

DISASTER MANAGEMENT-LESSONS LEARNT FROM PAST MAJOR DISASTERS IN HP

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Abstract

Himachal Pradesh faces various types of natural hazards and is one of the most multi-hazard prone State of India. The natural disasters destroy lives, property, and the rules of society, however, reveals a more silent and stable pattern of response. The frequency and most of these hydro-meteorological hazards are compounded by climate change and its impacts on agriculture, horticulture, human settlements and human and animal health. The article is a study of the social and economic history of natural disasters in the state of Himachal Pradesh and the lessons learnt from them besides it uncovers the silent processes, highlighting how disasters have enabled new understandings of nature, state, and society. The cases discussed in the paper pave the way for policy planners and people at the helm of disaster management

Introduction

Himachal Pradesh is one of the most multi-hazard prone State of India. The State faces various types of natural hazards like the geological hazards, earthquake and landslide; hydrological hazards of floods, flash floods and glacial lake outburst floods; meteorological hazards of droughts, hailstorms and cloudbursts; and climatologically hazards of cold wave, frosts and avalanche. The frequency and most of these hydro-meteorological hazards are compounded by climate change and its impacts on agriculture, horticulture, human settlements and human and animal health. Further, the State, on a routine has faced various manmade hazards such as fires, transport related accidents, stampedes in religious fairs etc. that took a toll of consume considerable human lives. Sparse density of population of the mountainous State has kept the level of

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human exposure to the risks of disaster in Himachal Pradesh relatively low as compared to many States of the country. However, location of high value infrastructure, such as hydro-electric projects and communication networks, productive assets, and vulnerable houses, social and community infrastructure in various hazard zones has exposed the economy of the State to considerable risks of disasters. Such risks particularly existed in unplanned and growing urban settlements, such as the capital city of Shimla.

Objectives

The people of Himachal Pradesh have lived with a high risk of suffering floods, earthquakes and fires etc. What did they do to rebuild their lives? Did the responses change over time? This article is a study of the social and economic history of natural disasters in our state and the lessons we have learnt from them.

- a) This article is a study of the social and economic history of natural disasters in the state and the lessons learnt from them.
- b) To assess the capacity of managing such events in view of the timeline available by analyzing some of the greatest natural disasters from past.
- c) To analyse the impact of natural disasters on lives, property, and the rules of society in the short-run view and silent and stable pattern of response in the long-run view.
- d) To find out the silent processes in disaster management that have enabled new understandings of nature, state, and society.

Basics of Disaster Management

The phrases "unprecedented" and "beyond anything experienced" become common about natural disasters. Natural disaster is not a new term in HP. The disasters starting from earthquake in District Kangra in 1905 up to the recent past, have taught valuable lessons for preventing loss of life and property in the modern era.

Before proceeding further, it would be appropriate to have clarity about the basic concepts associated with Disaster Management

1. **Hazard-** A rare extreme natural or human made event that threatens to adversely affect human life, property or activity to the extent of causing disaster.
2. **Vulnerability-** Vulnerability is a set of prevailing or consequential conditions that adversely affect people's ability to prevent, mitigate, prepare for and respond to hazardous events. These long-term factors, weaknesses or constraints affect a household or community's ability (or inability) also to absorb losses after disaster or to recover from the damage.
3. **Disaster-** A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.
4. **Capacity-** Capacity (as contrasted to vulnerability) has been included in disaster management initially as a guide for both international and local agencies who work with vulnerable communities to link disaster to development – even in emergency situations disaster survivors have capacities. They are not helpless victims but have 'coping' mechanisms on which to build on for emergency response and recovery.
5. **Risk-** Risk is commonly used to mean the probability or likelihood of meeting danger or suffering harm and loss. It is also the exposure of something of human value (life, property, and the environment) to a hazard and is often regarded as the combination of probability and loss.
6. **Disaster Management Cycle-** A collective term encompassing all aspects of planning for and responding to disasters, including both pre (prevention, mitigation and preparedness) and post disaster (response, search and rescue, relief, reconstruction and rehabilitation) activities. It may refer to the management of both the risks and consequences of disasters.
7. **Disaster Risk Assessment (HRCV)-** Disaster risk assessment is a participatory process to assess the hazards, which threaten the

community, its vulnerabilities and capacities. Through hazard assessment, the likelihood or probability of the occurrence and the magnitude, frequency, scope and duration of various hazards is determined. The vulnerability assessment identifies what elements are at risk and analyzes the causes and root causes of vulnerable conditions. The households and groups that are most exposed to any given hazard are identified. The result of the disaster risk assessment is a measurement and ranking of the disaster risks faced by the community as basis for risk reduction planning.

