
Disaster and Large-Scale Population Displacement: World and Indian Scenario

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Abstract: Displacement arising out of environmental disaster is not a new phenomenon around the world. World has experienced a series of devastating natural disasters in the last decades taking lives of hundreds of thousands of people, displacing millions, and decimated the built environment. India has also been subject to several environmental hazards such as flood, cyclone, cloudburst, landslide, etc. forcing millions to migrate away from their original place of habitation. This paper highlights the various disaster related displacement around the world and India. The data used in this study is secondary in nature and collected from the journal articles, newspaper reports, reports from various national and international organizations. The result of the study is represented with the help of Microsoft excel, and ArcGIS 10.4.1 is used to spatially depict the distribution of various disaster-prone areas of India.

Keywords: Disaster, Hazard, Displacement, Migration, ArcGIS

1. INTRODUCTION

Man has always been subject to natural disasters over which he has little control. Most people would include volcanic eruptions, earthquakes, landslides, tornadoes, hurricanes and cyclones; storm surge floods draughts, blizzards and forest fires in a list of environmental hazards. It is worth emphasizing that many of these only becomes hazards because man elects to use areas susceptible to these natural phenomena; this applies especially to earthquakes and floods. When the natural hazards pose great damage to life and property of human as well as animals then it can be termed as disaster.

Forced displacement for the environmental reasons is not a recent phenomenon. Scarcity of land resource and environmental degradation has led to waves of out migration throughout the history. Three million people fled the dust bowl of 1930s, whilst 700000 mostly poor black people departed to northern states following the Mississippi delta flood of 1927. Their decision as many instances reflected a combination of pressure and aspiration. Due to the degradation of original environment due to disaster, large scale displacement takes place either temporary or permanently. However, there are many disasters that are generated out of anthropogenic activities of human beings itself. The unsustainable practice of man has complicated the natural environment that often tends to fuel large-scale population displacement.

When we will look at the figures for displacement in India, we will be astonished to notice that the India is home for highest number of people displaced due to events of disaster. Indian is one of the consistently disaster facing country in the world. The disasters arising out of both natural cause and anthropogenic cause have compelled the large-scale movement of people away from their original habitation. The greatest example of disaster induced displacement in India is Bhopal Gas Tragedy. The displacement occurring due to flood in the Koshi river is another example. Though the displacement is temporary but the havoc it creates is devastating. There are numerous examples of disaster induced displacement from India. In the Himalayan mountainous region people have unsustainably plundered the natural habitation which is now paying off in frequent landslides, cloudburst etc. It can be now easily said that there is a serious relationship between environmental disaster and displacement all-round the globe. It is the prime objective of this paper to highlight these relationships.

2. MIGRATION (DISPLACEMENT)

Movement over territories is a characteristic feature of all human population irrespective of their stage of development. United Nation defines migration as a form of change in residence of population from one geographical location to another [1]. It may be either temporary or permanent. For the determination of migration by a people or

population census of India uses data of birth place. If a person is residing at a place other than his birth place then he is termed as a migrant [2]. Gosal (1961) says that the migration is not just the shift of people's residence from one place to another but the migration is an instrument of cultural diffusion and social integration which yields more meaningful redistribution of population. [3] According to Smith (1960) there are three-fold impact of migration. First on the area of out migration, second on the in-migration and third on the migrant itself. He has rightly remarked that the area of in-migration, out-migration and migrant himself never remains the same [4].

There is always a misconception about use of term refugee and migrant and most often people use these both terms synonymously. The people who are leaving their place of original habitation due to change in climate of environmental factors cannot be termed as refugees. United Nation's 1951 convention and 1967 protocol have made classification regarding status of refugee. It says that this term refugee should only be used for those who have left or fled away from the original habitation owing to a well-founded fear of prosecution on the name of race, religion, nationality, association with particular social and political groups, and such persons who are unable to get protection in their own countries. In this paper migration and displacement is used synonymously.

3. ENVIRONMENTAL MIGRANT (DISPLACEMENT)

Next question arises about "environmental migrants." How to categories these people? Jeff Crips of UNHCR have given definition that "people Who are displaced from or who feel obliged to leave their usual place of residence because their lives, livelihood and welfare have been at serious risk as a result of adverse environmental, ecological or climatic process.

