The recurrence of Natural Disasters in Jowhar, Middle Shabelle region, Somalia: The Causes and Impacts

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Abstract: *Natural disasters usually involve a phenomenon with consequences that exceed the response capabilities of local communities and have a significant impact on the region's socioeconomic development. Droughts, floods, and hurricanes are all natural disasters that jeopardize the environment and the lives of Somalis. Severe floods have devastated the south and central parts of the country multiple times, destroying infrastructure and homes and killing many vulnerable people. Droughts in the south and central parts of the country, particularly in the Middle Shebelle region, have killed a number of children and mothers. It also had a negative influence on crops and cattle. Objective of this study is to know the recurrence of Natural Disasters in Jowhar, Middle Shabelle region, Somalia: The Causes and Impacts. The Somali people are completely aware of natural disasters such as droughts and floods, and they are self-sufficient in dealing with the consequences of these disasters. Furthermore, the Somali government has not fully created environmental laws to protect and conserve the environment, and the majority of laws, rules, acts, and regulations are not used or administered effectively. We also found that the Somali government is not yet financially prepared to deal with these crises, and that there are no strategic plans in the central government or even state administrations to prevent or at least control these disasters from causing extreme harm to the community and the environment.*

Keywords: Natural Disasters, Floods and Droughts, Causes, Impacts of the Environment

1. Introduction

A natural disaster is a sudden and terrible event in nature, such as a hurricane, tornado, or flood, usually resulting in a significant amount of property damage to the affected community and a substantial number of deaths (Merriam -Webster.com dictionary, 2021)**.** According to NASA (2007), there are a number of natural disasters, including wildfires, eruptions, avalanches, tsunamis, earthquakes, landslides, flooding, hurricanes, tornadoes, cyclones, storm surge, lahars, drought, typhoons, diseases, and so forth. (IGI Global, 2021)

Natural and human-caused disasters affect thousands of people each year. Major adverse events such as these have the potential to cause catastrophic loss of life and physical destruction.

They are often unexpected and can leave whole communities in shock. People who live through a disaster can experience emotional distress. Feelings of anxiety, constant worrying, trouble sleeping, and other depression-like symptoms are common responses to disasters before, during, and after the event. Many people are able to "bounce back" from disasters with help from family and the community, but others may need additional support to cope and move forward on the path of recovery. Anyone can be at risk, including survivors living in the impacted areas and first responders and recovery workers. (SAMHSA, 2021)

Natural disasters derive from a combination of two factors: (a) natural phenomena capable of unleashing processes that lead to physical damage and the loss of human lives and capital, and (b) the vulnerability of individuals and human settlements. These events disrupt the living conditions of communities and individuals and the economic activity of countries. While some originate in violent or unexpected phenomena such as earthquakes, others such as droughts are slow to develop or evolve but still negatively affect societies and economies and, depending on their intensity and duration, may eventually affect food supplies or essential services (UN, ECLAC, 2004).

All nations are exposed to extreme natural events to a greater or lesser degree. Their effects do not always result in a disaster, however. This happens when a natural event meets conditions of vulnerability. Natural phenomena with the potential to cause destruction to a territory are identified as hazards. Vulnerability is a precondition (which becomes manifest during the disaster) and at the same time an indicator of the exposure of capital and the ability of individuals, households, communities and countries to tolerate and recover from damage. The destruction of physical assets and deterioration of the means of subsistence for much of the population are immediate and direct consequences of disasters. Nonetheless, there is a relationship between the extent of the impact and the problems suffered by countries in different spheres (social, political, environmental, sanitary, financial, etc.) that may impair their resilience and response capacity and negatively affect progress. (UN, ECLAC, 2004).

2. General objective of the study

The main objective of this study is to investigate the recurrence of Natural Disasters in Jowhar, Middle Shabelle region, Somalia: The Causes and Impacts.

Specific objectives

- To know more about factors that cause of flood and Drought events in Jowhar, Middle Shabelle region, Somalia.
- To determine the impacts of floods and Droughts in Jowhar, Middle Shabelle region, Somalia.
- To compare the one that has the greatest impact on the community in Jowhar, Middle Shabelle region, Somalia.
- To assess the consequences of natural disasters such as floods and droughts on vulnerable populations and the Environment in Jowhar, Middle Shabelle region, Somalia.