8. **Disaster Risk Reduction-** The reduction of disaster risk is the foundation of community-based disaster management. Disaster risk reduction includes all measures, which reduce related losses of life, property or assets by either reducing the hazard or vulnerability of the elements at risk.
9. **Disasters and Development-** Disasters can provide a specific window of opportunity for all areas of development, social, economic and environmental. Although most disasters bring large scale damage and loss affecting the social, economic and environmental aspects of human life, they also offer an opportunity to engage in long term recovery and reconstruction which can help build back better. This can be done by reducing the vulnerabilities of people at risk and enhancing their coping capacities. During the reconstruction and recovery phase that would follow a disaster, DRR strategies can be implemented where it may not have been possible or practical to do so before.
10. **Paradigm Shift-** India was, until recently, reactive and only responded to disasters and provided relief from calamity. The recurrent occurrences of different types of disasters compelled Government of India to take cognizance of the objectives of International Decade for Natural Disaster Reduction (1990- 2000), Yokohama Strategy for safer world (1994)⁶ and the Plan of Action for Safer World (Istanbul, 1996)⁷, and set up a High Power Committee on Disaster Management (HPC) in 1999 to recommend strategies for preparation of Disaster Management plans. The High Power

Committee gave its recommendations in October 2001 including a draft of the Disaster Management Act, a National Response Plan, and establishment of National Disaster Management Authority. Following one of the HPC recommendations, the Disaster Management function was transferred from Ministry of Agriculture to Ministry of Home Affairs. Based on the recommendations of HPC, UN agencies and Hyogo Framework of Action 39, the Government of India has brought about a paradigm shift in its relief centric to responsive and preparedness approach to disaster management. The new approach proceeds from the conviction that development cannot be sustainable unless disaster mitigation is built into the development process. The focus is now more on disaster risk assessment, preparedness and mitigation. This paradigm shift reinforces that disasters can be managed through adequate planning and preparedness for response.

Major Disasters in HP and Lessons Learnt

Situated in the lap of the Himalayas between latitude 30°22 to 33°12' N and 75°45'E to 79°4'E, Himachal Pradesh is prone to various hazards both natural and manmade. Main hazards consist of earthquakes, landslides, flash floods, snow storms and avalanches, draughts, dam failures, fires-domestic and wild, accidents- road, rail, air, stampedes, boat capsizing, biological, industrial and hazardous chemicals etc. However, the hazard which poses the biggest threat to the state is that of earthquakes. Another form of the natural hazards in the state is the frequent occurrences of landslides. The hills and mountains of Himachal Pradesh are liable to suffer landslides during monsoons and also in high intensity earthquakes.