First coined in 1970 by Lester Brown of the World Watch Institute, environmental refugee become popularized in 1990. It is increasingly used despite having no agreed definition in international law and never have formally endorsed by United Nations. Essam El-Hinnawi in the United Nations Environmental Programmes publication of same have provided a comprehensive study on the term "Environmental Refugees" in year 1985 [5]. He opined that, these people are forced to leave their original or traditional habitation for a short period of time or permanently due to extreme "Environmental disturbance" (natural and/or triggered by human activities) that disrupts their existence and/or seriously affect their quality of life. "Environmental disruption" is associated with any physical, chemical and/or biological changes in the ecosystem (or resource base) that renders it, temporarily or permanently unsuitable to support human life. Furthermore, he stressed that people who are displaced due to the reasons arising out of political and civil matters and migrants who are leaving their original habitation in search of better job opportunity and better quality of life which is purely on economic grounds are not considered as environmental migrants.

In 1985, UNEP in one of its report categorized environmental migrants into three broad categories [5]. First, the people who are temporarily displaced due to an environmental disturbance. Once the disruption or intensity gets normalized people returns back to their original location. This is usually situation arising out of natural hazards such as earthquake, cyclone etc. for example Tsunami of December 2004, Bhopal Gas Tragedy, Cyclone Feni, Hurricane Katrina etc. The second category includes migrants who are permanently moves to other places. They are displaced due to large scale disruption in their place of habitation. For example, people who are relocated for building reservoirs, dams, industrial units, mining, etc. The third category of migrants is those who leave their places in search of better life and livelihood. They are forced to do so because in their original place the resource base which supports their income or livelihood are disturbed to such an extent that they cannot support their sustenance. Moreover, they do not have such huge capital to invest them to reclaim their degraded land (example-salinized land, water logged land etc.).

4. DISASTER INDUCED DISPLACEMENT AROUND THE WORLD

Since 2008, an average of 26.5 million people has been continuously displaced or forced to migrate due to environmental disaster every year. Nearly 20 million people forced to flee their home due to flood, storms, earthquakes and other natural disaster globally in 2014, a problem likely to get worsen due to negative impact of human activities on environment. Asia is particularly more prone to natural disaster. Almost 90% of the total people who are forced to leave their land due to environmental cause is from China, The Philippines and India.

According to a report by IDMC, it has been observed that there is significant rise of 60% in the migration rate due to environmental issues or calamities than what was in 1970s.

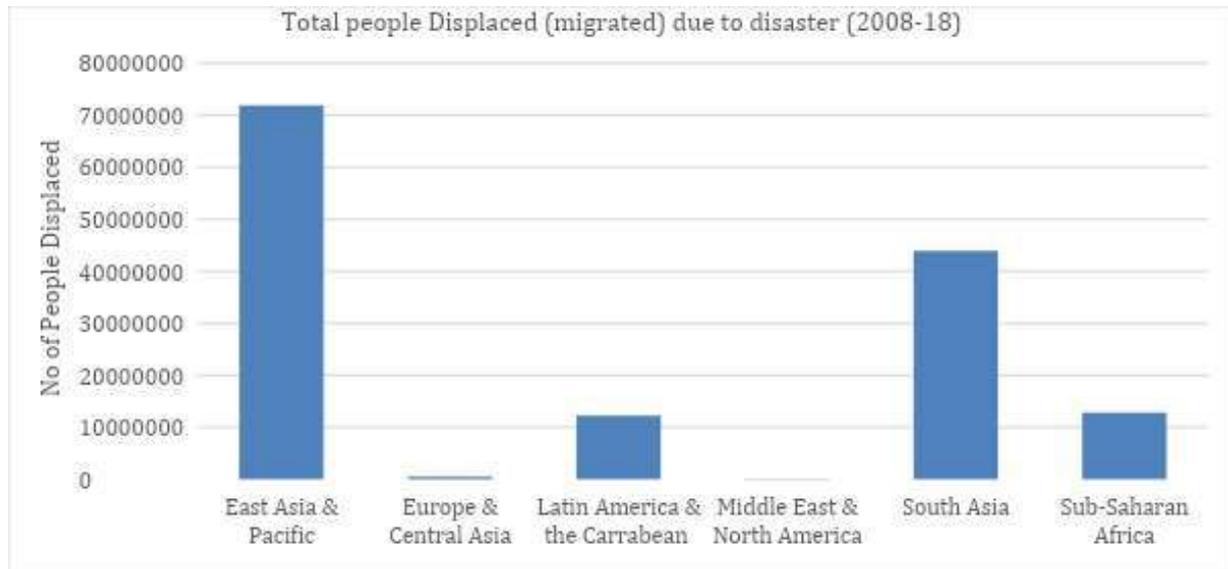


Chart -1: Total people displaced (migrated) due to disaster between 2008-2018

Source: Internal Displacement Monitoring Centre (IDMC) [6]

