

International Journal of **Natural Science** (IJNS)

NUMBERS AND SEVERITY OF NATURAL DISASTER IN GHANA

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Abstract

Purpose: Ghana has suffered some disasters both natural and manmade. Several natural disasters have occurred from the days of biblical Noah until now. These natural disasters have taken various forms; floods, earthquakes, volcanic eruption tsunamis, tornadoes, landslides, hurricane, and among others. Within the past decades, natural disaster has become a global pandemic which hampers economic and social development. This global phenomenon has affected over 6 million people and cause economic damage of approximately \$870,700,000 in Ghana .it is necessary or advisable to ascertain the causes of the natural disasters(floods) in Ghana and the propose an approach that disaster(floods) impacts and save lives and properties. My case study will be in Accra, the capital town of Ghana, which have been employed in my study since it recorded the highest natural disaster like (floods) and how best it can be managed using the statistical approach.

Methodology: The study used Desktop literature approach.

Findings: The study reveals that natural disasters are a great threat to humanity. Although they occurred long before the first human populated the planet, we likely contribute to an increase in natural disasters through our behavior. The number of natural disasters seems to be positively correlated to an increase in the earth's temperature.

Unique Contribution to Theory, Practice and Policy: The study recommended that countries should improve their emergency measures in order to save as many people as possible. They should also work together in order to mitigate the problem of natural disasters and ensure a livable future for future generations

Keywords: *Ghana, Accra, Natural Disaster, Statistical Approach of Sloving the Situation.*

INTRODUCTION

Natural disaster was defined as a sudden and terrible event in nature usually result in serious damage. For recent years Ghana has faced natural disasters like flood. Flood was defined by Hague:1997 as “a natural hazard which displaces peoples by destroying their land, houses and others tangible goods and properties”.

In 1968, Ghana experienced its first flood which affected 25,000 people including loss of lives and properties. According to report on natural disaster and hazard in Ghana, flood is number two after epidemic with regards to lost of lives about 409 people out of almost 5.9 million people have been killed between 1968 to 2021 as a result of natural disaster (flood) events. The second key element is the planning of the urban areas, which determines its water drainage capacity. As a city development plan provides areas for natural water flow and create a drainage system to convey out the surplus of water due to the urbanization. Other issues relating to natural disaster (flood) in Ghana are the poor, inefficient and at time belated responds by the central Government and other non-governmental in responding to the aftermath of natural disaster (flood). For instance, between 2016 and 2020 the response by the main organization responsible for the management of natural disaster (Natural Disaster Management Organization (NADMO)) was reported by some section of the media to woefully inadequate and ineffective. Several communities like Accra, koforidua and many were affected by flood from 2018 to 2021 where there needed relief items. These relief items supplied were not only reported to be insufficient but also arrived late. This led to the intervention being either inefficient or late. Ghanaians population has become increasingly urban over the past ten decades. The percentage of urban population increased from 43.8% from 2000 to speculate for 2021 will be 63.8% and above.

Therefore, there is little or no doubt about the negative impact of natural disaster (floods) on the urban population of many developing countries including Ghana. Floods in Accra have become annual event with its negative effect mostly felt by urban poor living in slum due to it populated nature. Factors that are usually attributed to the annual event of flood in Accra includes increasingly flow of water, and poor land use.

Problem Statement

Many countries like Ghana, is having a tendency to range of environmental and natural disaster including floods. In disaster prone countries, preparedness is an important factor in disaster mitigation.

There are various disaster management approaches. However, one common point at these approaches is that they are “preventives”. First and foremost, of the principal components of the preventive approach is preparedness and education. It is possible to increase the capacity to cope with the disasters, which show variety in terms of their development periods and times and mostly involves uncertainty raising the awareness of all component, all individuals and communities in line with common cause. Although Ghana natural hazards are usually within a short time frame, it is capable of increasing long term suffering on the populace and the economy as a whole.

Research Objective

The goal of this study is to be determining the level of natural disaster and the statistical way of solving this situation in Accra Ghana.

1. What is meant by natural disaster?
2. Causes of natural disasters.
3. Effect of natural disaster.
4. Solution of natural disaster.

Types of Natural Disasters

1. Geological
2. Hydrological
3. Meteorological
4. Wildfires
5. Space disasters

Geological

Geological disasters include avalanches, landslides, volcanic eruptions, sinkholes and earthquakes.

Hydrological

The main hydrological disasters are floods, limbic eruptions and tsunamis.

Meteorological

Meteorological disasters include blizzards, cyclonic storms, hailstorms, ice storms, heat waves, cold waves, thunderstorms, droughts and tornadoes.