The diagrammatic representation of hazard profile of Himachal is as under:-

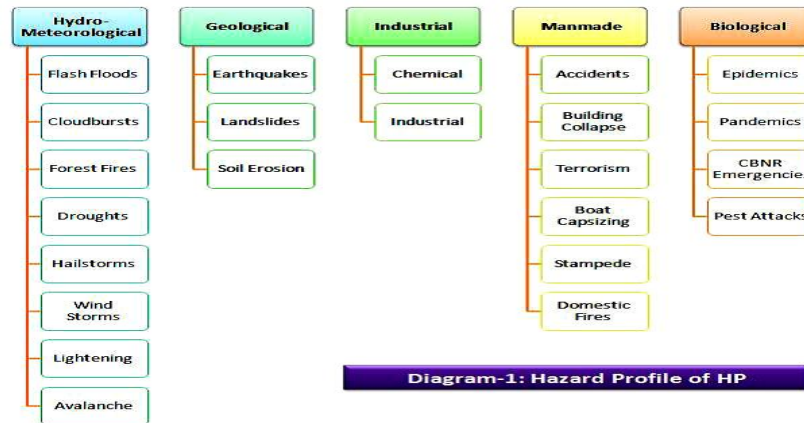
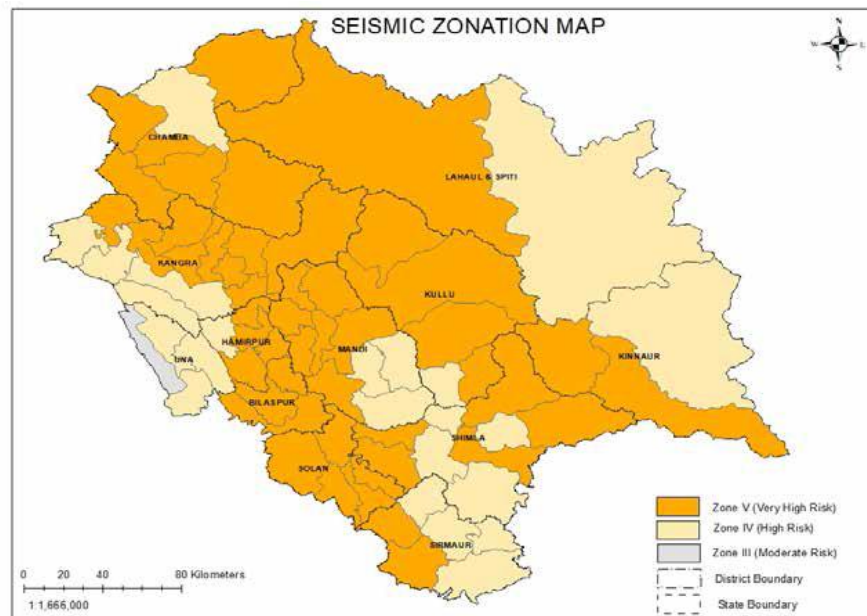


Figure 1: Hazard Profile of HP

History of major disasters in HP and lessons learnt from them is being discussed here-in-after in detail.

A. Major Earthquake Disasters and Lessons Learnt: Though numerous hazards pose threat to the State, however, the hazard which poses biggest threat to the State is the earthquake hazard. The State has been shaken by more than 80 times by earthquakes having a magnitude of 4 and above on the Richter Scale as per the recorded history of earthquakes. Broadly speaking, roughly 32% of the State falls in zone IV and rest of the State falls in Zone V as per the Seismic Zonation Map prepared by the Bureau of Indian Standards. Both these zones are highly susceptible to earthquake damages.



Map 1: Seismic Zones Map of HP

Over the past two centuries, as many as 553 earthquakes have been recorded in the State. Some of the major earthquake incidents are as narrated below:

1 Kangra Earthquake: One of the most devastating disasters which the state has gone through is the earthquake of Kangra. In April 1905, Kangra experienced an earthquake of magnitude 7.8 in which more than 19,800 people died and more than 20,000 houses were damaged. The loss of property and cattle was unprecedented.

2 Shimla Earthquake: The queen of hills was shaken in February 1906 when the mighty earth released its energy with a magnitude of 6.5 on reactor scale. The incidents took away the lives of 26 people and 45 were severely injured.

3 Kinnaur Earthquake: The border district of Kinnaur experienced an earthquake of magnitude of 6.8 on reactor scale in January 1975. More than 60 people died and many were left injured. As much as 2,000 houses were damaged and the property of crore of Rs was devastated.

Lessons Learnt

It is a myth that earthquakes kill people. They don't. Bad buildings kill people. The goal should be to make better, stronger and flood-proof houses, schools, hospitals and infrastructure.

(a) Dissemination of Knowledge

Widening the use of the available knowledge base is of paramount importance to minimize destruction caused by major earthquakes. While scientists and engineers continue their further research on prediction of earthquakes and on refining our understanding of earth motions and structural responses, the existing expertise, knowledge and skills should be used to their full potential with complete support of political institutions.

(b) Enforcement of Codes and Standards

There is obviously the need to enact a law to make earthquake safety norms binding on all new buildings. The codes and guidelines should not remain recommendatory documents but should be made mandatory by incorporating into relevant building by-laws and regulations through an appropriate legal framework.

(c) Retrofitting

Reducing earthquake hazards from existing buildings remains the foremost problem facing India and other countries prone to disasters. The buildings where most of the losses will be concentrated are already standing. These buildings should be retrofitted where necessary or demolished.

