

Human Interventions results in Devastating Natural Disasters: A Review with special reference to Uttarakhand Calamity and Kerala Floods

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Abstract:

Disasters are not bound by any geographical, social or political boundaries. India falls in such a geo-climatic zone where there are always risks of various types of calamities, due to which a number of population may be adversely affected. Socio-economic vulnerability of people adds more to the agony of these natural or man-made calamities.

Uttarakhand is a North Indian Himalayan state very rich in ecological wealth and diversity. It is also a popular centre for religious tourism. The region is also known for the disasters like, flash floods, avalanches, landslides, earthquakes, hailstorms, etc. which results in loss of life, property and ecosystems in the area. Similarly the South Indian state Kerala suffered a severe flood due to unusually high rainfall very recently. It was the worst flooding in the state in last hundred years. In addition to natural factors, unscientific development, faulty housing practices and land-use patterns, poor socio-economic conditions, increasing population, tourism pressure and human negligence are some of the human-induced factors involved in these calamities.

Key Words: geo-climatic, heavy rainfall, flash floods, vulnerability, unscientific development.

Introduction:

Disasters are the sudden events or series of events which has potential to cause huge damage or loss of life, property and ecosystem to such an extent which is much beyond the normal capacity of the affected community to cope with.

According to The Disaster Management Act, 2005 disaster is “*a catastrophe, mishap, calamity or grave occurrence in any area, arising from natural or man-made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of property, or damage to, or degradation of, environment and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area*”.

Disasters can be natural like, earthquakes, tsunamis, floods, cyclones, avalanches, cloudbursts, landslides, etc. and some man-made disasters like, nuclear accidents, industrial accidents, chemical and poisonous gas release, oil spills, etc. In some calamities, both- natural and human- induced factors are involved.

In the span of last four decades India has been hit by more than 400 major disasters causing enormous loss of life, infrastructure, property and ecosystems. Floods, droughts, earthquakes, cyclones, storms are frequently occurring calamities in India.

Vulnerability of population is one of the most significant factors leading to more damage. The geo-climatic condition, topographic features, poor socio-economic conditions, less availability of resources, high population density, unplanned development, inadequate forecasting, etc. are some major reasons for the high vulnerability of population. As per study around 2% national GDP is lost on these disasters.

Hybrid Disasters:

Some natural disasters are combined with human induced factors resulting into more impact; these disasters can be termed as hybrid disasters. The occurrence of these kind of disasters are increasing in modern times due to tremendous growth in population, unscientific development and many other unplanned human activities and above all unending human greed. Mumbai floods in July, 2005 and Uttarakhand calamity in June, 2013 are some examples of few major hybrid disasters in recent past. Kerala floods in August, 2018 is yet another calamity added to the list recently.

Uttarakhand Calamity - 2013

Uttarakhand is a Himalayan state of India. Himalayan ecosystems are represented by mutual existence of living and non-living components. The non-living components mainly include glaciers, snow clad mountains, perennial rivers, deep valleys, etc. Himalayas are considered to be youngest mountain chain on the earth and undergoing tectonic processes which makes these giant mountain ranges most fragile ecosystems in the world. This makes it highly vulnerable to natural hazards like earthquakes, landslides, floods, avalanches, extreme snowfall and rainfall. The Himalayan region has a history of natural disasters leading to loss of life, property, ecosystems and natural resources.

On 16th and 17th June, 2013, this state and the neighborhood experienced exceptionally heavy rainfall. The rains were so extreme that it caused havoc in the upper catchments and downstream flood plains of the major rivers, Ganga and Yamuna and their tributaries like Alaknanda, Mandakini and Bhagirathi rivers. Alaknanda valley and Mandakini valley are known for its landslides almost every year during monsoon seasons. Around 315 mm of rainfall was recorded in Kedarnath in 24 hrs; and this was the time when snow was still there on the ground. The extreme rains and the resultant snowmelt caused heavy flooding and the overtopping of Chorabari lake resulted in huge flash floods in which the towns of Kedarnath and Rambara were washed away. Huge volume of water and with high velocity carrying sediments, stones, rocks, sand and debris also lead to several landslides and toe erosion of slopes. This further lead to breaching and collapse of roads and highways and washed away many bridges. This region is also known for its spiritual

tourism as number of temples and shrines like Kedarnath, Badrinath and Hemkund Sahib etc, are there. This particular hazard coincided with the period when thousands of pilgrims visit there for Chardham Yatra and also for eco-tourism.