3. Review of literature

A total of 313 major natural disasters (excluding epidemic diseases) occurred worldwide in 2020, affecting 123 countries and regions. Among all these disasters, 193 were caused by floods, with the highest frequency, accounting for 61.66% of the total. A total of 15,082 people were killed by natural disasters worldwide in 2020. Extreme temperatures caused the largest number of deaths, reaching 6,343 people, and accounting for 42.06%; followed by floods with 6,171 people. A total of 98.9667million people were affected by natural disasters globally in 2020, of whom 45.95% were affected by storms, reaching 45.4708 million people, accounting for the largest proportion of the total; 33.56% by floods, reaching 33.2156 million people; 18.97% by droughts, reaching 18.7752 million people; less than 2.00% were affected by other types of disasters. (National Disaster Reduction Center of China, IFRC, 2021)

A study conducted by Blaikie in 1994 says it is not easy to draw the line between a disaster hazard that is exclusively natural and one that is socio-natural in character. Studies of disasters suggest that a great many hazards are the result of interaction between natural events and environmental conditions that have been degraded by human action (Blaikie and others, 1994). A paradigmatic example of socio-natural hazards of this type are climate events and the environmental alterations expected as a consequence of global climate change induced by the atmospheric concentrations of carbon dioxide resulting from human activity.

In other cases, environmental degradation results from the alteration of soils by deforestation, repeated monoculture or residential use, increasing the likelihood of landslides or flooding in the event of an earthquake or torrential rain.

In Africa, about 1.7 thousand natural disasters in Africa have been reported between 1970 and 2019, causing over 730 thousand deaths. Droughts were by far the main cause of deaths due to natural disasters, being responsible for 95 percent of deaths. Around five percent of human losses were caused by floods and storms. Africa is particularly vulnerable to climate change compared to other regions of the world. A large share of the population lives below the poverty line and its livelihood depends on activities extremely sensitive to climate changes and weather conditions. (Simona Varrella, 2021)

The largest effect on human life and health caused by natural disasters is death, and among the most common direct consequences occur various forms of injury, illness and stress. However, the effects may be indirect, such as environmental pollution or loss of flora and fauna, which in the long term can be dangerous to humans. (Obradović-Arsić, D., & Filipović, D. (2013).

4. Methodology

This study employed a cross-sectional and Qualitative research designs. Cross-sectional studies are use questionnaires for data collection with the view of generalizing from a sample to a population. This study was conducted in Jowhar town, Middle Shabelle region, Somalia. A total 200 respondents were participated this study, and used non-probability sampling which means to select the respondents intentionally. Data was be reviewed, edited and entered into computer and to be analyzed by software program statistical package for social sciences (SPSS).

5. Results

5.1 Socio-Demographic Data

A total of 200 respondents participated in the study. The majority of respondents by gender shows that 147 (73.5%) of respondents were Male, while 53 (26.5%) were female, the mean Age were 20-30 127(63.5%); and 109 (54.5%) were Single. About 153 (76.5%) had universality degree. Regarding the occupational status of the participants, students were the highest 52 (26%), and the majority of their income of 100-200$ were 63(31.5%).

Table 1: Socio-demographic characteristics of respondents

Characteristics		Frequency	Percent
Gender	Male	147	73.5 %
	Female	53	26.5 %
Age	Below 20	7	3.5 %
	20-30	127	63.5 %
	30-40	30	15.0 %
	40-50	29	14.5 %
	Above 50	7	3.5 %
Marital Status	Single	109	54.5 %
	Married	81	40.5 %
	Divorced	10	5.0 %
Educational status	University degree	153	76.5 %
	Secondary degree	11	5.5 %
	Intermediate degree	5	2.5 %
	Non-formal degree	17	8.5 %
	Reading and writing	14	7.0 %
Occupation	House wife	15	7.5 %
	Public Service	38	19.0 %
	Private sector	42	21.0 %
	Self employed	42	21.0 %
	Student	52	26.0 %
	Other	11	5.5 %
Monthly Income	50-100 $	38	19.0 %
	100-200 $	63	31.5 %
	200-300 $	38	19.0 %
	300-400 $	18	9.0 %
	400 $ above	43	21.5 %