The Intergovernmental Panel on Climate Change (IPCC) report which won Noble Prize of 2007 has highlighted the effects of climate change on humans. The report says that the greatest effect of climate change on human life is the migration of millions of people due to shoreline erosion, coastal flooding and agricultural disruption [7]. In February 2008, the deputy High Commissioner of Human Rights stated that “By 2050, hundreds of millions more people may become permanently displaced due to rising sea level, floods, drought, famine and hurricanes. The melting ice sheets alone threaten the home of 1 in every 20 people. Increased desertification and alteration of ecosystem by endangering community’s livelihood needs are also likely to trigger large population displacement.” Norman Myers in his report have presented the possible outcome of global warming and climate change. He projected that by 2050 there would be 150 million environmental refugees by all causes. This would be 1.5% of the then world population in comparison to present day’s 0.2% [8].

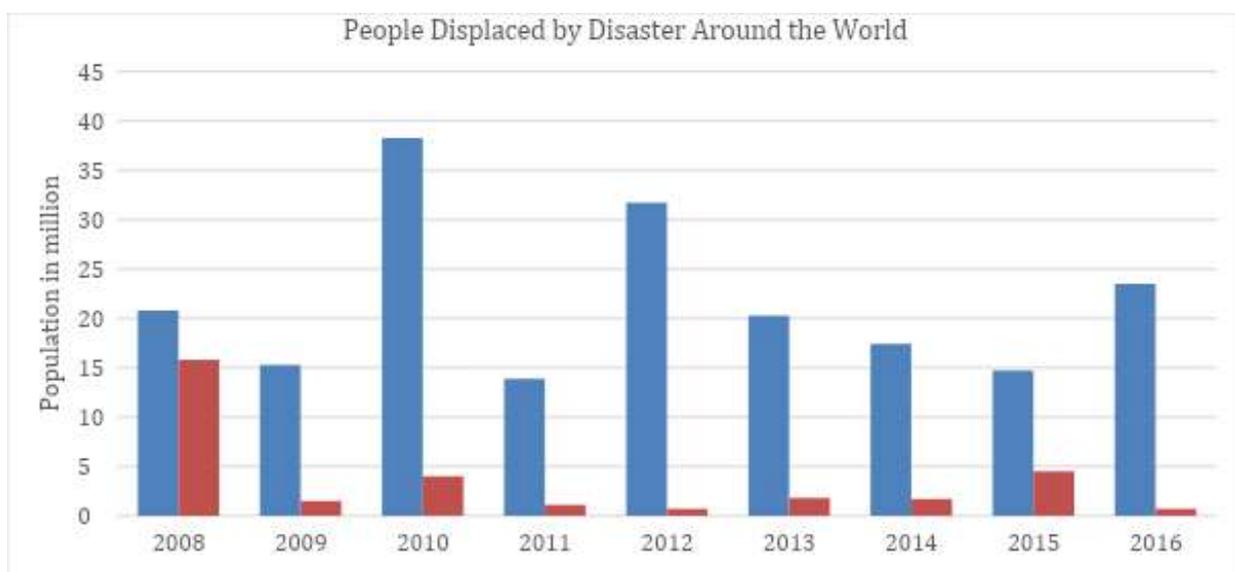


Chart- 2 People Displaced by disaster around the world between year 2008 and 2018

Source: Internal Displacement Monitoring Centre[6]

By 2099 the earth would be 1.8 to 4°C hotter than today. This will change the climatic zones. The drought prone areas of the world will increase by 2% to 10% by 2050. There will be change in rainfall pattern, and hydrological cycle would be more intense which create situation of intense and frequent drought, storms, flood, cloud burst, landslides, etc. It is estimated that south Asian monsoon will become stronger upto 20% and eastern India and Bangladesh will face severe catastrophe. In 2016, 23.5 million people all round the globe were displaced by the weather-related phenomenon. When it comes to the weather-related phenomenon and displacement, flood is most responsible phenomenon. China is the most vulnerable and affected country in the world by disasters. More than 74 lakhs people were migrated temporarily or permanently due to weather related disasters in 2016 [6]. When we look at the past few years, we can find that India have also faced severe damage by flood. In 2016, more than 24 lakhs people were displaced or migrated from their original place of habitation.

