



NATURAL DISASTERS AFFECTS THE ENVIRONMENT

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ABSTRACT-

Intense climate – related disasters – floods, storms, droughts and heat waves – have been on the rise worldwide. At the same time and coupled with an increasing concentration of greenhouse gases in the atmosphere, temperature, on average, have been rising, and are becoming more variable and more extreme. Rainfall has also been more variable and more extreme.

KEY WORDS- Climate, climate hazards, government policy, natural disasters,

INTRODUCTION-

In a regression analysis within a model of disaster risk determination for 1971-2013, population exposure measured by population density and people's vulnerability measured by socioeconomic variables are positively linked to the frequency of these intense disasters. Importantly, the results show that precipitation deviations are positively related to hydrometeorological events, while temperature and precipitation deviations have a negative association with climatological events. Moreover, global climate change indicators show positive and highly significant effects.

Along with the scientific association between greenhouse gases and the changes in the climate, the findings suggest a connection between the increasing number of natural disasters and man-made emissions of greenhouse gases in the atmosphere. The implication is that climate mitigation and climate adaptation should form part of actions for disaster risk reduction.

NATURAL DISASTERS-

Natural disasters are large-scale geological or meteorological events that have the potential to cause loss of life or property. These types of disasters include :

- Tornadoes and Severe Storms
- Hurricanes and Tropical Storms
- Floods
- Wildfires
- Earthquake
- Drought

Severe storm and floods are the most common type of natural disasters reported in the United States. These meteorological events are occasionally preceded by presidential "emergency declarations"" requiring state and

local planning prior to the event, such as evacuations and protection of public assets. Disaster Distress Helpline Staff are available to speak to those who call or text before, during, and after a natural disaster.

Human-Caused Disasters

Examples include industrial accidents, shootings, acts or terrorism, and incidents of mass violence. As with natural disasters, these types of traumatic events may also cause loss of life and property. They may also prompt evacuations from certain areas and overwhelm behavioural health resources in the affected communities. In the aftermath of the tragic loss of life that occurred on September 11, 2001, the feelings of loss of security and well-being—arguably the most crucial ingredients for leading a happy, healthy life – dramatically affected the citizens of the United States. Disaster Distress Helpline Staff are also trained to respond to calls or texts related to these types of disasters.

Rivers and Glaciers

The per capita availability of freshwater in India is expected to drop below 1000 cubic metres by 2025 because of population growth and climate change. River basins of Cauvery, Penna,, Mahi, Sabarmati, Tapi, Luni and few others are already water scarce. Krishna and Subamarekha may become so by 2025. High population density, coastal flooding and Salt Water Intrusion and exposure to storm surges makes Ganga, Godavari, Krishna and Mahanadi Coaststar river deltas "hotspots" or climate change vulnerability.

Glaciers are the main source of water for the Himalayan Rivers such as Ganga, Brahmaputra and Indus, 67% of Himalayan Glaciers have receded in the past decade and continue to diminish with increasing rates. The Ganga and the Indus are likely to become water scarce by 2025. Since 1962, the overall glacier area has reduced by 21% from 2077 Kms² to 1628 Kms². This will lead to water shortages becoming acuter with time and may endanger food security and energy generation.

Droughts, Heatwaves and Storms

500Mha land in the Asia Pacific region is already experiencing land degradation. The summers have already become more intense in India with some regions regularly reporting temperatures around 47°C. In the last four years, India has seen as many as over 4,620 deaths caused by heat waves, according to data published by the Ministry of Earth Sciences, Government of India, India Meterological Department declared that the storm that hit northern India in May 2018 was severe and their frequency could increase due to global warming. This is due to an increase in the Intensity of the wind and dryness of the soil which increases the intensity of dust storms. The rise in land surface temperature will be more pronounced in the northern part of India. A recent study report s that summers could last upto 8 months in the Gangetic plain by 2070, if the global temperature increases beyond 2°C Increasingly severe and frequent Heat waves may substantially increase mortality and death incidents. Such warning conditions along with the water scarcities aggravates the impacts of droughts.

