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# An Overview of Disaster Management in Baddi Barotiwala Nalagarh (BBN) Region of Himachal Pradesh

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***Abstract:***
*Baddi Barotiwala Nalagarh (BBN) Region is the one of the biggest industrial hub of Himachal Pradesh. It is located near the Shivalik foot hills. This leading industrial belt of Solan district is spread approximately in 770 acres. It is situated near the borders of Punjab and Haryana and has a plain geographical area. BBN industrial area is prone to geologically related disasters like to earthquake, flash flood and land erosion. Further, it is prone to chemical and industrial disasters such as industrial fires, gas and chemical leakages. Large scale construction has created problems such as cutting of trees and digging of local rivers for sand and stone. In addition, the level of underground water is going down and water is getting polluted due to large number of industries mainly due to pharmaceutical industries. The industrial pollution in the region is leading to various diseases relating to skin, lungs, heart, brain, liver, irritation in eyes etc. Several of the manmade actions may lead to a big natural disaster in the region. It is in this backdrop that this paper seeks to have an overview of disaster management in BBN Region. In particular, the paper studies the probabilities of incidents of disaster in this region along with the responses from the government and other agencies. The paper also attempts to analyse the disaster preparedness of the various agencies and offer suggestions for strengthening the same.*

## 1. Introduction

Twenty years back BBN area was an underdeveloped and backward area of Himachal Pradesh with low population. In the recent past, this belt has become one of the favourite destinations for many industries. The industrial development in this region brought lots of changes in this belt such as construction of roads, bridges, hotels, shops, malls, houses, educational institutions, hospitals and various other institutions and development of other infrastructure **[**Common Effluent Treatment Plant (CETP), Solid Waste Management Plant/ Treatment Storage Disposals**,** Truck Parking, hostels for workers] to support the growth of industries. One of the important factors, which have the potential to impact this development story, is the disaster management. It is significant to note that due to topographical, metrological and geological variability across the state the incidence of cloud bursts, flash floods, avalanches and other natural calamities hit the State often. In the disaster prone map of the country, Himachal Pradesh has attained its position among first five states in respect of hazards such as earthquakes, flash floods, landslides, avalanches and forest fires.

## 2. Objectives of the Study

*2.1. With a view to comprehensively undertake study on the subject matter under consideration, the following objectives were formulated:*

- To have an overview of disasters in Himachal Pradesh
- To study the salient features of the Disaster Management Policy of Himachal Pradesh
- To explore the probable causes for disasters in BBN Region
- To analyse the role of the various agencies involved in the disaster management in the BBN Region
- To give suggestions for strengthening the disaster management initiatives for the BBN Region

## 3. Research Methodology

To conduct this study researcher has used both primary and secondary methods. For this purpose, the researcher has visited, conducted interviews and held elaborate discussions with the officers of HIMUDA, Pollution Control Board, the Office of Sub-Divisional Magistrate, Superintendent of Police, Fire Office, Baddi Barotiwala Nalagarh Development Authority (BBNDA), Forest Department, Tehsildar of Baddi and Nalagarh etc.. The secondary data was collected from government documents, newspapers and relevant internet sites. In addition, observation method was also used as a tool of data collection. The data thus collected has been analysed primarily by employing qualitative techniques.

*3.1. Limitation of the Study*

The biggest limitation for the study was the scarcity of the available information as well as data in the various government departments.

*3.2. Disasters in Himachal Pradesh*

To look into the various cases of disaster in Himachal Pradesh, it is important to understand the meaning of disaster, which is a sudden accident or a natural catastrophe that causes great damage or loss of life. Disaster may be manmade or natural, but it is sure that disaster will led to many tribulations in the area. There are various types of disasters

