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The Management of Disasters: An Overview

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Abstract: The cost of disasters has significantly increased over the past few decades, including in India.Therefore, more strategic and organized efforts are required at the global and national levels in order todecrease vulnerabilities and risks of hazards. It is important to remember that any discussion ofenvironmental catastrophes must place people's lives at its center. The severity of environmentaldisasters and the amount of money lost by societies are directly correlated. This essay examinesdisaster management.

Keywords: Disaster management, National Disaster Management Act, Hazard

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INTRODUCTION

Natural disasters are sudden, unexpected, and may affect everyone. These extreme catastrophes, whether natural or man-made, surpass the tolerated size within or beyond specific time limitations, make adjustment impossible, result in catastrophic losses of property, money, and life, and immobilize society. These occurrences aggravate natural environmental processes, resulting in disasters for human society, such as sudden tectonic activity leading to earthquakes and volcanic eruptions, continued dry conditions leading to prolonged droughts, floods, atmospheric disturbances, collisions of celestial bodies, and so on. It is worth noting that human lives are at the center of any discussion on environmental catastrophes. There is a direct correlation between the severity of environmental catastrophes and the amount of money that is lost by societies.[1]

Extreme occurrences, which sometimes turn into catastrophes, are always the result of risky environmental processes. Only if they have a significant impact on human civilization can they be considered catastrophes. An very powerful tropical cyclone (typhoon, hurricane, or tornado) in the middle of an ocean is only an extreme occurrence; but, when it strikes populated coastal regions and causes catastrophic damage and loss of life, it is a tragedy. The same holds true for volcanic eruptions; they are never catastrophic on uninhabited land or water but may cause widespread destruction in urban areas. As a rule, environmental catastrophes have a natural cause and are thus classified as natural disasters. In other words, when humans are situated in an area that might be severely affected by a natural, unexpected physical process or occurrence, catastrophes are the inevitable result.

Such example, if a magnitude 10 earthquake hits a densely populated region. When an earthquake of lesser strength, that is, below 7 on the Richter scale, happens in a densely populated region, it becomes a catastrophe. As a corollary, it may be argued that it is not the regularity with which extreme occurrences occur that makes them so devastating, but rather their extremeness in terms of intensity, scale, dimension, and the quantity of harm they do. The level of destruction wrought upon human civilization is used as a

measure of a disaster's intensity. Extreme occurrences are always produced by risky environmental processes, however not all extreme events end in calamity. When they have a negative impact on human civilization, we can call them catastrophes. An very powerful tropical storm (typhoon, hurricane, or tornado) that forms in the middle of the ocean and then dissipates is just an extreme "event," but it is a "disaster" when it causes massive damage to human infrastructure and lives.[2]

Natural disasters are the most common cause of environmental devastation, and as the name implies, they are purely natural. Simply said, when people settle in areas that are prone to natural calamities, such as those caused by earthquakes or tsunamis, these occurrences have catastrophic consequences.

DISASTER DEFINITION

A catastrophe occurs when a danger, whether natural or man-made, has a negative effect on people and their surroundings. The term "disaster" has its origins in astrology, which suggests that unfortunate events are more likely to occur when the stars are in an unfavorable configuration.

The term "disaster" comes from the Middle French word "desastre," which in turn comes from the Old Italian word "catastrophe."[3]

The name "Disastro" comes from the combination of the Greek words for "evil" (dis.) and "Star" (aster).[4]

AS PER THE DISASTER MANAGEMENT ACT (2005)

A catastrophe is "a sudden catastrophic occurrence that substantially disrupts the functioning of a community or society & causes human material, economic, or environmental losses that surpass the capacity of the community's or society's own resources to manage." Many catastrophic events are brought on by natural causes, but sometimes people are to blame.

(Vulnerability + Hazard) / Capacity = DISASTER

The combination of risks, vulnerability, and an inability to mitigate negative risk consequences leads to catastrophe whenever a threat materializes and has an adverse effect on susceptible individuals.[5]

TYPES OF DISASTER

If we look at the main causes of environmental disasters, we can classify them into two broad categories: natural and human-caused.

A. Catastrophic events and

B. Natural and man-made catastrophes

As a subset of natural disasters, floods and earthquakes are also recognized. -

(a) There are three types of man-made catastrophes.

(b) Natural catastrophes caused by humans include landslides, rapid soil erosion, and

(c) Biological disasters, such as the unexpected increase or decrease in population of species in a given habitat due to increased nutrient levels or the presence of toxic chemical elements, and (c) chemical and nuclear disasters, such as the release of toxic chemicals into the air, nuclear explosions, and the leakage of radioactive elements.