NATURAL DISASTERS IN INDIA

Landslides and avalanches

Landslides are very common in the Lower Himalayas. The Young age of the regions hills results in rock formations, which are susceptible to slippage. Rising population and development pressures, particularly from logging and tourism, cause deforestation. The result is denuded hillsides which exacerbate the severity of landslides, since free, cover impedes the downhill flow of water. Parts of the Western Ghats also suffer from low-intensity landslides. Avalanches occurrences are common in Kashmir, Himachal Pradesh and Sikkim etc. Landslides in India are also highly dangerous as many Indian Families and Farmers reside in the hills or mountains.

Floods in India

Floods are the most common natural disaster in India. The heavy southwest monsoon rains cause the Brahmaputra and other rivers to distend their banks, often flooding surrounding areas. Though they provide rice paddy farmers with a largely dependable source of natural irrigation and fertilisation, the floods can kill thousands and displace, millions. Excess erratic or untimely monsoon rainfall may also wash away or otherwise

ruin crops. Almost all of India is flood-prone and extremely precipitation events, such as flash floods and torrential rains, have become increasingly common in central India over the past several decades, coinciding with rising temperatures. Meanwhile, the annual precipitation totals have shown a gradual decline, due to a weakening monsoon circulation as a result of the rapid warming in the Indian Ocean and a reduced land-sea temperature difference. This means that there are more extreme rainfall events intermittent with longer dry spells over Central India in the recent decades.

Cyclone in India

The Intertropical convergence Zone may affect thousands of Indians living in the coastal regions, Tropical cyclogenesis is particularly common in the northern reaches of the Indian Ocean in and around the Bay of Bengal, Cyclones bring with them heavy rains, storm, surges, and winds that often cut affected areas off from relief and supplies. In the North Indian Ocean Basin, the cyclone season runs from April to December with peak activity between May and November. Each Year an average of eight storms with sustained wind speeds greater than 63 kilometers per hour (39 mph) form, of these, two strengthen into true tropical cyclones, which have sustained gusts greater than 117 Kilometers per hour (73 mph). On average, a major (Category 3 or higher) cyclone develops every other year.

During summer, the Bay of Bengal is subject to intense heating giving rise to humid and unstable air masses that produce cyclones. Many powerful cyclones, including the 1737 Calcutta cyclone, the 1970 Bhola cyclone, the year 1991 Bangladesh cyclone, the 1999 Odisha cyclone, and 2019 Cyclone Fani in Odisha and Cyclone Vayu in Gujarat have led to widespread devastation along parts of the eastern coast of India and neighbouring Bangladesh. Widespread death and property destruction are reported every year in Exposed Tamil Nadu and West Bengal. India's Western Coast bordering the more placid Arabian Sea, Experience cyclones only rarely, these mainly strike Gujarat and less frequently. Kerala and sometimes Odisha.

NATURAL DISASTERS IN THE WORLD

North America, Central America & the Caribbean

- The region suffered 74,839 deaths and \$ 1.7 trillion economic losses.
- The region accounted for 18 per cent of weather, climate and water-related disasters, four per cent of associated deaths and 45 per cent of associated economic losses worldwide.
- Storms were responsible for 54 per cent and floods, 31 per cent of recorded disasters, with the former linked to 71 per cent of deaths and the later to 78 percent of economic losses.
- The United States accounts for 38 per cent of global economic losses caused by weather, climate and water hazards.

South West Pacific

- The region recorded 1,407 disasters, 65,391 deaths and \$ 163.7 billion in economic losses.
- 45 Per cent of these disasters were associated with Storms and 39 per cent with floods.
- Storms accounted for 71 per cent of disaster-related deaths.
- Disasters resulting from weather, climate and water hazards in Australia accounted for 54 per cent or \$ 88.2 billion in economic losses in the entire region.

Europe

- 1,672 recorded disasters took 1,59,438 lives and \$ 476.5 billion in Economic damages.
- Although 38 per cent were attributed to floods and 32 per cent to storms, extreme temperatures accounted for 93 per cent of deaths with 1,48,109 lives lost.
- Extreme heatwaves of 2003 and 2010 were responsible for 80 per cent of all deaths, with 1,27,946 lives lost in two events.

Africa

- 1695 recorded disasters caused the loss of 7,31,747 lives and \$ 5 billion in economic losses.
- The continent accounts for 15 percent of weather, climate and water related disasters. 35 percent of associated deaths and one per cent of economic losses are reported globally.
- Although disasters associated with floods were the most prevalent at 60 per cent droughts led to the highest number of deaths, accounting for 95 percent of all lives lost in the region, with most occurring in Ethiopia, Mozambique and Sudan.