Wildfires

Wildfires are natural disasters that occur naturally due to droughts and lightning but are also often caused by humans.

Space disasters

Space disasters include impact events of meteors or asteroids and solar flare.

Impact events mean that the earth will be eventually hit by a meteor or asteroid.

Solar flare refers to an event when the sun releases large amounts of solar radiation, which can destroy our electrical equipment on earth if the radiation is strong enough.

Causes for Natural Disasters

- Global warming
- Natural activities in the earth's crust
- Tectonic movement
- Moon activity

- Mining
- Deforestation
- Soil erosion
- Seismic activity
- Air pressure
- Ocean currents
- Pollution

Global warming

Global warming is a great cause of natural disasters since it affects our planet in several different ways.

Global warming leads to an increase in temperature of oceans, which in turn leads to more and stronger hurricanes and tropical storms since hurricanes get their energy from the seawater. Moreover, the probability of droughts increases since the planet's average temperature increases.

It is quite difficult to prove the causal connection between climate change and natural disasters since there are many other variables, but the increase of natural disasters over the last decades likely leads to the conclusion that global warming is a major contributor to natural disasters.

Natural Activities in the Earth' Crust

Natural disasters are also caused by natural activities in the crust of the earth. Natural processes can cause tension inside the earth's crust which are sometimes released through earthquakes.

Tectonic Movement

Since the earth is not made up of one single surface but instead of many plates sliding on our planet's underlying mantle, a shift or collision of these plates can have severe adverse effects. This can lead to earthquakes, volcanic eruptions and tsunamis.

Moon Activity

The moon is known to have a strong influence on the natural processes on earth. According to latest studies, researchers found that the moon has the potential to cause huge earthquakes which may cause huge amounts of destruction and death.

Mining

It is controversial whether mining activities can cause natural disasters. Some scientists blame mining for landslides and soil and mountain erosions. Others argue that landslides occur naturally due to heavy rainfalls and flash floods. Mining can thus potentially contribute to the emergence of natural disasters, although it is not a main driver.

Deforestation

Deforestation can contribute to an increase in natural disasters since forests usually prevent floods and droughts since they balance and hold back natural groundwater resources. By deforestation,

the ground is no longer covered and thus the probability for floods and droughts increases dramatically.

Soil Erosion

Soil erosion can lead to a high level of degradation of land, which in turn can lead to a loss in fertility and thus to famine for local populations. Soil erosion can also cause landslides which can cause serious damage to nature as well as to humans.

Seismic Activity

The seismic activities inside our earth can cause earthquakes. These earthquakes can cause death and injuries for many people as well as for animals and other life forms. It also leads to a loss of many homes so that people who survived often must leave their home countries in order to find a better future.

Air Pressure

There is a connection between the air pressure and some natural disasters like hurricanes, heavy rains and thunderstorms. Thus, air pressure naturally contributes to natural disasters in a certain way.

Ocean Currents

Changing ocean currents can lead to a change in the ocean temperature which in turn can harm or even kill large populations of fish and other sea animals and plants. Moreover, changing currents and therefore a possible local increase in water temperature can lead to a higher probability for hurricanes or tropical storms.

Pollution

Since our nature is a quite sensitive organism, pollutions of all sorts may lead to an imbalance of the earth which in turn may create natural disasters of several sorts.

Effects of Natural Disasters

- Environmental issues
- Humanitarian crisis
- Damages to infrastructure
- Public health issues and diseases
- Food scarcity
- Water scarcity
- Displaced population
- Injuries
- Fatalities
- Emotional shocks
- Economic impact

Environmental Issues

There are severe effects of natural disasters overall environmental system. Hurricanes and other storms can destroy the lives and the livelihood of many people, especially of those who live near the coast since they are also in danger of tsunamis. Moreover, draughts may lead to a migration of many people who just will no longer be able to make their living in their home countries since there is not enough water left to grow plants or to raise cattle. Natural disasters not only have dramatic effects on humans, but they also destroy the habitat of many animals and plants which may in the worst case even become extinct.

Humanitarian Crisis

Natural crises lead to humanitarian catastrophes all over the world. This includes an increase of famine and also the spread of diseases, especially in poor developing countries since they will often not be able to fight the consequences of natural disasters in an effective way due to a shortage and resources and also due to a lack of technological knowledge. Natural disasters may force many people to migrate to other countries since their livelihood has been destroyed and thus, they will strive to search for a better life in other places on earth.

Damages to Infrastructure

Natural disasters usually also imply great damage to the affected infrastructure. This includes the destruction of important buildings like hospitals or airports. Moreover, roads may be blocked through trees and thus the transportation system may collapse as a result of natural disasters.