This calamity in combination with some human- induced components lead to severe loss of life, property, infrastructure and natural ecosystems of the region.

Causes:

The Uttarakhand disaster is expressed in many ways. Some experts feel that it's a natural disaster and sometimes they term it as, Himalayan Tsunami. Some other experts and even some media call it as man-made disaster on the basis of human induced component in it. In this review paper it is called a hybrid disaster as the author feels that both, natural and man-made factors are responsible for the great destruction.

Natural Causes: There was heavy to very heavy rains on 16th and 17th June, 2013, in the state of Uttarakhand. This abnormally high rain has been associated with the fusion of westerlies with the monsoonal cloud system.

Because of melting of ice-caps and glaciers due to high temperatures in May and June, the rivers of this region are already swollen. The heavy rainfall resulted in the fast melting of the Chorabari Glacier, which led to heavy floods in Mandakini river.

Human-induced Causes: Impacts of the disasters are intensified more when natural causes are coupled with the man-made factors. Human factors like, unscientific development, wrong land-use pattern, poor socio-economic conditions, deforestation, high density of population, increasing tourism pressure, lack of preparedness, etc are some vital factors.

Kerala Floods- 2018:

The recent Kerala floods resulted in about 400 deaths and left over 3.14 lakh people homeless and in the relief camps. The obvious reason for the devastating floods was the intense rainfall, higher level than the normal, which though was not unprecedented at all. Kerala has occasionally experienced intense rainfall earlier too, but never this level of flooding or landslides. The Western Ghats Ecology Expert Panel (WGEEP) in its 2011 report had recommended that several areas in Kerala which come under Western Ghats should be classified as ecologically sensitive. However, the state government had opposed the panel's recommendations. Environmentalists claimed that the floods and landslides in Kerala is also a man-made (hybrid) disaster as illegal constructions on river beds and unauthorized stone quarrying contributed to the calamity. The existence of illegal stone quarries and large number of unauthorized constructions on river

beds makes it a man-made calamity when intense rainfall and human intervention have made it a serious disaster.

Causes:

Natural Causes: Kerala received a very heavy rainfall, which was about 250% more than usual rainfall in the state. In the first 24 hours state received about 310 mm of rain. That led the water level of dams rise to overflow, which resulted in flooding in local low lying areas. Most of the regions affected by this calamity were once classified as ecologically-sensitive zones (ESZs) by the Western Ghats Ecology Expert Panel (WGEEP).

Human-induced Causes: For the first time in the history of Kerala large number of dams were opened at a time. 35 out of 54 dams were opened as they started overflowing. All five overflowing gates of Idukki dam were opened at the same time.

According to environmentalists, the Western Ghats Ecology Expert Panel's recommendations were strong enough to protect the sensitive Western Ghat region. But the Kerala government rejected the panel's report and did not adopt any of its recommendations. That is a negligence on the part of state government. It is pointed out from the findings that quarrying is a major reason for the mudslides and landslides. Irresponsible Environmental policy is a major cause this calamity. Deforestation is another reason for more destruction. Idukki and Wayanad are considered to be most densely forested districts in the state. However, both the districts have a decline in their forest cover by the end of 2017. The estimated reduction in forest cover in Idukki district is 20.13% and that of Wayanad district is around 11% reduction.

Conclusion:

The correct knowledge of environmental systems and processes, topographical conditions of the area the key factors in the management of disasters, particularly the hydro-meteorological disasters. Natural process cannot be avoided but the impacts or the consequences can certainly be lower down by avoiding human factors. Unscientific development, wrong land-use pattern and many other human practices coupled with irresponsible environmental policies can turn an ordinary event into a calamity. Disaster management preparedness has to be strengthened by proper training and resources and also the socio-economic conditions of the vulnerable population should be improved. It's very essential to maximize the ability of the regions to cope with disasters at all levels by integrating disaster risk reduction into development.

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