(d) Earthquake Safety Programmes & Emergency Planning

Earthquake safety programmes should become standard topics in boardrooms, council chambers and homes. Earthquake mitigation and emergency planning should not be viewed as an autonomous, single-purpose activity carried out by specialists. Government and business managers should consider earthquake safety measures as a normal part of

their responsibilities. Educational programmes should be televised to increase the level of awareness amongst the people on building safer structures.

(e) Management Leadership

Building officials and emergency service professionals serve as key forces to improve building codes, and to move local and central government towards preparedness programmes. Thus to move earthquake safety into the mainstream of Indian life, the involvement of people should be expanded

(B) Landslides Disasters and Lessons Learnt:

Landslide is the most common hazard in Himachal Pradesh. Almost every year the State is affected by one or more major Landslides are triggered by both natural and anthropogenic factors. Among the natural factors, the most important are rock vibrations due to earthquakes, steepness of slopes, saturation by heavy rains, melting snow and ice, frost, excess load from embankments, toe cutting by rivers and streams and change in vegetation cover. The anthropogenic factors include deforestation, unscientific construction of roads, terracing, water intensive agricultural practices, and encroachment on steep hill slopes etc.

The following major landslides deserve a special mention:

- **Matiyana Landslide:** In the year 1988, major landslides occurred at a place called Matiyana just few km away from state capital Shimla. In this heavy landslides a bus was completely buried. 45 passengers which were travelling by the said bus lost their lives in this incident
- **Lugar Hati Landslides:** Lugar Hati is a place in district Kullu. In the year 1994, a major landslides occurred at this place and 42 passengers were buried under the debris.
- **Kotpuri Landslide:** In another major landslides in Himachal Pradesh, 46 people killed and several others were injured at Kotpuri near Padhar on the Mandi-Pathankot national highway.

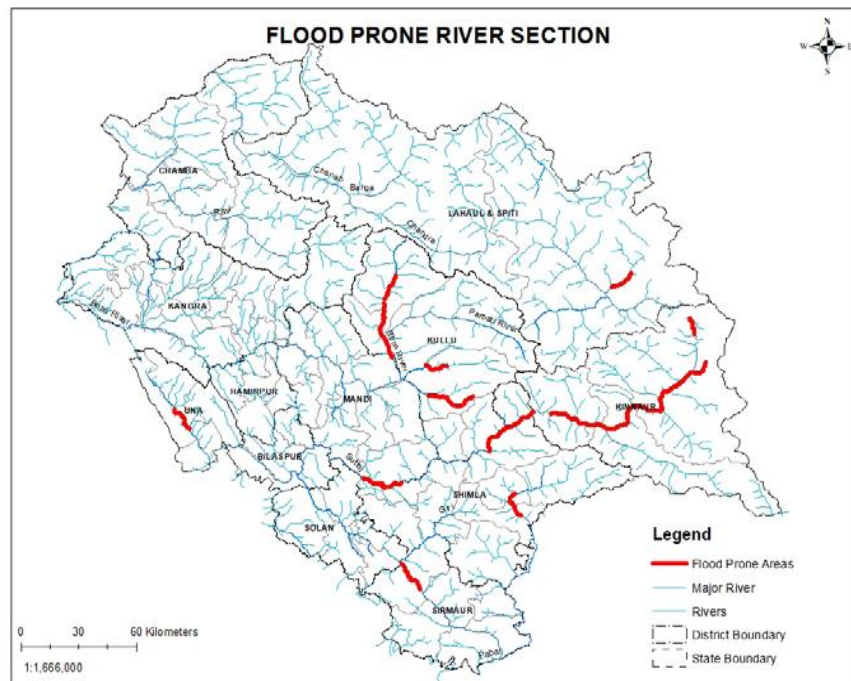
Apart from the aboved there have been several other landslides in different parts of the state at different point of time.