A- Natural calamities

An element of human influence exists even in natural hazards. A dangerous event is a natural occurrence that takes place in a crowded region. A natural catastrophe is a dangerous occurrence that results in unacceptably high numbers of deaths and/or massive property damage.

Although most natural phenomena are unpredictable in terms of frequency or intensity, people may play a significant role in preventing disasters by taking steps to prevent natural occurrences from becoming catastrophes. It is crucial to realize that human activity may make natural risks more frequent and severe. [6]

A- Natural hazards are physical phenomena that occur in the world naturally and are brought on by sudden or gradual onset occurrences:-

1. Earthquakes, landslides, volcanic activity, and sinkholes are examples of geophysical hazards.
2. Floods, maelstroms, tsunamis, and limbic eruptions
3. Climatological risks, including drought, wildfires, and very high temperatures
4. Meteorological Dangers, such as Cyclones, Storms, or Wave Swells
5. Biological Hazards, including animal and insect plagues and disease outbreaks.

B- Complex emergencies brought on by technological or human causes such as war, starvation, population displacement, workplace mishaps, and vehicular mishaps.

1. Geophysical dangers:

Earthquakes- Quakes occur when the Earth is suddenly shaken by forces far below its surface. An abrupt rupture or release of pent-up energy that sends forth waves of shaking. Earthquakes may cause surface-level effects including ground shaking and displacement, and sometimes Tsunamis.

Avalanches are a big threat in the mountains throughout the winter because of the geophysical hazard they pose. Avalanches happen when a huge amount of snow (or rock) slides down a mountain side. Gravity currents may also carry granular materials, such as in an avalanche. An avalanche occurs when a large quantity of material, or a combination of materials, falls rapidly to the ground under the influence of gravity.[7]

Lehar- Lehars are a type of natural disaster closely associated with volcanic eruptions, characterized by the rapid movement of large quantities of material, such as mud, rock, and ash, down the side of the volcano. There are thousands of lives at stake, and entire towns can be wiped out in seconds by these

flows.

Landslides and Mudflows – A landslide is a natural catastrophe similar to an avalanche, although it does not include snow but rather boulders, trees, pieces of buildings, and anything else happens to be swept away. Earthquakes, volcanic eruptions, or just generally unstable terrain may trigger landslides. When heavy rains force the loose soil on hilly terrain to collapse and slide downstream, a landslide of the kind known as a mudslide or mud flow occurs.

Volcanic Eruption – Eruptions occur when a volcano suddenly becomes active and unleashes its stored energy. Supervolcano are exceedingly rare but have occurred in locations like lake Taupo, 26500 years ago, and the Yellowstone caldera, which might become a supervolcano in the near geological future. High-temperature ash and steam clouds called pyroclastic flows may race down mountainsides during some types of volcanic eruptions, reaching speeds greater than that of a commercial jet.[8]

1. Hydrological Dangers

Flood – Whenever a storm produces heavy rain for an extended period of time, flooding is the inevitable outcome. Examples of such events include thunderstorms, the quick thawing of enormous quantities of snow, and the extensive flooding caused by rivers that have swelled due to upstream rainfall downriver places, or, less commonly, the failure of a dam other river man-made structure. Extreme floods and storm surge are possible outcomes of tropical cyclones.

Limnic eruption – Lake overturns, or limnic eruptions, are very unusual natural disasters caused by the sudden release of carbon dioxide (CO2) from animals and humans. Rising CO2 displaces water, so a volcanic eruption could cause tsu-namis in the lake.

Maelstrom – A maelstrom is a huge whirlpool created by the tides. Moskstraumen, found in Norway's Lofoten islands, is the world's largest maelstrom. Intense mael- stroms may reach velocities of 30-50 km/h.

Sieche – A seiche is a standing wave that occurs in a closed or semi-closed water system. Lakes, reservoirs, bays, and oceans have all been observed to experience Sieches and Seiche-related phenomena. Key to seiche formation is the presence of at least partial boundaries around the body of water, which permits the formation of a standing wave.

Tsunami – Tsunamis are waves in the ocean caused when a large body of water moves out of its normal location. The Japanese words "tsu" (harbor) and "nami" (wave) combine to form the word "tsunami," which translates literally as "harbor wave." Undersea earthquakes, like the one that struck the Indian Ocean in December 2004, and landslides, like the one that hit Latoya Bay in Alaska, are both potential triggers for tsunamis. Informally, extremely large tsunamis are called "mega tsunamis."[9]

3. Dangers from the Weather and the Atmosphere

Drought -When there is not enough precipitation to meet the demands of agriculture, cities, and the environment, we are experiencing a drought. Wildfires and famine are two of the many potential outcomes of prolonged droughts.