3.2.1. Natural Types of Disasters

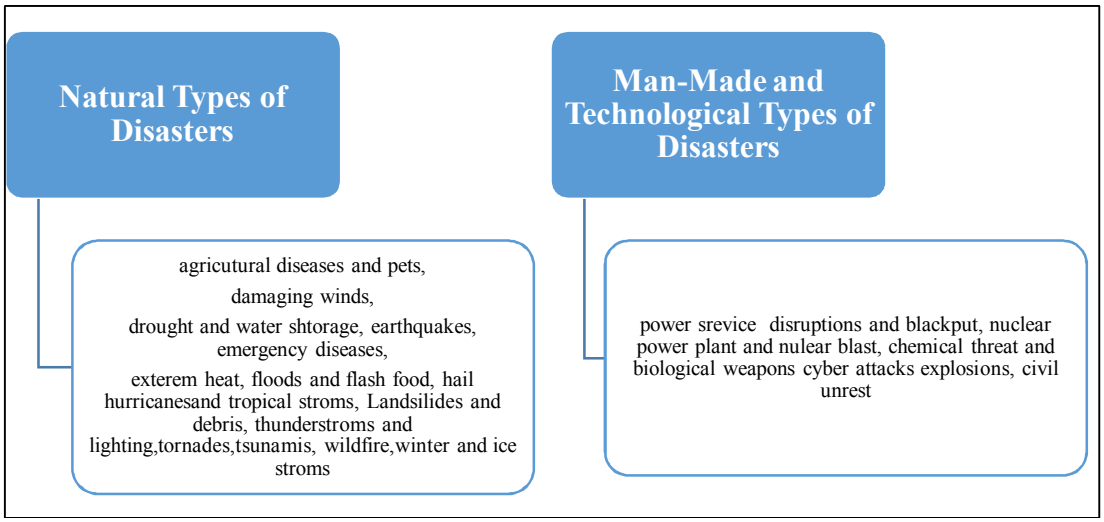


*Figure 1*

Himachal Pradesh is vulnerable to 25 out of 33 types of hazards identified by the High Powered Committee (HPC) of Government of India and categorized into 5 sub-groups. Apart from identified hazards by HPC, the state is also confronting the emerging threats of climate change and man and animal conflict.

Water and Climate Related Disasters: 1 Floods 2 Hailstorm 3 Cloud Burst 4 Heat Wave and old Wave 5 Snow Avalanches 6 Droughts 7 Thunder and Lightning. Geologically Related Disasters: 1 Landslides and Mudflows 2 Earthquakes 3 Dam Failures/ Dam Bursts Chemical, Industrial and Nuclear: 1 Chemical and Industrial Disasters 2 Nuclear Disasters Specific to industrial belts (Nalagarh, Mehatpur, Baddi-Barotiwala, Kala-Amb and Paonta Sahib) Accident Related Disasters: 1 Forest Fires 2 Urban Fires 3 Major Building Collapse 4 Serial Bomb Blasts 5 Festival related disasters 6 Electrical Disasters and Fires 7 Air, Road and Rail Accidents 8 Boat Capsizing 9 Village Fire Biologically Related Disasters: 1 Biological Disaster and Epidemics 2 Pest Attacks 3 Cattle Epidemics 4 Food Poisoning Emerging Threats-Climate induced Hazards: Glacial Lake Outburst Floods (GLOF) Landslide Dam Outburst Floods (LDOF) Flash Floods [1].

Table mention below has shown hazards and threats (Earthquake, Landslide, Floods, Avalanche, Forest Fire, Drought and Cloud Burst) in various districts of the Himachal Pradesh according to the ecology and geology with large variation in physio-climate conditions.

| 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 and Spiti | M | M | M | VH | M | M | H |
| Shimla | VH | H | H | M | H | M | H |

*Table 1: District-wise Hazard Threat in Himachal Pradesh*
*Source: Himachal Pradesh State Disaster Management Plan 2012*

**VH means Very High**

- **H- means High**
- **M-means Medium**

Map shown below has divided all districts of state in three zones according to porn to earthquake.

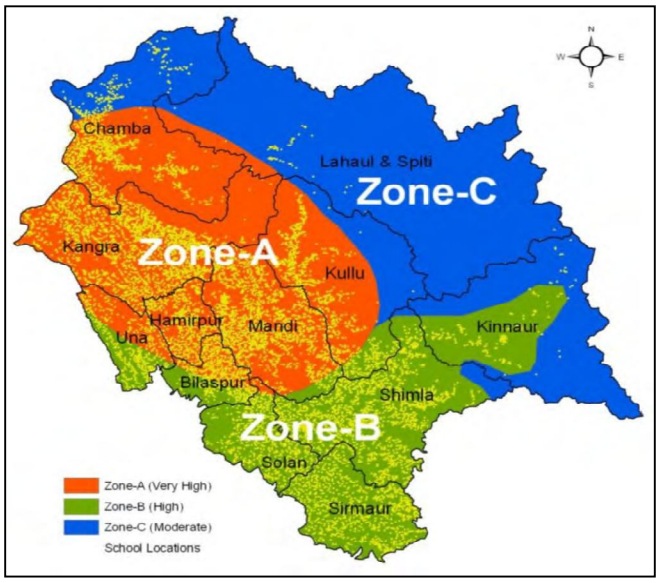


*Figure 2*
*Source: Himachal Pradesh State Disaster Management Plan 2012*

The Kinnaur earthquake of 1975 was associated with transverse Kauirik 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 considerately 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 earthquake intensity maximum of MSK IX or more. The remaining districts of Lahaul and Spiti, Kinnaur, Shimla, Solan and Sirmour lie in Zone lV i.e. the areas in this zone are in high damage risk with expected intensity of MSK VIII or more. The spatial distribution and district wise history of past seismic events is given as below:

| Ser.no | **District** | **Number of earthquakes** | **Percentage of Total** |
|---|---|---|---|
| 1 | Chamba | 186 | 33.63 |
| 2 | Lahaul and Spiti | 99 | 17.90 |
| 3 | Kinnaur | 93 | 16.82 |
| 4 | Mandi | 53 | 9.58 |
| 5 | Shimla | 49 | 8.86 |
| 6 | Kangra | 39 | 7.05 |
| 7 | Kullu | 19 | 3.44 |
| 8 | Sirmaur | 8 | 1.45 |
| 9 | Solan | 4 | 0.72 |
| 10 | Hamirpur | 2 | 0.36 |
| 11 | Bilaspur | 1 | 0.18 |
| 12 | Una | 0 | 0.00 |
| | Himachal Pradesh | 553 | 100 |

*Table 2: District-wise occurrence of Earthquakes (1800-2008)*

Disaster Management Plans even though available as office documents yet are not practical and useful at the time of crisis.

*3.3. Himachal Pradesh State Disaster Management Plan 2012*
As described in the previous section, the State of Himachal Pradesh is highly vulnerable to various natural and man induced disasters. This coupled with vulnerability factors like limited awareness on disaster risk reduction; inadequate preparedness and improper planning have contributed significantly to the increased risk to the people. It is certainly possible to reduce the potential impact of disasters by evolving appropriate preparedness, preventive and response plans. Risk identification and assessment constitutes the first step in developing the State plan.[ii]

*3.4. Flash Flood*

Flash flood is the most frequent and damaging floods that occur with little or no warning causing immense loss to life and property. Flash Floods usually takes place when rapidly rising and flowing surge of water reaching full peak within few minutes is generated as a result of excess rainfall or failure of impoundment.