Lessons Learnt

- (a) A robust and strong Disaster Preparedness including increased awareness amongst all the stakeholders during planning and management in hazard prone areas is essential
- (b) Codes for landslide zonation should also take into account the domino effects of flash flooding and effects of landslide run outs
- (d) Creation of norms, regulatory mechanisms and strict compliance of land use zoning regulations in the mountains based on landslide zonation maps. Constructions should be restrained from entering into active river regime and fluvial geomorphology.
- (e) Excavation or slope modification and protection measures for modified slopes should go hand in hand for ensuring slope stability
- (g) All moraine-dammed lakes in the Himalayan catchments be mapped and their geotechnical stability be assessed
- (h) Weather forecast in the landslide prone areas of the country to be improved by IMD through installation of more number of state-of-the-art AWS and closely spaced Doppler instruments for regular monitoring & developing Early Warning system

(C) Floods & Cloud Burst Disasters and Lessons Learnt

Although Himachal Pradesh is at the tail end of the southwest monsoon track, it receives considerable rainfall during the months of July to September. This coupled with snowmelts in high altitudes cause the rivers to swell, sometimes much beyond their capacities to drain out, resulting in floods in low lying settlements. In exceptional circumstances, riverine floods are also caused by outbursts of dam created temporarily on rivers due to landslides.



Map 2: Flood Prone River Sections of HP

Flash floods had been more frequent and damaging in Himachal Pradesh than riverine flood. Over 40 incidents of flash flood and cloudbursts occurred in Himachal Pradesh in the last 12 years and over 35 people were feared dead. Some of the major events flash floods disaster which occurred in Himachal Pradesh are listed below:

- In 1974, Lake formed by the blockage of Satluj River due to Nathpa rock fall damaging Sanjay Vidyut Power House causing revenue loss of Rs.45 Million.
- In September 1995, flash flood occurred in Kullu valley. It Caused damage to the tune of Rs.759.8 million. Heavy rains and flash floods caused water saturation along loose Quaternary deposits along slopes and excessive bank erosion which led to landslides in Kullu valley.
- On 29th and 30th July 2001, Flash floods occurred in Chhota Bhangal and Baijnath Sub Divisions of Kangra district. It caused widespread damage in the area. 12 deaths occurred due to flash floods and loss of

150 cattle was reported from the area. Bridge connecting Deol and Baijnath was also washed away. Total estimated loss was to the tune of Rs.18.27 Crore.

- **Cloud burst:** The geographic configurations of the numerous small valleys of Himachal Pradesh provide a conducive environment for cloudbursts when highly condensed rain-bearing clouds burst causing sudden torrential rainfall over a small area for a short time. Himachal Pradesh experiences cloud bursts regularly during the southwest monsoon and the frequency is more during the months of July and August.

Lessons Learnt

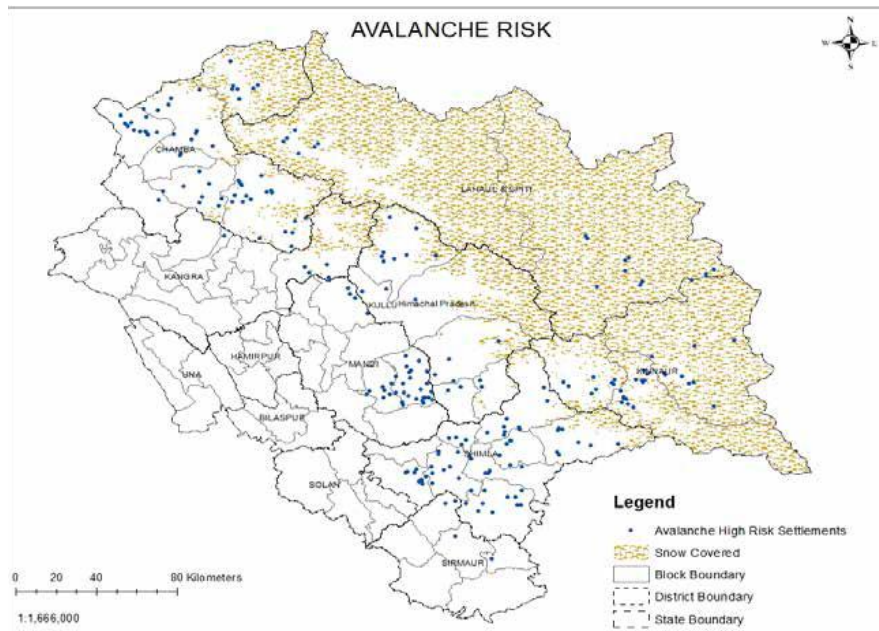
Risk Reduction (protection should go beyond technical and include socio-economic considerations): In Himachal Pradesh, in order to ensure its efforts towards improving risk reduction are achieved, major improvements have to be made, through the use of remote sensing and GIS technologies in conjunction with flood management and its inter-relationship to flood hazard assessment and planning. The protection should go beyond the technical fixes, particularly for protection to improve the structure.