Table 2: Research related questions

Variables		Frequency	Percent
Do you have any experience or knowledge of natural disasters in the country, particularly droughts or floods?	Yes	178	89 %
	No	22	11 %
Have you or anyone you know ever been directly affected by a natural disaster such as a droughts or a floods?	Yes	171	85.5%
	No	29	14.5 %
Is there any impact on the community, the environment, livestock, and agricultural production as a result of the Droughts and Floods?	Yes	189	94.5 %
	No	11	5.5 %
Droughts and floods are the most common disasters in our home country of Somalia; what do you think are the causes?	Natural cause	56	28 %
	Lack of community knowledge and government preparedness	56	28 %
	Environmental issue (climate change)	52	26 %
	deforestation and environmental degradation	22	11 %
	political issue	14	7 %
Which is more common in Jowhar district: 1: floods caused by river flooding or 2: floods caused by excessive rainfall?	River floods	178	89 %
	Excessive rainfall floods	22	11 %
What is the greatest impact of floods in Jowhar district, based on your experience and knowledge?	Agriculture	62	31 %
	Environment	38	19 %
	Building	30	15 %
	Livestock	20	10 %
	Population	10	5 %
	Infrastructure	40	20 %

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Drought seems to be the most catastrophic problem in the country all the time, what causes the recurrence of droughts, based on your knowledge and experience?	Deforestation	56	28 %
	The government does not fully manage environmental issues whole the country	52	26 %
	Global climate change	50	25 %
	Environmental deterioration	22	11 %
	no environmental protection law and Environmental Conservation law	20	10 %
Droughts jeopardize cultivation and crop production by affecting the environment and plants; therefore, who is most vulnerable to the drought's effects?	Livestock	107	53.5 %
	Agriculture	71	35.5 %
	Population specially women & children	22	11 %
Do you believe that the current situation in the country and the recurrence of these disasters, particularly droughts and floods, is due to the country's lack of a comprehensive environmental protection law that is the responsibility of the central government?	Strongly Agree	109	54.5 %
	Agree	66	33 %
	Neutral	17	8.5 %
	Disagree	5	2.5%
	Strongly dis-agree	3	1.5 %
Environmental research institutions working on environmental issues in the country are needed to raise public awareness of such issues. Can we say that as a result of this vacancy, people do not fully understand how to protect their environment and prevent deforesting it in order to survive droughts and floods?	Strongly Agree	83	43.5 %
	Agree	88	44 %
	Neutral	23	11.5 %
	Disagree	5	2.5 %
	Strongly dis-agree	1	0.5 %

The Somali government has the responsibility of responding to these disasters, but they are not sufficiently prepared, why are they not prepared as they are responsible for the country?	Because of financial limitations	73	36.5 %
	Due to security reasons, in some places cannot be reached	87	43.5 %
	The country is not entirely under the government's authority	28	14 %
	Political factors	12	6 %

6. DISCUSSION

Somalia has achieved significant progress in recent years with the formation of stable political, economic, and security institutions after more than two decades of governmental uncertainty these points to a more promising future in terms of peace and economic and social development.

The country has little historical or current responsibility for global climate change but suffers disproportionately from the climate crisis. Climate change-related droughts, intermittent floods and desert locust infestation results in loss of livestock and agricultural production which account for more than 70% of GDP while employing millions directly and indirectly. The destruction of local communities' main livelihood bases continues to increase the number of internally displaced persons and resultant humanitarian crises. Furthermore, climate change and variability impacts and conflicts are interlinked in Somalia and affects the affect the most vulnerable (particularly women and children) and resource-dependent communities. Somalia is showing progress with recently found stability albeit multi-faceted challenges in economic, political and social aspects. Therefore, Somalia's priority for the next decade is to spur sustainable economic growth through leveraging its natural resources and enhancing living standards for its population.

Natural disasters, particularly droughts and floods, strike Somalia every year, having a negative effect on the environment, killing livestock, destroying crops, and impacting negatively on infrastructure, sometimes resulting in fatalities. According to the information we have gathered, Somali communities are aware of and have experienced these natural disasters in the country, particularly droughts and floods.

The majority of the respondents were over the age of 30, and the majority of those who completed the research were university educated. This indicates that the information was obtained from reliable sources. Another example of how this information is more accurate is that it is acquired directly from local people in Jowhar district who have firsthand experience with the situation.

Natural disasters frequently have an impact on the environment as well as the lives of people, animals, and agriculture. Natural reasons are the most common cause, which occur at specific periods of the year when they become dry or disappear during the rainy season.

Other natural disasters are caused by a reason that we are so similar to the rest of the world, which is the deteriorating global climate change, which has resulted in the disappearance of rains that have been accumulating in Somalia for many years.