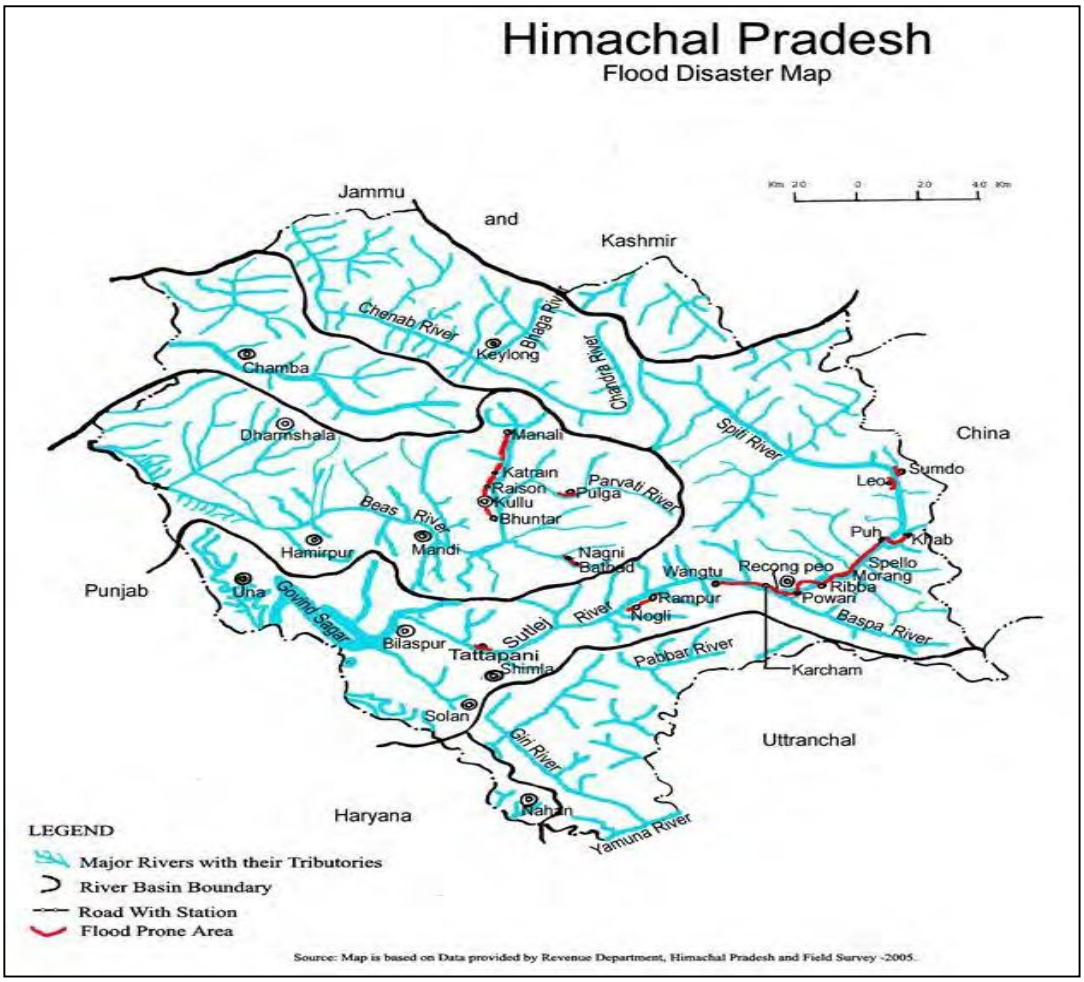


*Figure 3*

The major causes that are responsible for floods and flash floods in the state of Himachal Pradesh are: Cloudburst in upper catchments of the river, Excessive rainfall in the catchments, Melting and Bursting of glaciers due to global warming, Sudden breach or failure of manmade or natural barriers. Change of river course, Landslides triggered due to slope failure or tectonic movements leading to LDOF phenomena.

Over 40 incidents of flash flood and cloudbursts occurred in Himachal Pradesh in the last 12 years and over 35 were feared dead. In August 1994, the Manimahesh cloudburst and flash flood washed away almost the entire length of Chamba-Bharmour road (62 km), over 50 people feared dead, and 2000 injured. The estimated loss was over 450 crore of Rupees. 1997 again saw a heavy flash flood in Maglad in Rampur tehsil of Shimla district. Some of the major flash floods reported in the State are as follows:

| Year | Location | Official Damage |
|---|---|---|
| July 2000 | Satluj River, Kullu, Mandi, Kinnaur, Rampur | 140 dead, 400 shifted, 12400 sq km. Affected |
| August 2001 | Chamba | 16 dead, 3010 sq km affected |
| July 2003 | Gadsa valley – Kullu | 35 dead |
| August 2004 | Satluj river, Kinnaur, Shimla, Kullu, Bilaspur | 3500 people and 56 villages evacuated |
| June 2005 | Parchu lake, Kinnaur, Rampur | 5 bridges damaged, 50 houses submerged |

*Table 3: Major Flash Floods in Himachal Pradesh*


*Figure 4: Forest Fire*

Forest fire is a major cause of degradation of forest. With increasing population pressure, the forest cover of the country is deteriorating at an alarming rate. The forests of the Himachal Pradesh are more prone to forest fire compared to forests in other parts of India due to various biotic and geographic reasons. In Himachal Pradesh the recorded forest area is 10, 46900 hectares, of which around 9, 74800 hectares cropped area is fire prone. In Shimla district around 69 percent of the total area have a history of forest fires and in districts of Chamba, Lahaul Spiti and Kinnaur it is 44.9 percent of the total area experience forest fires in summer and 20 percent area is prone to frequent fires.

About 90 percent of forest fires are due to intentional or unintentional human interventions. In state like Himachal, forest fires also have a close link with livelihood. People residing within forests or nearby areas are dependent on forests for their source of income and for day to day fuel requirements. At times they ignite forests for collection of forest produce or for improving the productivity. Some fires are caused due to poor knowledge and the negligence of the people. Throwing burning cigarettes and cooking food in the forest are such causes of forest fire. Remaining 10 percent of forest fires are due to natural processes such as lightning, increase in temperature during summer etc.

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

| Year | No of incidences | Areas affected (ha) |
|---|---|---|
| **1995** | 1669 | 57143 |
| **2000** | 1900 | 36887 |
| **2001-02** | 301 | 5719 |
| **2002-03** | 282 | 4204 |
| **2003-04** | 550 | 9896 |
| **2007-08** | 580 | 7810 |

*Table 4: Forest Fires Affected Area in the State*

| Year | | No. of Fire Cases | | Kind of Area Affected by Fire (in ha) | | percentage of Fire Prone Area |
|---|---|---|---|---|---|---|
| Chil | | Plantn. | | Others | | Total |
| **2007-08** | 580 | 3104 | 1997 | 2708 | 7810 | 1.80 |
| **2008-09** | 572 | 2768 | 2015 | 1801 | 6586 | 1.52 |
| **2009-10** | 1906 | 13602 | 4054 | 7193 | 24849 | 5.73 |
| **2010-11** | 870 | 4308 | 1446 | 2082 | 7837 | 1.81 |

*Table 5: Forest Fires Affected area during the Last 4 Years*

*3.5. Industrial Hazards*

The state has concentrated industrial pockets in Solan, Sirmour, Una and Kangra districts which render the area vulnerability to the industrial hazards. As of 2010-2011 the state has about 6069 small, medium and large units operating in the state.