Early warning (poor people, many of them do not understand weather forecasting or early warning signs): The affected communities lack awareness, sensitization and education regarding localized hazard and flood risk reduction, emergency preparedness and response functions. Education is a particular requirement for populations generally located within the flood plains. The early warning systems are somewhat in place but the outflows of information have a limited outreach to those who need it most.

Vulnerability mapping (Reaching those most in need): The magnitude of some of floods in past was extraordinary, they caused severe damage along the Rivers. Since there had been no flooding in these areas for many years, people had settled in either flood plain or flood prone areas.

Consideration of Climate Change Adaptation: The risks of extreme weather phenomena are increasing along with global climate change. Himachal is no exception to the global picture and has encountered an increased frequency and intensity of climate extremes in recent decades.

(D) Avalanches Disasters and Lessons Learnt



Map 3: Avalanche Risk Map of HP

Snow avalanches are the sudden slide of large mass of snow down a mountain. Several factors may contribute to the occurrence of avalanches. These include temperature, snowfall, wind speed, local weather conditions, terrain, slope, vegetation and general snow pack conditions. Different combinations of these factors can create low, moderate and high intensity avalanches. The destruction caused as a result of avalanche in the past in Himachal Pradesh though not widespread is confined to higher reaches only. The prominent events of avalanche damage in Himachal Pradesh are as given below:

- ❖ In Lahaul and Spiti In March 1978 About 30 people killed In an avalanche and road and property was damaged. Once again in March, 1979 About 237 people killed. And Communication disrupted
- ❖ In District Kinnaur in March 1991 Tinku avalanche occurred every year 4-5 times from Jan to March. Road was blocked for 40 days in 1991. In Sept.1995 Due to avalanche, huge chunk of debris came down which later changed into flood.

Lessons Learnt

A number of lessons have been learnt from these avalanche disasters. It has to be noticed that, as in the case of other disasters that have occurred in the past, "at posterior" the majority of the heavy situations that happened seem avoidable or, at least, manageable without big losses. In fact, disasters, in particular due to avalanches, occur with an increasing frequency. Nevertheless, people and authorities involved were often not well prepared to face such type of natural event, although foreseen, thus this may become a disaster. A common lesson learnt is that the responsibility of the various organizations involved in the whole chain: prevention, preparedness and response must be clarified. Personnel called to operate in the disaster area have to be periodically trained. Monitoring of the risk zones is often insufficient.

(E) Major Droughts and Lessons Learnt From Them

Meteorologically, drought is defined as a situation when the annual rainfall over any area is less than 75 percent of the normal. It is termed as moderate if rainfall deficit is between 25 to 50 percent and severe if the deficit is more than 50 percent. None of the districts of Himachal Pradesh is chronically drought affected but at least five districts of the State have faced drought-like condition in some years and at least two districts have experienced drought in successive years, as shown in Table below. The Spiti Sub-division of the State is the cold desert area of the State.

Table 1: Drought History of HP

S. No	District	Year of successive Drought	Year of severe Drought
1.	Bilaspur	1974-75, 1975-76, 1992-93	1975 (37%)
2.	Kangra	1962-63, 1963-64	1974 (45%)
3.	Mandi	1982-83	1983 (44%)
4.	Sirmaur	1979-80, 1986-87	1979 (43%), 1986 (41%)
5.	Una	1972-73, 1974-75, 1981-82, 1982-83	1975 (43%), 1981 (40%)

Lessons Learnt

While a disaster like drought can shift our focus, with our priorities changing and survival mode kicking in, some farmers demonstrated the strength to fight for themselves, their neighbours and fellow farmers. The following are lessons one must learn from the drought to become more than just survivors during the next one.

(a) Adapt Now: We cannot change our agricultural practices only when the drought is already upon us. Sustainable systems of conservation agriculture and crop rotation are ways of life, and farmers who practiced these were better off, and weathered the drought more sustainably, than those who had not employed these methods.