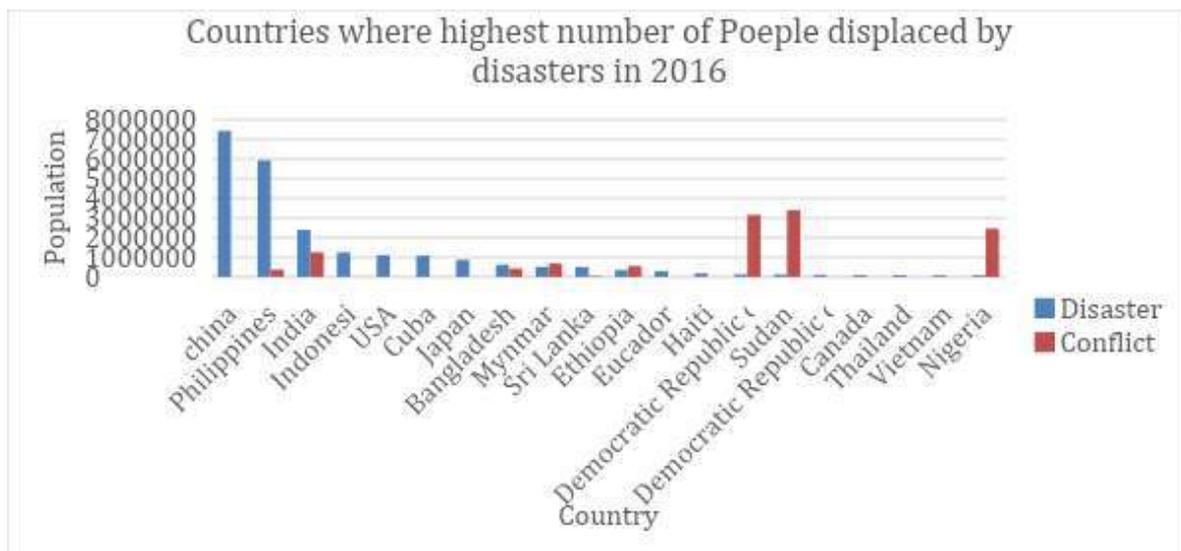


Chart- 3 countries where highest number of people displaced by disasters

Source: IDMC [6]