Out of which the units categorized to be falling in red, orange and green categories are 947, 2443, 2652 respectively**.**

| Sr. No. | Description | Small | Medium | Large | Total |
|---|---|---|---|---|---|
| **1** | 008 - Aluminum Smelter | 4 | 1 | 1 | 6 |
| **2** | 012 - Asbestos and Asbestos Products | 0 | 0 | 1 | 1 |
| 3 | 027 - Bulk Drugs and Pharmaceuticals | 13 | 1 | 3 | 17 |
| **4** | CTP - C.E.T.P. | 1 | 0 | 0 | 1 |
| **5** | 031 – Cement | 12 | 4 | 12 | 28 |
| **6** | 032 - Chemical Fertilizers (Phosphoric, other than Single Super-Phosphate) | 1 | 0 | 0 | 1 |
| **7** | 033 - Chemical Fertilizers (Nitrogenous) | 1 | 0 | 0 | 1 |
| **8** | CHE - Chemicals and Products | 7 | 0 | 0 | 7 |
| **9** | 040 - Copper Smelter | 2 | 0 | 0 | 2 |
| **10** | 045 – Distilleries | 1 | 2 | 3 | 6 |
| **12** | 049 – Electroplating | 22 | 4 | 1 | 27 |
| **13** | 053 - Exploration for Gas, its Production, Transportation and Storage | 1 | 0 | 0 | 1 |
| **14** | 054 - Exploration for Oil their Production, Transportation and Storage | 0 | 0 | 1 | 1 |
| **15** | 055 - Ferro Alloys | 3 | 0 | 2 | 5 |
| **16** | FOU - Foundry Plants | 2 | 0 | 0 | 2 |
| **17** | 058 - Foundries(Individual) | 2 | 2 | 1 | 5 |
| **18** | FPF - Foundry-Pit Furnace | 0 | 1 | 0 | 1 |
| **19** | 061 - Glass and Fiber Glass Production and Processing | 4 | 2 | 0 | 6 |
| **20** | 067 - Highway Projects | 6 | 0 | 3 | 9 |
| **21** | 069 - Hospitals, Clinics and Diagnostic Laboratories | 2 | 0 | 1 | 3 |
| **22** | 074 - Incineration Plants | 1 | 0 | 0 | 1 |
| **23** | 075 - Inorganic Chemical Industries (Basic Manufacturing) | 5 | 0 | 0 | 5 |
| **24** | 077 - Integrated Iron and Steel Plants | 14 | 5 | 1 | 20 |
| **25** | 079 - Integrated Paint Complexes | 1 | 0 | 0 | 1 |
| **26** | 080 - Integrated Textile Processing Mills | 3 | 0 | 0 | 3 |
| **27** | 085 - Lead Smelter | 6 | 0 | 1 | 7 |
| **28** | 088 - Lime Kilns | 5 | 1 | 0 | 6 |
| **29** | 091 - Lubricating Oils, Greases or Petroleum-Based Product | 4 | 0 | 0 | 4 |
| **30** | 094 - Manufacture of Basic Raw Materials required in the manufacture of Paints | 2 | 0 | 0 | 2 |
| **31** | 101 - Metal Finishing Industries | 40 | 4 | 4 | 48 |
| **32** | 107 - Mining Projects (Major Minerals) with leases more than 5 Hectares | 5 | 4 | 2 | 11 |
| **33** | XXR - Misc / Others (Red) | 135 | 26 | 41 | 202 |
| **34** | 111 – Newsprint | 1 | 0 | 0 | 1 |
| **35** | 115 - Organic Chemical Industries (Basic Manufacturing) | 1 | 0 | 0 | 1 |
| **36** | 121 - Pesticides | 11 | 0 | 0 | 11 |
| **37** | 122 - Petro-Chemical Intermediate SDMT, Caprolactam | 1 | 0 | 0 | 1 |
| **38** | 138 - Pulp, Paper (Based on Agriculture Residue and Wood) | 2 | 1 | 1 | 4 |
| **39** | 146 - River Valley Projects including Hydel Power | 77 | 25 | 88 | 190 |
| **40** | 155 - Slaughter Houses and Composite Meat Plants | 2 | 0 | 0 | 2 |
| **41** | 164 - Stone Crushers | 308 | 2 | 2 | 312 |
| **42** | 171 - Tarred Roads in Himalayas and/or Forest Areas | 1 | 0 | 0 | 1 |
| **43** | Tex – Textiles | 2 | 0 | 7 | 9 |
| **44** | 192 - Zinc Smelter | 2 | 0 | 0 | 2 |

*Table 6: List of Heavily Polluting Industries*
*Source: httphpsdma.nic.in*

The number of industrial accidents that took place in the last three years is indicative of vulnerability threat and risk that exists to life and property in the industrial belts.