Asia.

- 3454 disasters were recorded with 9,75,622 lives lost and \$ 2 trillion reported economic damages.
- Asia accounts for nearly one third, or 31 percent of the weather, climate and water related disasters globally, for nearly half of deaths of one – third of associated economic losses.
- Forty – five Percent of these disaster were associated with the floods and 36 percent with storms.
- Storm took 72percent of life lost. Wild floods led to 57 percent of economic losses.

South America.

- The top ten recorded disasters in the region accounted for 60% of the 34,854 lives lost, 38% of economic losses equally \$ 39.2 billion.
- Floods represented 90% of events in the top ten list of disasters by death toll and 41% of the top ten list by economic losses
- Floods word responsible for 59% of disaster, 77% of life loss and 58% of economic loss of the region.

ECONOMIC LOSSES DUE TO NATURAL DISASTERS

- In the United States, Hurricane Harvey caused \$ 96.9 billion in damage, Maria in the Caribbean 69.4 billion and Irma 58.2 billion in Cape Verde.

S.No.	Disaster Type	Year	Country	Economic Losses (in US \$ Billion)
1.	Storm (Katrina)	2005	United States	163.61
2.	Storm (Harvey)	2017	United States	96.94
3.	Storm (Maria)	2017	United States	69.39
4.	Storm (Irma)	2017	United States	58.16
5.	Storm (Sandy)	2012	United States	54.47
6.	Storm (Andrew)	1992	United States	48.27
7.	Flood	1998	China	47.02
8.	Flood	2011	Thailand	45.46
9.	Storm	2008	United States	35.63
10.	Flood	1995	Democratic People's Republic of Korea	25.17

WMO – Most expensive disasters from 1970-2019.

DEATH DUE TO NATURAL DISASTERS

- Of the top 10 disasters, drought proved to be the deadliest hazard during the period, causing 650000 deaths, followed by storms that led to 577232 deaths, floods, which took 58,700 lives and extreme temperature events, during which 55,736 died.

S.No.	Disaster Type	Year	Country	Deaths
1.	Drought	1983	Ethiopia	3,00,000
2.	Storm (Bhola)	1970	Bangladesh	3,00,000
3.	Drought	1983	Sudan	1,50,000
4.	Storm (Gorky)	1991	Bangladesh	1,38,866
5.	Storm (Nargis)	2008	Myanmar	1,38,366
6.	Drought	1973	Ethiopia	1,00,000
7.	Drought	1981	Mozambique	1,00,000
8.	Extreme Temperature	2010	Russian Federation	55,736
9.	Flood	1999	Bolivarian Republic of Venezuela	30,000
10.	Flood	1974	Bangladesh	28,700

A growing trend of more destructive climate disasters.

Cyclones Idai and Kenneth.

In March 2019, Cyclones Idai took the lives of more than 1000 people across Zimbabwe, Malawi, and Mozambique in the Southern Africa, and it devastated millions more who were left destitute without food or basic services. Lethal landslides took homes and destroyed land, crops and infrastructure. Cyclone Kenneth arrived just six weeks later, sweeping through Northern Mozambique, hitting areas where no tropical cyclone has been observed since that satellite era.

Australian wildfires

The start of 2020 found Australia in the midst office, worst ever Bush fire season - following on from its hottest year on record which had left soil and fuels exceptionally dry. The fires have burned through more than 10 billion hectares, killed at least 28 people, razed entire communities to the ground, taking the homes of thousands of families, and left millions of people affected by a hazardous smoke haze. More than a billion native animals have been killed, and some species and ecosystems may never recover.

East Africa drought

Higher sea temperatures, linked to the climate change, have doubled the likelihood of drought in the Horn of Africa region. Severe droughts in 2011, 2017 and 2019 have repeatedly wiped out crops and livestock. Draught have left 15 million people in Ethiopia, Kenya and Somalia in need of aid, yet the aid effort is only 35 percent funded. People have been left without the means to put food on their table, and have been forced from their homes. Millions of people are facing acute food and water shortages.

South Asia floods

Over the last year deadly floods and landslides have forced 12 million people from their homes in India, Nepal and Bangladesh. Just two years ago Exceptionally heavy monsoon rains and intense flooding destroyed, killed and devastated lives in the same countries. In some places, the flooding was the worst for nearly 30 years, a third of Bangladesh was underwater. While some flooding is expected during monsoon season, scientists say the region's monsoon rains are being intensified by rising sea surface temperatures in South Asia.