(b) Research: The drought elevated the intensity of research into drought and heat-tolerance, and taught us that we must not wait for a severe drought before intensifying our research on mitigating the risks of climate change.

(c) Alternative Crops: Farmers should do the relevant calculations to determine profitability before considering this; a possible drought should not be the only factor when changing to an alternative crop, and market demand and profitability should also be given due consideration.

(d) We Can Overcome: The single most positive experience of the drought was encountered amongst those who were resilient and helpful to their community and fellow farmers. We shall remember those who managed to plan for the following season while their crops were dying,

and the faith that carried farmers, their families and workers through the tough times to become better citizens and tomorrow's leaders.

(F) Major Stampedes and Lessons Learnt: The State of Himachal Pradesh has more than 2,000 Hindu temples, some of them attracting large number of pilgrims from the State and outside, especially during religious fairs. Temples like Sri Naina Devi in Bilaspur, Baba Balaknath in Hamirpur, Jawala Mukhi & Baijnath in Kangra, Chintpurni in Una, Bijli Mahadev in Kullu, Tarna in Mandi, Renukaji in Sirmour, Laxmi Narayan in Chamba, Bhima Kali in Sarahan Shimla attract large number of visitors and tourists every year. Unregulated mass gathering of pilgrims during festivals in some of these ancient temples with narrow entry and exit routes have resulted in stampedes killing hordes of pilgrims. On August 3, 2008, the Naina Devi temple experienced a horrific tragedy when 146 devotees, including 30 children and 38 women were crushed to death and 50 were injured in a stampede.

Lessons Learnt: It is believed that most major crowd disasters can be prevented by simple crowd management strategies Human stampedes can be prevented by organization and traffic control, such as barriers. On the other hand, barriers in some cases may funnel the crowd towards an already-packed area.. Hence barriers can be a solution in preventing or a key factor in causing a crush. One problem is lack of feedback from people being crushed to the crowd pressing behind – feedback can instead be provided by police, organizers, or other observers, particularly raised observers, such as on platforms or horseback, who can survey the crowd and use loudspeakers to communicate and direct a crowd.

There is risk of a crush when crowd density exceeds about four people per square meter. For a person in a crowd a signal of danger, and a warning to get out of the crowd if possible, is the sensation of being touched on all four sides. A later, more serious, warning is when one feels shock waves travelling through the crowd, due to people at the back pushing forward against people at the front with nowhere to go.

(G) Forest Fires Disasters and Lessons Learnt

The forests of Western Himalayas are more vulnerable to forest fires as compared to those in Eastern Himalayas due to drier climates and higher population densities. Himachal Pradesh has a recorded forest area of 1,046,900 hectares, of which around 974,800 hectares (93%) are known to be prone to fire.

The magnitude of forest fires as disaster can be gauged from the number of fire incidents and area affected as given below:

Table 2: Magnitudes of Forest Fires

Year	No of incidences	Area affected (ha)
2000-01	1900	36887
2001-02	301	5719
2002-03	282	4204
2003-04	550	9896
2007-08	580	7810
2015-16	671	5734

Lessons Learnt: General lessons learnt that have been retrieved from the forest fire disasters can be summarized as below:

Concerning Prevention Measures: Forest fires are not tied to rigid concepts of seasonality (summer/winter), but can actually occur at serious levels before the "fire season", under specific weather conditions related to prolonged periods of drought followed by an increase in temperature.

It is essential to communicate to the people that the responsibility belongs to everyone to prevent forest fires.

Concerning Preparedness Measures: The cooperation between services (police, inspectorate, foresters) should be promoted. It is necessary to set up an emergency forest fire operative plan for winter months. The fire risk analyses and maps should be made available on the Internet, as it could be an aid in planning and preparing for forest fire fighting operations.

Concerning Dissemination of Information to the Public: It is necessary to increase prevention against the principal causes of fire by better informing the public of regulations regarding agricultural, forestry, and grazing activities. It is important to ensure the coordination of hunting associations in defining strategies to prevent fires related to hunting activities. It is essential to discourage forest fires related to building speculation through increased awareness of regulations and sanctions.