| Year | No. of fatal accidents | No. of persons died in fatal accidents | No. of non fatal accidents | No. of persons injured in non fatal accidents | Total no. of Accidents | Total no. of persons died and injured |
|---|---|---|---|---|---|---|
| **2008** | 6 | 6 | 5 | 5 | 11 | 11 |
| **2009** | 10 | 19 | 9 | 32 | 19 | 51 |
| **2010** | 3 | 11 | 3 | 5 | 6 | 16 |

*Table 7: Industrial Accidents in Himachal Pradesh (2008-2010)*
*Source: httphpsdma.nic.in*

*3.6. Vulnerability to Fires*

Forest and building fires is 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 90percent 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 forest wealth but destroy precious flora and fauna as well. The severity of problem may be judged from the forest fire of 1995 spreading across Uttarakhand and Himachal in which direct loss incurred was to the tune of rupees 1750 million. It is apparent from the table given below that the frequency of forest and domestic fires are very high and resultant damage and loss is also considerable.

*3.7. Forest Fires Affected Area (ha.)*

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 factor contributing to high vulnerability. For instance, in certain parts of Shimla city ignition of fire at one point can engulf the whole locality. Rural villages in the state are particularly vulnerable because the construction of houses involve use of substantial quantity of timber and fuel wood as source of energy for cooking and warming. Every year there are numerous incidences of fires causing human, animal and material loss. The destruction of Malana village in Kullu and Chachawari village in Rohru area of Shimla district are the recent instances of fire hazards in the State.

*3.8. Salient Features of Disaster Management Plan of Himachal Pradesh2013*

The primary objective of mitigation efforts would be:

- To identify, delineate and assess the existing and potential risks and to work towards reducing potential causalities and damage from disasters.
- To substantially increase public awareness of disaster risk to ensure safer environment for communities to live and work.
- To reduce the risks of loss of life, infrastructure, economic costs, and destruction that result from disasters.

Prevailing risk and the vulnerabilities perception, the mitigation measures proposed have been categorized under following six major groups:

- Risk assessment
- Construction work
- Repair and maintenance
- Research and technology transfer
- Training and capacity building
- Land Use Planning and Regulations
- Resources for Mitigation

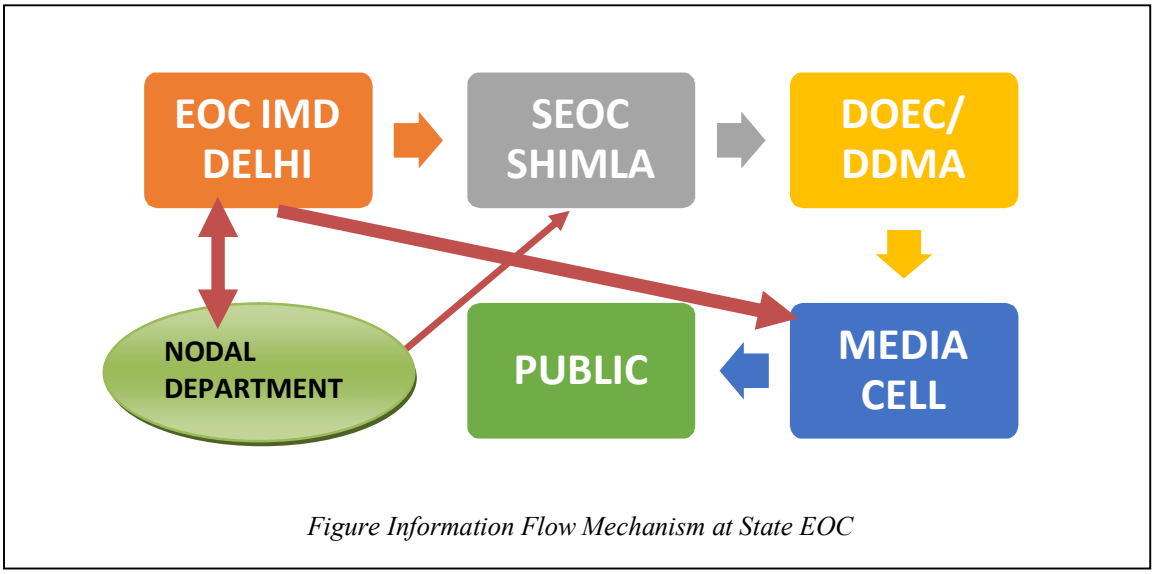


*Figure Information Flow Mechanism at State EOC*

*3.9. Disasters in BBN Region*

In the last fifteen years the real depiction of Baddi and Barotiwala and Nalagarh region has changed with the establishment of large number of industries. Industrialization process in BBN region contributed in development and on the other side it has created many

problems for people living in this area. It is true that industrialization has negative impact on the environment if the process of industries is not regulated according to the norms of the environment. Real scenario of BBN area is not under the control as we know that it is not only the hub of pharma companies and textile companies but many other types of industries are also established in this industrial belt. Till now there is no proper method of waste management and thus air pollution, water pollution and soil pollution is increase day by day. Most of the waste burnt in open places or dump in local rivers and which has raised the level of pollution in this area. Further, due to industries, population of the area has also increased, and resulted into more constructions according to their needs such as housing, shelter, market area, hospitals, schools, in the last ten years increased (trucks 2008 in 2500 and in 2014 approx. 8000 trucks, tempo (small vehicles for loading) in 2008 only 1200 and in 2014 more than 2000, except this more than 5000 cars and bikes travel on the roads of BBN) [iii] the number of vehicles lead to uncontrolled traffic and result is more accidents.