The Blizzard - Blizzards are very powerful winter storms that bring cold temperatures, high winds, and heavy, blowing snow.

Hailstorm - Hailstorms are a form of natural disaster in which a thunderstorm generates large amounts of hailstones, which then cause damage to the area they fall upon. When a hailstorm hits a farm, it can wreak havoc on crops and machinery.

Heat wave - A heat wave is a potentially dangerous period of unusually high temperatures in a given region. Extremely high temperatures, known as heat waves, are the result of a rare confluence of meteorological conditions. These conditions may include temperature inversions, katabolic winds, and other phenomena.

The Ice Age- During an Ice Age, global temperatures would drop to uninhabitable levels, making many previously habitable regions uninhabitable. The worldwide drought that might accompany an ice age is a potential mine of its own making**.**

4. Meteorological Hazards

A hurricane, tropical cyclone, or typhoon is just a cyclonic storm system that develops over water and is given a distinct name. Storms spin due to the corioli effect, and a hurricane is called when the storms' combined wind speeds reach above 74 miles per hour. Typhoon in the western Pacific; hurricane in the Atlantic & eastern Pacific; tropical cyclone in the Indian Ocean.

A tornado forms as a consequence of a thunderstorm, making it a kind of natural catastrophe. Storms with the potential to become tornadoes are characterized by powerful, swirling columns of air that may produce winds of up to 300 miles per hour. Torna- dos, also known as "waterspouts," form over tropical waterways with moderate rainfall.

An Extreme Danger:A wildfire is an uncontrolled blaze in a wilderness area. Wildfires may be caused by a variety of factors, the most common of which are improper lighting and prolonged dry periods, although human carelessness or intentional acts of destruction can also spark blazes.[10]

5. Potential Biohazards

Epidemic – Epidemics occur when a contagious disease rapidly spreads throughout a population of humans or other hosts. If an epidemic quickly spreads around the world, we call it a "pan-demic."

Famine – Large-scale hunger, starvation, disease outbreaks, and deaths are all symptoms of famine, a social and economic calamity.

6. Dangers from extraterrestrial life

Impact event – The precise effects of a direct hit on Earth would depend heavily on the size of the crashing object, although in the case of medium to large impacts, short-term climate disruption and a widespread collapse of agriculture would be quite easy to predict.

Solar Flare– A solar flare occurs when the sun unexpectedly releases significantly more radiation than

usual. Scientists theorize that a global collapse in communication infrastructure could result from such a radiation release.

CATEGORICAL DISASTERS

Every level of disaster management and preparation have to think about how susceptible the catastrophe-affected region is and how prepared the authorities are to handle it. Using this method, the High Power Committee on Hazard Management5 classified disasters as L1, L2, and L3 in its 2001 report. The L0 normality period may be used for catastrophe preparedness.

Disasters of L1 severity may be handled by the District's infrastructure and personnel. But state officials will still be prepared to help out if they are called upon to do so.

Those disasters at L2 need the aid of the state and the deployment of state-level authorities for disaster management. The federal government must always be on high alert to be deployed swiftly if necessary.[11]

The third, or L3, level of emergency relates to a catastrophic event or a calamity of unprecedented proportions that overwhelms the ability of state and local authorities to react.

The DM Act 2005 makes no reference to the leveling of disasters from L0 to L3.

To add insult to injury, the DM Act does not provide a mechanism for declaring a tragedy a "national calamity" or "national disaster."

Vulnerability can be exacerbated when humans interfere with natural processes

The construction and settlement of hazardous terrain, such as flood plains, sea cliffs, coasts, and volcanic slopes, all of which are vulnerable to natural disasters including floods, landslides, hurricanes, and volcanic eruptions.

It might make natural disasters worse or more often. For instance, significant erosion may be a result of overgrazing or deforestation.

