland, Shimla-2
Phone/Mobile	9418013795, 0177-2624857
Fax	0177-2624192, 2624193
Email	-

Department	Health and Family Welfare
Coordinator/ Nodal Officer	-
Address	B-6, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2622050
Fax	-
Email	pmis.dhs@gmail.com

Department	Directorate of Horticulture
Coordinator/ Nodal Officer	Dr. S.S. Verma
Address	Nav Bahar, Shimla-2
Phone/Mobile	9816140287, 0177-2841120
Fax	-
Email	horticul_hp@nic.in

Department	Directorate of Ind., Geological wing and DIC
Coordinator/ Nodal Officer	Mr. Indresh Dhiman
Address	Udyog Bhavan, Shimla – 171 001
Phone/Mobile	9418455765, 0177-2657339
Fax	-
Email	geologicalwing@gmail.com

Department	Department of Environment, Science and Technology
Coordinator/ Nodal Officer	Mr. S.S. Randhawa
Address	Department of Environment, Science and Technology, Paryavaran Bhawan, Near US Club, Shimla-171001
Phone/Mobile	9418382126, 0177-2622490
Fax	-
Email	ssrandhawa15@gmail.com

Department	HP Institute of Public Administration
Coordinator/ Nodal Officer	-
Address	Fairlawns
Phone/Mobile	-
Fax	-
Email	-

Department	Irrigation and Public Health
Coordinator/ Nodal Officer	Mr. Mukul
Address	Engineer-in-Chief, I&PH Department, U.S. Club, Shimla. PIN - 171 001
Phone/Mobile	0177-2655262, 9418069324
Fax	-
Email	hpirrg@rediffmail.com, iph-hp@nic.in

Department	Directorate of Labour and Employment
Coordinator/ Nodal Officer	Mr. A.K. Sood
Address	Himrus Building, Shimla-1
Phone/Mobile	9418473059, 0177-2624157
Fax	-
Email	-

Department	Directorate of Land Records and Consolidation
Coordinator/ Nodal Officer	-
Address	B-39, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	0177-2623678, 0177-2623683
Fax	-
Email	-

Department	Directorate of Language, Art and Culture
Coordinator/ Nodal Officer	Mr. C.L. Kashyap
Address	B-39, SDA Complex Kasumpati, Shimla-9
Phone/Mobile	9418120265, 0177-2626616
Fax	-
Email	dirculture@gmail.com

Department	Planning
Coordinator/ Nodal Officer	-
Address	Yojna Bhawan, HP Sectt. Shimla-2
Phone/Mobile	0177-2625856, 2621698
Fax	-
Email	-

Department	Department of Finance
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Department of Police
Coordinator/ Nodal Officer	Mr. Satinder Pal Singh
Address	Nigam Vihar, Shimla-2
Phone/Mobile	98162-49400, 0177-2627361
Fax	-
Email	-

Department	Department of Information Technology
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Information and Public Relations
Coordinator/ Nodal Officer	Mr. R.S. Negi
Address	Information Bhawan, Shimla-2
Phone/Mobile	9418453335, 0177-2620068
Fax	-
Email	-

Department	Public Works Department
Coordinator/ Nodal Officer	Mr. Ajay Garg
Address	Head Office Shimla, Engineer-in Chief, PWD, Nirman Bhawan, Nigam Vihar, Shimla-171002
Phone/Mobile	9816004654, 0177-2625821
Fax	-
Email	hp_shi6@nic.in

Department	Directorate of Rural and Panchayati Raj
Coordinator/ Nodal Officer	Mr. Keval Sharma
Address	Rural Development Department, B-27, SDA Complex, Kasumpti Shimla-171009
Phone/Mobile	9418626511, 0177-2623805
Fax	Fax: +91-177-2624792
Email	jointdirectorhppr@gmail.com

Department	Directorate of Women and Child Division Block
Coordinator/ Nodal Officer	Mr. Lok Chand Chauhan
Address	-
Phone/Mobile	9418492374, 0177-2623006
Fax	-
Email	-

Department	Tourism and Civil Aviation
Coordinator/ Nodal Officer	Mr. Surjit
Address	B-28, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	9418105752, 0177-2625924
Fax	-
Email	tourismmin_hp@nic.in

Department	Tourism and Civil Aviation
Coordinator/ Nodal Officer	Mr. Surjit
Address	B-28, SDA Complex, Kasumpti, Shimla-9
Phone/Mobile	9418105752, 0177-2625924
Fax	-
Email	tourismmin_hp@nic.in

Department	Town and Country Planning
Coordinator/ Nodal Officer	Ms. Anjali Sharma
Address	Directorate of Town and Country Planning, Yojna Bhawan, Block No. 32A, SDA Complex, Vikas Nagar,
Phone/Mobile	9418470359, 0177-2624737
Fax	-
Email	-