Deforestation is a major environmental challenge facing Somalia, particularly in Jowhar District; it is one of the main causes of the country's recurrent droughts. If trees are cut down, the landscape will change, soil erosion will occur, CO2 purification will be reduced, and more carbon dioxide will be released into the atmosphere.

When trees are removed from a forest, the soil becomes more prone to erosion. As the forest transitions from a confined, damp ecosystem to an open, dry one, the remaining plants become more vulnerable to fire.

Habitat destruction, biodiversity loss, and aridity have all occurred from tree removal without adequate reforestation. As evidenced by contemporary conditions and the fossil record, deforestation causes extinction, changes in climatic conditions, desertification, and population displacement. Deforestation also affects atmospheric carbon dioxide bio-sequestration, generating negative feedback cycles that contribute to global warming. By removing forests for agricultural use and lowering arable land in general, global warming puts additional strain on people seeking food security. Therefore in Somalia especially Jowhar district, deforestation has been a major factor in the country's vulnerability to natural disasters drought and flooding.

The majority of the flooding in Somalia's Jowhar district in the Middle Shabelle region is caused by river floods. Flooding occurs when sections of the riverbed collapse. There are around three open breakages and more than nine overflows in Jowhar district, which cause river flooding on occasion.

Heavy rainfall Somali seasons include The Xagaa season runs from July to September, the Dayr season runs from October to December, the Jilal season runs from December to March, and the Gu season is from late March to June. The Xagaa and Jilal seasons are particularly dry, and drought can occur. The Dayr and Gu seasons, on the other hand, have the most rainfall, with the Gu being the heavier of the two. The Gu rains, which fall every year, cause the floods that wrack the southeastern part of Somalia. Rainfall in the southwestern region of the country drains to the lowlands of the Jubba River valley and the Shabelle River valley.

In addition, any excess water that runs down from the two rivers might add to the water flow. The resulting runoff creates massive flooding in the areas surrounding the two river valleys. Because of the elevation and temperature of the area, the Jubba River and Shabelle River Valleys are prone to flooding every year when the Gu rains fall.

Floods have been occurring in the jowhar neighboring communities since the beginning of May 2021. (Baarey, Bananey, Hansholey, Libigha and parts of jowhar town) Other settlements, such as Dai Gwan, have been flooded. The river breakage at Baarey in the south of Jowhar is at an alarming stage, and the community has been unable to block it.

Hirshbelle's state government had previously given 2500 sandbags, while the Somalia Red Crescent Society had delivered 4000 sandbags, but it appears that this will not be enough to close the gap. The current river level in Jowhar is 3.95 m, but based on the rainfall forecast, the levels are predicted to continue rising along the Shabelle River, posing a moderate to high risk of flooding. When all of these factors come together, catastrophic floods can occur, causing harm to the environment, crops, livestock, and even death.

The floods have had the greatest impact on Jowhar town's farming system, resulting in the loss of a substantial amount of the harvest. Jowhar residents who depend on agriculture for their livelihoods are now suffering several hardships. Environmental implications of floods include a lot of erosion, environmental structures being destroyed, animals being seriously affected, and infrastructure like roads being severely damaged.

Overbank spilling has happened, causing riverine flooding in portions of Middle Shabelle. Furthermore, since August 14, 2021, two open river breakages in Jowhar district, located in Bodale and Halgan villages, respectively 22km and 8 km south of Jowhar town, have caused

major flooding in the area. Several houses have been damaged, and hundreds of acres of crops have been lost.

In Jowhar Women and children are the most vulnerable groups when it comes to floods and droughts, while livestock are the second. Given their lack of physical sturdiness, IDP camps are considered as one of the most vulnerable places in terms of sensitivity. They are also frequently exposed to flood spots due to their proximity to rivers, making them particularly vulnerable to river breakages.

River breaking points are found in regions where the riparian vegetation surrounding the river is lacking. These are areas where the water overflows without being limited by riverfront vegetation, exposing already vulnerable living structures. When the riparian forest is thicker, the vegetation appears to hold water, preventing the flooded region from spreading and preserving the area's living structures.

There are three main camps in Jowhar district 1) General Da'ud (6512, IDPs) 2) Buulo Makiino (2472, IDPs) 3) Laanta Afaraad (15055, IDPs)

During droughts and floods, the people in these camps do not receive enough food, nor do they receive adequate assistance from the central government, foreign humanitarian agencies, or even the Hirshabelle state administration except for occasional small donations from the humanitarian agencies, in addition to the constant malnutrition and famine.