*3.10. Probable Factors that may lead to Disasters in the BBN Region*

There are many issue are coming in front of local administration with respect to the activities which will lead to the disaster in this industrial region such as:

- Construction in BBN Area
- Bricks kiln
- Mining problem
- Intensity of pollution
- Blockage of local rivers

*3.11. Construction in BBN Area*

BBN has large number of industries more than 3000, number of houses, hotels, schools, shops, market complex, roads, other supporting projects. This process of construction is going on without any check and control. Majority of the construction is legitimate and is illegitimate. It has been observed that due to lack of land availability and high cost people has started construction the blocked local rives. But this whole process affecting the soil erosion, leads to cutting of trees, mining in area etc.

*3.12. Bricks Kiln*

Rapid growth of infrastructure in BBN area has forced to brick kilns in this area and which directly related to the erosion of soil. To form a good quality of brick and reduce the transportation expenditure brick kilns are formed near BBN or in BBN area. These bricks ovens supply bricks to whole Himachal State, according to the demand, it can be observed that on and average after every three to five kilometer there is Brick oven.

*3.13. Mining Problem*

It is a very prominent issue in BBN region. Large level of construction is responsible for this activity. Illegal mining has destroyed forest area. The problem is particularly being experienced in the bordering areas of the state, including Baddi-Barotiwala-Nalagarh (BBN).[iv]

Industrial area has led to an increase in illegal mining on the Nalagarh-Ropar State Highway close to the Sarsa Bridge. The blatant plundering of sand from the DPF land on a stretch of, where crevices measuring 7 to 10 ft had developed, bore the testimony to the large scale illegal mining that was underway in Nalagarh,[v]

*3.14. Intensity of Pollution*

State environment report revealed that water quality of Sirsa, Markanda and Sukhna Nallah was D grade because of low level of oxygen due to organic pollution of industries. [vi]

Report of the Central Pollution Control Board (CPCB) detecting alarming levels of critical volatile organic compounds (VOCs) in the industrial area of Baddi-Barotiwala-Nalagarh (BBN) alarm bells have started ringing for people residing in the area. These chemicals which also include cancer emitting carcinogens have enhanced the risk of locals acquiring cancer. Besides, VOCs target eyes, skin and respiratory system, central nervous system, liver, kidneys, reproductive system and even the cardiovascular system, blood, heart and the peripheral nervous system. [vii]

Industrial pollution in this area and the appalling impacts on the local environment. While the Sarsa river, a tributary of the Sutlej, is choked with effluents, dust and bad odor due to chemical leaks have become a nuisance across the industrial area.[viii] "BBN Industrial area is another Bhopal in the making as the toxic units here are ill planned and there is no environmental infrastructure in place and most importantly the communities have no information about the hazards of industries and their complaints have always been disregarded.

*3.15. Blockage of Local Rivers*

Before ten years it was observed that in rainy seasons these local rivers had high flow of water. Now these rivers are dry nevertheless there is a chance that due high rain fall flash flood may come and this will give hug loss to the life and property of people.

The Himachal Pradesh state has a very elaborate and excellent plan for Disaster management in sate. Still administration is lacking in the implementation of plan. In BBN industrial area number of organization working for the disaster management unfortunately or

fortunately recently state government has specifically focused on the disaster management plan for BBN Region. There are forty organization are doing their efforts to formulate the plan but the question that how much time it will take to be finalized and when this plan will be implemented in BBN region. If suddenly and calamities or disaster happened then what is in the hand of government department to safe and overcome form the disaster. Still there are no training activities for doctors, health workers on emergency preparedness and response and for people living in villages of BBN area. These departments have just started their initiative towards disaster management.

*3.16. Responses of Various Department Regarding*

There are approximately fourteen government organizations are involved in the disaster management plan formulation and majority of the department are interviewed by the researcher.

HIMUDA (Himachal Pradesh Housing and Urban Development Authority)

Department is came into existence in 1992. Works according to the state policy by considering of possibility disasters in area, this organization has constructed approximately 700 flats for people in BBN Area. Once in year provide training for disaster management to their employees and provide the awareness. It has channelized the adjoining area.[ix]

3.16.1. Fire Office

Fire officers are fully trained to handle the disaster in the area they have specialized vehicle to handle the disaster. District Solan has 4 fire office out of two is in BBN Industrial area and department has sufficient manpower near about 22 employees are involved. They regularly get training to handle the accident in.