Public Health Issues and Diseases

Natural disasters often destroy many important facilities that are meant to keep living conditions stable. If these facilities are destroyed, there will likely be an increase in diseases since the hygienic conditions dropped as a consequence of the natural disaster. Making things worse, natural disasters often also destroy hospitals and other medical facilities. This means not only the likelihood of diseases increases due to lower hygienical standards, also the supply of medicines will be more difficult. As a result, it is more likely that people will not be able to recover from their diseases.

Food Scarcity

Another effect of natural disasters can be a scarcity of resources, which is especially severe when it comes to the supply of food. If large areas of land have been destructed by natural disasters, farmers will no longer be able to harvest enough crops or to raise enough cattle in order to meet the demand. Thus, the local population is likely to suffer from starvation.

Water Scarcity

Another related issue is the topic of water scarcity. Due to natural disasters, natural water sources like rivers or lakes may be polluted and thus the water supply will be decreased dramatically. A scarcity of water supply will be especially severe when draughts hit areas for a long period of time. Farmers will no longer be able to raise enough crops.

Moreover, even the drinking water will become a scarce resource which may eventually lead to migration since water is essential for all life on earth.

Displaced Population

Due to natural disasters, people often lose all their belongings, including their houses and their livelihood. If this happens, they must decide if they will be able to rebuild all of it or if they instead see a better chance to move to other countries in order to be able to find a better future there.

There will be an increasing number of migrants in the future due to the fact that global warming will greatly reduce the fertility make many areas since there will not be enough water left to grow crops or to raise cattle. Thus, many people will be forced to leave their homes and to migrate to other countries.

Injuries

Many people will suffer from injuries caused by natural disasters. Making things worse, medical treatment in the affected areas will be quite limited since many medical facilities may have been destructed as well. It will therefore not be possible to treat many injuries in an effective way which may cause adverse long-term health effects.

Fatalities

Many people lose their lives as a consequence of natural disasters. Natural forces are simply too strong to save all people. Moreover, especially in developing countries, warning systems are often not good enough to be able to save the lives of many people. In addition, medical facilities are often not advanced enough and will not be able to deal with a large number of heavily injured people at once, which may result in increased mortality.

Emotional Shocks

Apart from physical injuries, many people will also suffer from mental conditions since they will not be able to process and handle the consequences of natural disasters appropriately. Many people lose their children or other family members to natural disasters which will shock them emotionally for quite a long time or even for their whole life. It will take a long time for many people to recover from these kinds of emotional horrible events.

Economic Impact

To make things worse, there are usually great adverse economic effects from natural disasters. For example, an earthquake can lead to a devastation of large areas of land. People will no longer be able to make their living from farming in these areas. Thus, they will lose their livelihood because of the result of this disaster.

Solutions to the Natural Disasters Problem

- Emergency measures
- Investments in risk reduction
- Information sharing on newest research findings

- Reforestation
- Stable buildings
- Education
- Technology
- Governance
- Economic support

Emergency Measures

Since we will not be able to entirely stop the occurrence of natural disasters, it is crucial to do our best to mitigate the adverse effects. This means having effective early warning systems in place which advise people to search for shelter before natural disasters hit. Moreover, the medical facilities have to be secured against natural disasters so that injured people will be able to get medical support. In addition, governments in high-risk countries should make agreements to help each other in case one country is affected by a natural disaster. With these emergency measures, the effects of natural disasters can be mitigated to a significant degree, even though we will never be able to protect all people from the horrible adverse effects.

Investments in Risk Reduction

Investments in risk reduction may also protect people from the adverse effects of natural disasters. This could mean taking prevention measures even before natural disasters occur. For example, countries can build barriers which in case of a tsunami prevent it from hitting the coast.

Information Sharing on Newest Research Findings

It is crucial that countries all over the world share their newest findings and insights on measures for how to protect people from the effects of natural disasters. Since developed countries usually have larger budgets for research, they should supply developing countries with insights that help these countries to take action against natural disasters.

Reforestation

Reforestation is an effective measure against some natural disasters, especially against landslides, droughts and floods. The roots of trees hold the soil together and also store large amounts of water. Moreover, reforestation is also a counter-measure to the issue of global warming.

Global warming also contributes to an increase in natural disasters since it increases the sea temperature which contributes to more powerful storms. Thus, reforestation can indirectly contribute to a decrease in the probability of hurricanes and other storms.

Stable Buildings

We have to make sure that our buildings are able to survive strong storms and also earthquakes. This is possible with our current knowledge; however, it takes quite advanced building techniques in order to achieve this kind of buildings. Moreover, poor countries may often have not the knowledge nor the resources to build stable homes. Thus, especially people in these countries must improve in order to be more resistant to natural disasters.