Department	Directorate of Transport
Coordinator/ Nodal Officer	Mr. Ravinder Mehta
Address	Parivahan Bhawan, Shimla-4
Phone/Mobile	9418077435, 0177-2655632
Fax	-
Email	-

Department	Directorate of Urban Development
Coordinator/ Nodal Officer	Mr. B.R. Dadwal
Address	Directorate Urban Development, Palika Bhawan, Talland, Shimla-1
Phone/Mobile	0177-2626516, 9816190097
Fax	2626518
Email	ud_hp@nic.in

Department	Directorate of Youth Services and Sports
Coordinator/ Nodal Officer	Ms. Suman Rawat Mehta
Address	Craig Garden, Shimla-2
Phone/Mobile	94184-61098, 0177-2622032
Fax	-
Email	sumanrawatmehta@gmail.com

Department	Aryabhata Geo-informatics & Space Application Centre (AGiSAC)
Coordinator/ Nodal Officer	-
Address	Aryabhata Geo-informatics & Space Application Centre (AGiSAC), Shree Niketan, Beolia Road, Lower Panthaghati, Shimla-171009
Phone/Mobile	0177-2620047
Fax	-
Email	agisac.hp@hp.gov.in

Department	G. B. Pant Institute of Himalayan Environment and Development(Himachal Unit) Mohal, Kullu
Coordinator/ Nodal Officer	-
Address	G. B. Pant Institute of Himalayan Environment and Development, Mohal, Kullu - 175126
Phone/Mobile	(01902) 260208, 260313,
Fax	(01902) 260207
Email	samantss2@rediffmail.com

Department	Institute of Himalayan Bio-resource Technology(IHBT)
Coordinator/ Nodal Officer	-
Address	CSIR-Institute of Himalayan Bioresource Technology, (Council of Scientific & Industrial Research), Post Box No. 6 Palampur (H.P.) 176061
Phone/Mobile	+91-1894-230411
Fax	+91-1894-230433
Email	psahuja@ihbt.res.in, director@ihbt.res.in

Department	Institute of Integrated Himalayan Studies(I-IHS), Himachal Pradesh University, Shimla
Coordinator/ Nodal Officer	-
Address	Institute of Integrated Himalayan Studies, (UGC Centre of Excellence), Himachal Pradesh University, Summer Hill, Shimla-171005
Phone/Mobile	+91 177 2633017
Fax	+91 177 2633018
Email	-



Department	Snow and Avalanche Study Establishment, Manali
Coordinator/ Nodal Officer	-
Address	Snow & Avalanche Study Estt (SASE), Defence Research and Development Or- ganization (DRDO), Ministry of Defence, Himparisar, Sector 37-A, Chandigarh - 160 017 and
Phone/Mobile	-
Fax	-
Email	director@sase.drdo.in

Department	Himalayan Forest Research Institute, Shimla
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Central University of HP
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	CSK HP Krishi Vishva Vidyalaya
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Dr. YS Parmar University of Horticulture and Forestry
Coordinator/ Nodal Officer	-
Address	Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Nauni, Solan-173230
Phone/Mobile	01792 252363, 01792 252357
Fax	01792 252242
Email	vcuhf@yahoo.com, thakurvs@satyam.net.in

Department	Himachal Pradesh Agriculture University, Palampur
Coordinator/ Nodal Officer	-
Address	Himachal Pradesh Agriculture University, Palampur- 176072
Phone/Mobile	-
Fax	+ 91 1894230465, + 91 1894230511
Email	registrar@hillagric.ac.in, vc@hillagric.ac.in

Department	IIT, Mandi
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Chitkara University
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Dr. Rajendra Prasad Government Medical College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	HP Technical University
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Indian Institute of Advanced Studies (IIAS)
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Indira Gandhi Medical College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Jawaharlal Nehru Government Engineering College
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	National Institute of Technology, Hamirpur
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Jaypee University of IT
Coordinator/ Nodal Officer	-
Address	-
Phone/Mobile	-
Fax	-
Email	-

Department	Central Water Commission, Shimla Office
Coordinator/ Nodal Officer	-
Address	Directorate, Central Water Commission, Ministry of Water Resource, Govt of India, Block No.10, SDA Complex, Kusumpty Shimla - 171009
Phone/Mobile	0177-2626211, 2624976, 2624396
Fax	0177-2626211
Email	metcentresml@yahoo.co.in

Department	Indian Meteorological Department
Coordinator/ Nodal Officer	-
Address	Meteorological Centre, Bibra House, Cliffend estate, Shimla-171001
Phone/Mobile	-
Fax	-
Email	-

# Notes