To control the accidents in industry sate government has made a rule that they will build their own fire control system (Automatic hydrant system and Air brake system) and industry has to take NOC from fir office to establish this.

Accidents in BBN reasons it is observed that in 2012 there were large number of fire accidents in Industries in a one month (in 2012) there were 64 cases of fire accidents and total 169 cases were recorded in fire office. Percentage of fire accidents is reduced in 2013 there were only 115 cases recorded in fire office and the main reasons of fire accidents in textile industry or short circuits. [x]

- BBNDA (Baddi Barotiwala Nalagarh Development Authority)

Development authority came in to existence in 2006. BBNDA take care of development activities in Baddi Barotiwala Nalagarh Industrial area. This nodal organization is a link pin to provide the funds advising and to formulate the plan. Organization is also dealing with the disaster management in Baddi. It is doing good efforts according to disaster management. BBNDA has construed approximately 4000 building in BBN area, according to them it is built according to the state Disaster management plan Like 29 departments of District Solan of Himachal Pradesh out of which eleven departments from BBN region they will form their plan for disaster management according to the need of BBN Industrial area. This plan formation work is just as a seed in air it will take time to from an effective plan because of lack of coordination and communication between various govern organization at local level, scanty data, lack of initiative and attitude of the employees.[xi]

3.16.2. Sub- Divisional Magistrate's Office

According to this department the main reasons of disaster will be mining activity, and leakage of gases from industry. The effect of the disaster will be up the 25 kilometers on radius. Beside industries BBN has gas plant and depot of oil, BBN can be another example of Bhopal gas incident and may lead to a big disaster if government administration and local people will not take right steps to supervise and control and implement the right plane at right time. Apart from this they are the changes of forest fire. To control the fire accidents and to converting as a disaster industries has to take NOC from fire office regarding the set up of fire control mechanism during the construction of industry. But only few industries go for this many micro level and small scale industries still not have proper fire control system. There was an incident of flash flood in 1974-75; many people died who were living at the bank of the Sirsa River in BBN area. People doing mining activity are not strictly following mining rules. Mining percentage is increases because of high construction in BBN area and in neighboring states (Punjab and Haryana). This increased level of construction forces to illegal mining. We need to understate the balance growth. In Water level is going down. Maximum work is on papers.[xii] Pollution in water will create many diseases in people and this may transfer to one generation to another generation and lead to biological disorders in people living in BBN area.

The fact is this that changes are the law of nature and positive growth mandatory for continuous development of area. People cannot run off from their homes and their jobs. Therefore it is `significant balance the activities of not to disturb the natural resources. Majority of the people's activities lead to natural disaster.

If the various activities will not be controlled at right time this would lead to imbalance in the environment. It is very essential to check the various activities of various organizations to give a healthy environment for coming generations. To save the environment is not the responsibility of single department but all government and non government organizations and people living in the area are responsible to save the environment.

*3.17. Suggestions*

- Implementation of disaster Management Plan: till now there is no strict actions have been taken towards the disaster management plan. As we know that BBN is an industrial area and there may have any accident in industry which will create a disastrous picture of this region for many years like Bhopal Gas Disaster. Majority of departments are working on papers and in reality picture is different. Implementation is only possible if there will be true team work and dedication for the safety of people living in this area.
- Awareness in people: There should be regular awareness programs for people focusing on disaster management. Youth is the strongest pillar to bring change in society and should play active role to spread awareness in villagers especially because this area left untouched by various officials due to time limit and over work.
- Plantation of trees: due to huge construction number of tree has been reduced in this area; there are no parks and gardens for people living in this area. Plan for Plantation is not successful In BBN region due to internal politics in various department/ unwillingness of local people.
- People participation: People participation should be done for the plan formulation and implementation so that there interest and awareness regarding environment can be enhanced and plan will be implemented within the time limit.
- Effective supervision: effective supervision is required on the various activities regarding construction works in BBN Industrial region.
- Attitude of officials: Government employees and local leaders need to change their attitude towards public.
- Approval for the construction is done on the basis of rain harvesting similarly construction should be done on the basis of tree plantation.
- There should be separate office (team) for disaster management which will work in BBN Industrial area.
- Ego clashes have created the biggest problems in the way of development. Thus people need to generate the sense of belongingness with their locality, organization and brother hood, and then only better plans formation and implementation can be possible.
- Continuous participation of NGOs: Role of NGO is very vital to provide the awareness and training to local people but still this role is missing in this area. Biggest reason behind is that there NGO continuously working for this cause.

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