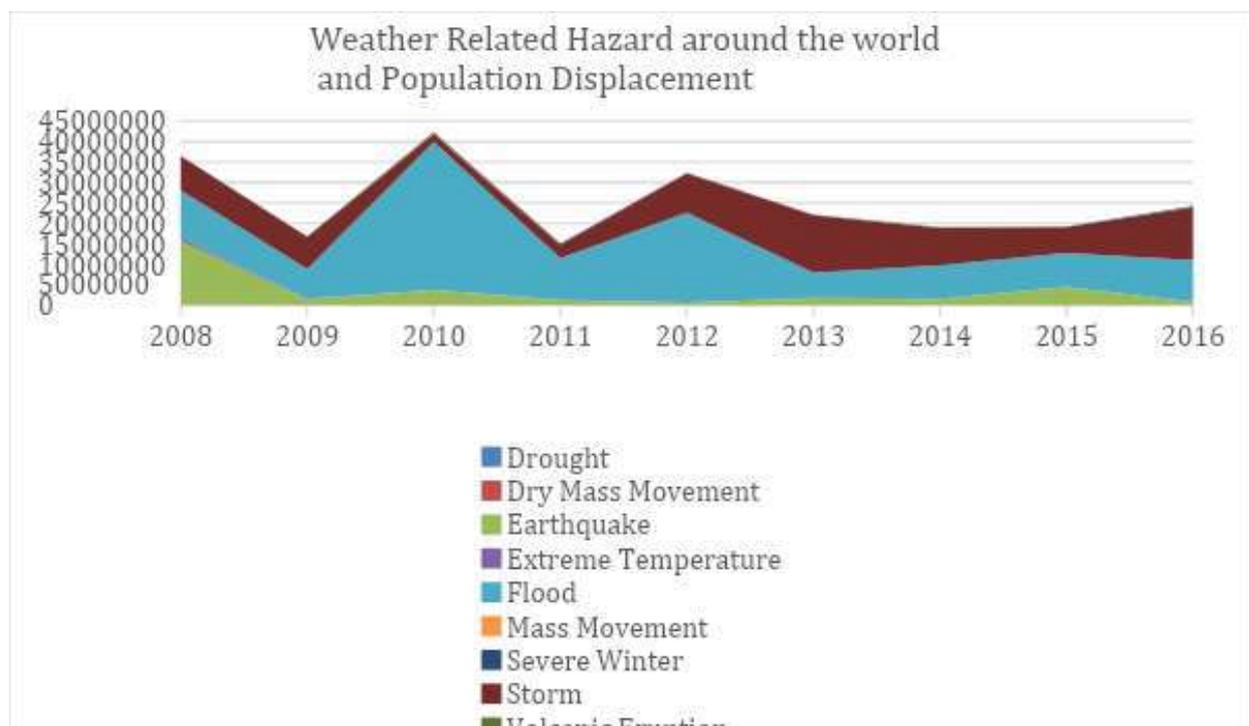


Chart-4 Weather Related Hazard around the world and Population displacement[6]

5. INDIAN SCEANRIO OF DISASTER INDUCED DISPLACEMENT

In whole of South Asia, India has the highest number of displacement due to disaster. It is also consistently the country with highest level of displacement associated with disaster globally. The total number of displacements occurred in India between 2008-2018 is around 3.6 million per year, the majority of it is during monsoon season and flooding. India is also prone to other disaster either slow or sudden which include earthquake, Tsunami, Cyclone, cloudburst, storm surge, etc. the high level of vulnerability and exposure of people to these hazards means the number of displacements occurring due to disaster remains high per year.

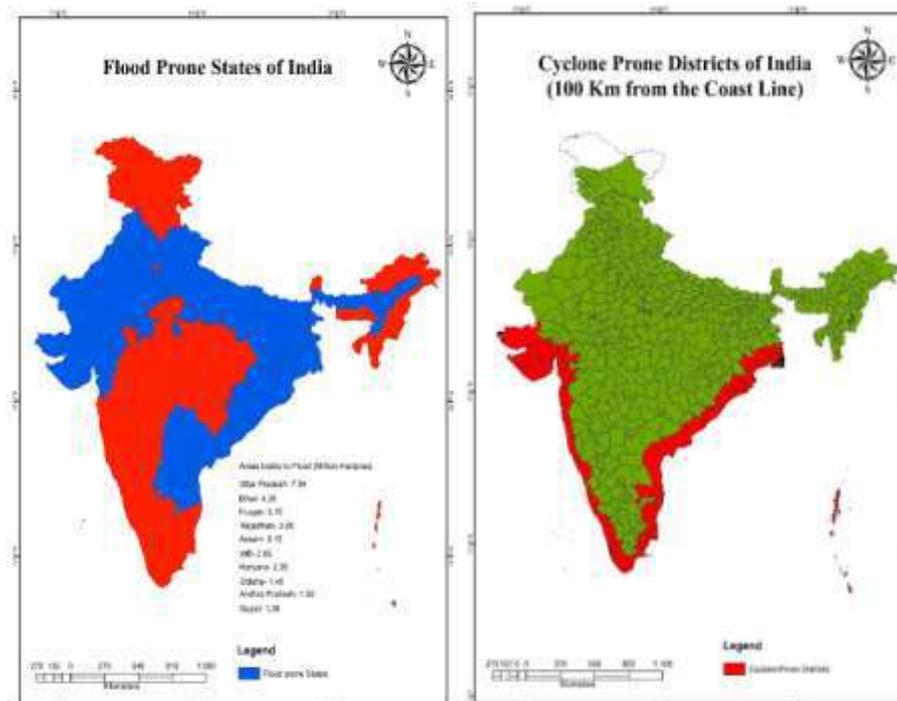
Table 1: year wise displacement (migration) in India due to disaster

Year	Displacement
2008	6662000
2009	5304000
2010	1411000
2011	1503000
2012	9110000
2013	2145000
2014	3428000
2015	3655000
2016	2400000
2017	1346000