It is in the responsibility of developed countries to provide help and share insights in order to make buildings more resistant to natural disasters, also in poor countries.

Education

Education plays an important role in the context of natural disasters. On the one hand, it helps people to understand how they contribute to natural disasters in their daily lives. For example, our consumption behavior leads to an increase in the speed of global warming which in turn leads to more storms. On the other hand, education also helps people in the sense that they will be taught how to behave in case of emergency and thus to be able to save their lives.

Technology

Technology is an important part of the overall picture to deal with natural disasters. Although we will never be able to fully prevent all kinds of natural disasters, technology can help to mitigate the adverse consequences of these events. For instance, improved early warning systems can save many lives which would otherwise be lost due to tsunamis or other natural disasters.

Governance

Emergency plans on how to behave in case of natural disasters have to be prepared and improved by governments in the affected areas over time. Through profound emergency plans, many people will be able to survive natural disasters. Governments have to make sure that these plans are up to date and also adjust them when they get new insights.

Economic Support

Since the biggest natural disasters often happen in poor countries, rich developed countries can help them with financial support in order to recover from the adverse consequences. For example, it will take lots of money to rebuild the destroyed infrastructure. This can be accomplished much faster if financial support is supplied by other countries.

Historical Examples of Natural Disasters

1556 Shaanxi Earthquake

The Shaanxi earthquake in 1556 is considered the deadliest earthquake in recorded history and killed approximately 830,000 people.

1839 Coringa Cyclone

In 1839, Coringa, a port city in India, had been hit by a massive cyclone which caused the death of 300,000 people.

1881 Haiphong Typhoon

The Haiphong typhoon hit parts of Vietnam and the Philippines in 1881 and caused more than 300,000 fatalities.

1887 Yellow River Flood

The Yellow River Flood happened in 1887 on the Huang He river in China.

It killed around 900,000 people and is therefore ranked as one of the deadliest natural disasters in history.

1920 Haiyuan Earthquake

The Haiyuan earthquake in 1920 Haiyuan County in China. It caused more than 270,000 deaths.

1970 Bhola Cyclone

The Bhola cyclone in 1970 stroke both India and Pakistan and caused more than 500,000 fatalities.

It is therefore known as the deadliest tropical cyclone in the recorded history.

Tangshan 1976 Earthquake

In 1976, an earthquake hit the region of Tangshan in China.

More than 240,000 people died because of this natural disaster.

1992 Hurricane Andrew

Hurricane Andrew was a hurricane of category 5 that hit the Bahamas, Louisiana and Florida.

Although the number of fatalities was relatively low, the economic damage was one of the largest in history and amounted to 27.3 billion USD.

2003 Bam Earthquake

The Bam earthquake happened in 2003 in Iran and killed around 26,000 people.

2004 Indian Ocean Earthquake and Tsunami

The epicenter of the Indian Ocean earthquake in 2004 was in Sumatra, Indonesia.

It also caused a tsunami. The estimated fatalities amount to over 225,000.

2005 Hurricane Katrina

The category 5 Hurricane Katrina hit Louisiana and Florida in 2005.

It caused over 1000 fatalities and the damage amounted to 125 billion USD.

2005 Kashmir Earthquake

The earthquake in Kashmir, Pakistan in 2005 caused between 80,000 and 90,000 fatalities.

Additionally, millions of people had to be displaced.

2008 Sichuan Earthquake

The Sichuan earthquake in China in 2008 caused almost 90,000 deaths and caused damage amounting to 150 billion USD.

2008 Cyclone Nargis

Cyclone Nargis hit Myanmar in 2008 and is known as the worst natural disaster in the history of the country. It is estimated that this cyclone caused around 140,000 fatalities.

2010 Earthquake in Haiti

The earthquake in Haiti in 2010 caused massive destruction.

The estimates of fatalities range between 100,000 and over 300,000, depending on the source.

The 300,000 estimate is the official number released by the government.

2011 Tōhoku Earthquake and Tsunami

In 2011, the Tōhoku earthquake off the coast of Japan caused around 16,000 deaths.

Conclusion

Natural disasters are a great threat to humanity. Although they occurred long before the first human populated the planet, we likely contribute to an increase in natural disasters through our behavior. The number of natural disasters seems to be positively correlated to an increase in the earth's temperature.

Since we contribute to global warming through the emission of greenhouse gases, we also indirectly contribute to an increase in natural disasters. However, we will not be able to entirely prevent natural disasters to happen. Instead, we should improve our emergency measures in order to save as many people as possible. All countries should work together in order to mitigate the problem of natural disasters and ensure a livable future for future generations.

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