Construction ended up being one of the world's largest industrial catastrophes due to groundwater contamination that caused subsidence. The workers and maintenance personnel at the multinational corporation (MNC) union carbide plant in Bhopal were completely careless, resulting in the leak of a toxic gas (MIC). The poisonous was carried away for kilometers due to winds that encompassed individuals who were sleeping, even though at first it was thought to be only an accident. When they suddenly began to choke and die, they had no idea why. Even while some people got away, the poisonous gases caught up with them and caused major health issues; some of them are still dealing with the aftereffects, and no one has yet discovered a way to fix the harm done by the lethal mix of gas that leaked out of the union carbide factory. As a result, a relatively minor accident at the plant had far-reaching consequences, killing thousands of people and affecting many more in the surrounding areas.[12]

AFFECTED BY DISASTERS

Any potentially dangerous procedure may have immediate, far-reaching consequences.

The procedure has primary implications when it happens. This includes the failure of flood barriers and the collapse of structures as a result of natural disasters including earthquakes, landslides, and hurricanes.

For a secondary impact to take place, a primary effect must first be in place. Earthquakes may cause a variety of problems, including fires and the interruption of utilities like water and electricity. Hurricane flood or landslide flooding of a waterway.

Territorial effects are secondary outcomes that persist long after the triggering event has passed.

One other factor is wealth, since it is often wealth that dictates where people choose to make their homes. Since wealthy countries are responsible for the majority of fossil fuel consumption, which results in an increase in atmospheric CO2 levels, they presumably contribute to global warming as well.[13]

Disasters' psychological and social effects

As a result of terrorist attacks, natural catastrophes, and technology failures, victims may have prolonged and severe psychological effects, including post-traumatic stress symptoms or full blown syndrome. Consistent evidence shows that mental health issues such sadness, anxiety, somatic complaints, or excessive alcohol consumption spike in the wake of major catastrophes. These studies examined victims' mental health following large-scale disasters, both natural and man-made. The loss of life, injury, or damage to property or the environment is another indicator of a disaster's severity. Children, because of their inherent vulnerability, were and continue to be the greatest victims of these tragedies, no matter how severe they were. Children are especially vulnerable to the psychological and behavioral effects of disasters.

These days, unless there are a lot of casualties, news outlets hardly pay attention to reports of natural disasters. Every day, nature strikes in a variety of ways, leaving destruction and heartache in its wake. This includes volcanoes, mudslides, tsunamis, and floods. While people have learned to mitigate some of the damage caused by natural disasters like tornadoes, earthquakes, hurricanes, and wildfires, it is impossible to completely eliminate the effects of these calamities.[14]

Damage to the body -The physical destruction caused by natural disasters is the most readily apparent effect. Families are left destitute and some businesses are forced to close permanently when their homes, vehicles, and personal belongings are all destroyed in a short period of time. Houses can be swept off their foundations by tsunamis and floods, and tornadoes can obliterate buildings at will**.**

Financial tensions

If the National Hurricane Center's estimates are correct, the United States lost $75 billion due to Hurricane Katrina in August of 2005. Also, it doesn't account for the devastation that the same hurricane wreaked in Miami-Dade and Broward counties in Florida. This kind of destruction is unusual, yet even a moderate storm may result in serious problems. Cleanup and restoration costs must be manageable for the local economy.[15]

Geography plays a role

The severity of a natural catastrophe is often determined in great part by its geographical location. Natural catastrophes may leave residents in rural or remote areas without access to utilities such as electricity and running water. They may be unable to go to a town to replenish their supplies and will have to make do with what they have on hand. Natural catastrophes pose special challenges in densely inhabited regions. As individuals seek refuge in makeshift camps, hygiene becomes an issue as people jostle for few supplies.

IMPACT OF THE ENVIRONMENT

Natural catastrophes have an impact on more than just human life. Animals, like people, are susceptible to homelessness. They may be forced to relocate to a new place and attempt to establish themselves there. Natural disasters such as volcanic eruptions, earthquakes, floods, wildfires, and mudslides may have long-lasting effects on the terrain and even wipe out native species. There are crisis circumstances that need a national reaction because they threaten the national interest as a whole. Terrorist events like hijackings, suicide bombings, sabotage, attacks on key infrastructure or community symbols, hostage crises, the use of nuclear, chemical, or biological weapons, war, or the appearance of war, the disruption of essential services like the railway, chemical or biological disasters, major mine accidents, oil spills, and cyber terrorism are all examples of such contingencies.[16]

CONCLUSION

This paper shows that India has made significant efforts to elevate DRM to a priority at the local and national levels. Important legal frameworks for disaster management in the nation are the National Disaster Management Ordinance of 2006 and the National Disaster Management Act of 2010. The establishment of a three-tier hierarchical disaster institutional structure in India was made possible by these legislative arrangements, which supplanted the prior legal and institutional systems.

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