Other obstacles facing Somalia in overcoming these recurring natural disasters include the need to establish environmental research institutions also complete and implement environmental laws and regulations. Environmental ministries have failed to apply with environmental laws, and just a few of the agreements have been used to enforce them.

It is one of the few things that encourages deforestation and contributes to environmental degradation. If these rules were implemented, there would be less environmental degradation then droughts and floods would be prevented.

Also the environmental protection law is not yet applicable, with recently found stability; Somalia has made progress in the development of policies and institutional frameworks relevant to climate change, Natural Resource Management and overall National development. The existence of policies and regulatory frameworks are steps in the right direction although implementation challenges still exist at both the Federal government and State levels.

Some of environmental national policies are; The Somalia National Climate Change Policy 2020, The National Adaptation Programme of Actions 2013, The National Environment Policy, Draft National Environmental Management Bill, Somali National Disaster Management Policy, The National Biodiversity Strategy and Action Plan 2015, National Drought Plan, Somalia National Action Programme for the UN Convention to Combat Desertification and National Capacity Assessment Towards Implementing the Environmental Treaties of the Rio Convention. Despite that there are all of these policies, laws and more that cannot be summarized here, there are still implementation challenges at both the Federal government and State levels.

Somalia has a long history of disasters caused by both natural and man-made disaster. Weather extremes and climate unpredictability have historically exposed the country's environment to many threats, including periodic droughts and floods. The country is extremely sensitive to the effects of climate change, and the resulting natural disasters present a threat to Somalia's long-term development, food security, and poverty reduction. Every year, droughts are followed by floods in Somalia, causing severe loss of life and property and delaying the country's economic and social progress. While floods are limited in scope due to the spread of major river systems, drought is the most common natural hazard that has negative consequences across multiple sectors and affects more people than any other sort of disaster.

7. Conclusion

According to my research, the Somali people are completely aware of natural disasters such as droughts and floods, and they are self-sufficient in dealing with the consequences of these disasters. Most foreign humanitarian agencies especially UN-agencies and the Federal Government of Somalia are often offer little assistance to people who are affected the droughts and floods in Jowhar district Middle-Shabelle region, Somalia. All of these issues arise as a result of their contributions to society by their hands, which is the leading source of deforestation and environmental deterioration.

Furthermore, the Somali government has not fully created environmental laws to protect and conserve the environment, and the majority of laws, rules, acts, and regulations are not used or administered effectively. This indicates that people are to be courageous to harm the environment, because they are not afraid of breaking any laws, rules and regulations.

We also discovered that the Somali government is not yet financially prepared to deal with these crises, and that there are no strategic plans in the central government or even state administrations to prevent or at least control these disasters from causing extreme harm to the community and the environment.

People who do activities that are destructive to the environment simply to make money from the trees they cut down are obviously a problem to the country. The government should do either one of two things. The first option is to look to the government for alternative sources of income, second to reinforce environmental protection laws in order to prevent excessive deforestation.

If these two things are currently difficult, people should be educated and Environmental institutions should be established to educate people about the deforestation and degradation and conserve their natural resources, or at the very least to start a campaign to plant trees in the same way that they are cutting down trees.

8. Recommendation

Once a forested land with trees and wildlife my home country today appears to be deserted only because we ignored the environment, witnessing a pastoralist with hundreds of animals totally engaged in destruction just to make some money. These people only need to be educated about the value of trees and forests in order to become part of the solution rather than the problem. Strict measures must be implemented across the country, with no mercy granted to anyone who cuts down trees or contributes to environmental deterioration.

Drought is common in large portions of the country, resulting in significant economic losses and humanitarian misery. Meteorological drought strikes Somalia nearly every two years, beginning in particular areas and gradually spreading to the rest of the country due to seasonal shifts and rising dryness. Its recurrence results in animal and agricultural losses, contributing considerably to the country's ongoing challenge of food insecurity, which causes immense hardship to the affected communities.

Floods, on the other hand, are a common occurrence in Somalia, notably along the Juba and Shabelle Rivers in the country's south. Floods are most common during the Gu and Dyer seasons, when rainfall exceeds usual. Hundreds of thousands of animals are killed each year by torrential rains and high wind speeds. Villages, homes and structures are also destroyed by such powerful storms, causing anguish and misery to already vulnerable communities. Climate events will have a particularly negative influence on Somalia's land-based resources sectors, such as forestry, agriculture, livestock, water management, and natural ecosystems.

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