Dry corridor in Central America

An El Nino period, supercharged by the Climate crisis, has taken Central America's dry corridor into its 6th year of drought. Guatemala, Honduras, El Salvador and Nicaragua are seeing their typical three

month dry season extended to six months or more. Most crops have failed, leaving 3.5 million people, many of whom rely on farming for both food and livelihood, in the need of the humanitarian assistance, and 2.5 million people food insecure.

MEASURES TAKEN TO TACKLE AND PREVENT NATURAL DISASTERS

Major Catastrophes , such as earthquakes, floods and hurricanes, lead to hundreds of people dying, being injured, suffering and being displaced every year. Such disaster also caused the destruction of homes and infrastructure, as well as the loss of millions of dollars. These natural disasters have an even more devastating effect when they occur in developing countries, such as a hurricane Matthew in Haiti, which left nearly 1000 dead in its wake .In 1989, the United Nations General Assembly designation, 13 October as the International Day for Disaster Risk. Reduction "**in order to promote a global culture of disaster reduction, including disaster prevention and mitigation**". The United nation is therefore seeking to raise awareness of natural disaster through information campaigns promoting efforts to make communities and government face with such issues more resilient and able to respond to the disasters.

Preventing natural disaster fighting against climate change and resilience.

Since it was first established, the Intergovernmental Panel on Climate Change (IPCC) has warned that increased atmospheric concentrations of greenhouse gases from human activity are impacting extreme climate phenomena. Global warming is causing various atmospheric phenomenon to become increasingly violent, and there is a strong link between natural disasters and climate change. So the first step to prevent potential natural disaster is reducing pollutant emissions.

It is also necessary to make states more resilient by looking forward and preparing countries to deal with the climatic related risk from adopting conservation and restoration measures to improving infrastructure.

Sendai seven campaign for reducing natural disasters.

To reduce the number of deaths resulting from natural disaster, the UN launched the Central Seven campaign, which focuses on seven objective outline in the sendal framework. This framework will be implemented over seven years, 2016 to 2022, providing one year for each objective.

International Day for Disaster Risk Reduction.

2016 : To reduce disaster mortality.

2017 : To reduce the number of people affected.

2018 : To reduce economic losses.

2019 : To reduce disaster damage.

2020 : To increase the number of countries with response strategies.

2021 : To increase international cooperation with developing countries. Countries

2022 : To make warning system more reading available.

CONCLUSION-

Disaster relief addresses the immediate and short term needs of a disaster affected communities. It can include evacuations, search and rescue missions, and emergency medical assistance.

- Setting up temporary shelters that provide. A safe place to sleep, food and emotional support from Trained Personnel.
- Delivering meals and water.
- Distributing emergency supplies and necessities such as toiletries for hygiene and tarps, shovels, trash bags for clean up efforts.
- providing emergency health services such as the first aid for injuries and prescription medication replacements.

Well coordinated responses to disaster require prior planning. This helps ensure fast, effective response efforts and limits duplicated efforts.

Disaster preparedness plans are-

- Identify organizational resources.
- Designate roles and responsibilities.
- create procedures and policies.
- Organize activities that improve disaster readiness

Anticipating the needs of a communities the disaster effect improves the quality of the response efforts. Building the capacities of volunteers, personnel and disaster management teams to respond to disasters also make the response efforts more effective.

Mitigation and prevention efforts aim to reduce the potential damage and suffering that disaster can cause. While disaster management cannot prevent disasters, it can prevent them from becoming compounded as a result of neglecting causal factors and manageable risk. Mitigation especially refers to action taken that can lessen the severity of disasters impact investing in measures that limit hazards can greatly reduce the burden of disasters. Strategies that disaster management professionals implement to protect vulnerable communities and limit hazards include the following-

- Raising awareness about potential hazards and how to address them.
 - Educating the public about how to properly prepare for different types of disasters.
 - Installing and strengthening prediction and warning systems.
- Managing hazards and risk meaning, planning to minimize a communities vulnerability to disaster, this can involve.
- Encouraging community members to buy appropriate insurance to protect their properties and belongings.
 - Educating families and business on how to create effective disaster plans.
 - promoting the use of fire retardant material in construction.

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