Source: IDMC [6]

5.1 Exposure to Hazard

Approximately 68% of the India is prone to droughts 60% of earthquake 8% to flood and 75% of the coastline is exposed to cyclone (World Bank and GFDRR, 2012). The most flood prone areas are the Brahmaputra-Ganges-Meghna (GBM) river basins in the Indo-Gangetic-Brahmaputra plains in the north and northeast India which carries 60% of the total river flow of India. With a vast coastline which stretches over 7500 km is always prone to cyclone. 96 districts in total 9 states are prone to cyclonic disaster. These districts are located within 100 km from the coastline which makes the vulnerable to the situation every year.



Map- 1 & 2 Area prone to flood and area prone to cyclone respectively

5.2 Vulnerability to Hazard

369546000 people are living in the multidimensional poverty in India which constitute 27.5 % of the total population of India. [9]. India houses the largest share of global population under poverty line. Both urban and rural part of India is facing the problem of disaster related displacement. This problem is more pronounced in the urban areas due to inadequate availability of housing, water supply, sanitary facilities, and proper healthcare. According to census of India 2011, Mumbai houses the 41% of the India's total slum population of 20.5 million people [10]. Located on the low laying reclaimed marshy land, Mumbai slums are always prone to flooding during the monsoon season, especially when the heavy rain combines the high tide [11].

India's high risk is due to its large number of exposed and vulnerable people and high population density, even in rural areas. In 2013, monsoon floods displaced 1,042,000 people in the states of Bihar, Kerala, Uttarakhand, Assam, Andhra Pradesh, West Bengal and Uttar Pradesh while Cyclone Phailin displaced another million people in coastal areas of Odisha and Andhra Pradesh. In 2012, monsoon flooding displaced 6.9 million Indians. The 1988 Nepal-India earthquake and the 2005 Kashmir earthquake were two of the largest disaster events over the past 40 years. The 2004 Indian Ocean Tsunami heavily impacted the Andaman and Nicobar Islands as well as the eastern coastline, 97 displacing more than 382,000 people.

5.1 Monsoon and Displacement in India

Indian is not unfamiliar with the heavy rains and monsoonal floods. Every year in monsoon time situation of flood occurs either from cyclones or increasing water levels in rivers. The flood of Koshi river in 2008 accounted for deaths of more than 300 people and displacement of more than 3 million people. Similarly, heavy rain of Mumbai in 2005 also created devastating situation.

The 2018 was intense in all those. Rainfall above average mark triggered flooding situation across India between June and August. Tropical cyclones also hit the eastern coast of the country and compelled the millions in the states of Tamilnadu, Andhra Pradesh, Puducherry, Odisha to leave their homes and habitation. Disaster made as many as 2.7 million new displacements in the year 2018.

The monsoon season was the world's second largest disaster displacement event in 2018 after typhoon Mangkhut, triggering almost 2 million displacement between May and October. Kerala flood in 2018 accounted for more than half of the India's new displacement. As many as 1.5 million people were recorded as displaced. By the end of the monsoon season, as many as 2000 homes had been destroyed and 22000 damaged, hampering return for many people [12].

Three cyclones struck India's eastern coast during the year 2018. Cyclone Titli was responsible for around 300000 pre-emptive evacuation in Odisha and around 100000 displacement in October. When Cyclone Phethai hit two months later, many were still leaving in the damaged homes [13]. Phethai caused as many as 32000 displacement in December. Cyclone Gaja compelled 249000 displacement in Tamilnadu and Puducherry in November. It also destroyed homes and livelihood potentially hindering return for many of those displaced [14].

6. CONCLUSION

The data we are observing on displacement by disaster, climate change and other environmental degradation indicate that there is an urgent need for policies and practice at all levels to support the population on both humanitarian and developmental level. The prediction by various scientists and organizations about increasing number of disaster and related victims in the form of displacement tell that the current situation is very dangerous. In the Indian context, large number of unsustainable projects and development activities has led to change in the natural environment of a particular place. The landslide and cloudburst are now frequent in the mountainous regions and river flood can be seen very often than not in the plains in every monsoon. With India having more than 7500 km of coast line there is always a situation of cyclone disaster in the particular zone. If we want to save our current and future generation from violence of nature then we have to 'act now.'

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