(H) Road Accident and Lessons Learnt

Vehicular accidents on road kill nearly 1600 people every year and the number does not show any signs of decline. In fact road accidents have emerged as the single most important cause of human mortalities in a normal year outnumbering deaths in all natural disasters put together.

Table 3: Year-wise Road Accidents in Himachal Pradesh

Year	No of accidents	Persons killed	Persons injured	Vehicles Involved
2003-04	2,794	843	4,293	3,195
2004-05	2,758	920	4,674	3,423
2005-06	2,868	861	4,755	2,868
2006-07	2,737	929	4,886	2,917
2007-08	2,953	921	5,272	3,756
2008-09	2,840	898	4,837	3,583
2009-10	3,023	1,173	5,630	3,705
2010-11	3,104	1,105	5,350	3,810
2011-12	3,063	1,051	5,260	3,775
2012-13	2,867	1,057	5,422	3,461
2013-14	3,008	1,116	4,961	-
2014-15	3,012	1,179	5,522	-

Lessons Learnt: The number of deaths due to road accidents in the State is indeed a cause for worry

- ❖ **Bad Roads:** Himachal is said to be one of the fastest developing states in India. The state is performing extremely well in fields such as education, industrialization etc. However the conditions of the roads, be it the metropolitans, towns or villages, act as a major pothole in states complete progress.
- ❖ **Speeding:** Another major factor contributing to the increased number of road accidents is speeding. The public fails to follow the speed limits, especially on the highway.
- ❖ **Overloaded vehicles:** Be it passengers or goods, overloaded vehicles are also a major cause for accidents in the state. It becomes difficult to control an overloaded vehicle. When a vehicle is carrying goods such as protruding steel rods, the result of an accident is even worse.
- ❖ **Drunken driving:** Even though driving under the influence of alcohol is strictly prohibited, many flaunt this rule, which at times results in road accidents. Even if the person under the influence of alcohol walks away safe from the scene of the accident due to the safety features of the car, the pedestrians and smaller vehicles involved in the accidents are not so lucky.
- ❖ **Helmets:** Two-wheelers account for 30% of the road accidents in the state. Wearing a helmet can reduce the risk of severe injury by 72% and the risk of death by 39%, according to the World Health Organisation.
- ❖ **Safer road for vehicles, not people:** While India has been upgrading its highways since 2000, with dividers, four-lane and six-lane roads and expressways, the design does not cater to the requirements of pedestrians, cyclists, two-wheelers, animal carts and other slow-moving traffic.

Conclusion

Disasters are tragedies. Yet they can serve as laboratories for understanding the physical and social factors governing them. Valuable information gathered during the hours, days, months, and years following a disaster can lead to policies and practices that reduce the risk of loss of life, property, and natural resources. This information can be used to enhance the effectiveness of hazard and risk assessments, awareness and education, preparedness, prediction and warning, and mitigation.

Because disasters have both immediate and long-term impacts, post-disaster studies should be conducted so that lessons can be learned at all phases. As experience has shown, however, human suffering and other damage do not end with the event itself. Thus research should focus on the complicated processes of recovery and reconstruction in the months and years following a disaster.

Quick decisions and strong leadership can make or break relief and recovery efforts. A real test of leadership in a disaster can lie in the time it takes for leaders to ask for help. When disaster strikes, asking for help is not a signal of weakness, it is a key trait of able leadership. That alone will inspire others in the hierarchy to ask for help. Effective coordination is what stops a disaster from becoming a crisis.

At last but not the least, as a blessing in disguise, disastrous situations make people to realize the human values in actual sense. In such situations religion can easily be kept at home where it truly belongs. Pride can be swallowed to the deepest pits of silence. Bravery can be very infectious. Warmth can spread faster than violence. Kids and students who have not gone to school and colleges due to the calamity but ran out to help have probably learned the best lessons of their life. It can be observed that sometimes society can function beautifully with least governance.

References

1. Basic Reading Material of the National Training Programme by NIDM-
2. Basics of Disaster Management by Center for Disaster Management and Studies
3. Gujarat Earthquake, January 2001 – lessons to be learnt, Dr. K.L. Walls & I. Mujoo
4. Himachal Pradesh State Disaster Management Plan 2017
5. Hindustan Times Archives
6. The Tribune Archives
7. Times of India Archives