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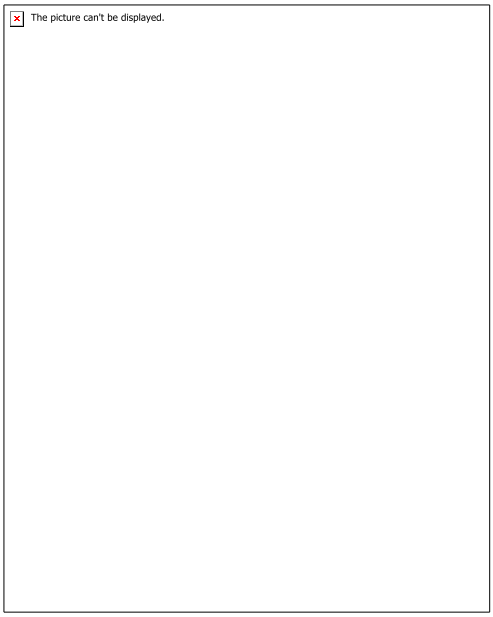

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TOPIC

IMPACT OF NATURAL DISASTERS ON RESETTLED FARMERS IN ZIMBABWE

BY

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ABSTRACT

To explore the impact of natural disasters on resettled farmers in Muzarabani district, Multidimensional responses are needed to support communities in the face of a changing climate that is continuously exposing communities to shocks such as floods and drought.Strong institutional capacity is essential for drought and floods mitigation and response to prevent the negative social and economic impacts on vulnerable populations. This study assesses the socio economic impacts of the 2015/16 El Nino induced natural disasters and identifies coping mechanisms, preparedness and response strategies that were employed in the Muzarabani district in Mashonaland central Province of Zimbabwe. Muzarabani district area is prone to drought and floods has an erratic rainfall pattern characterized by dry spells. Frequent droughts are making it harder and harder for resettled farmers to cope with each drought occurrence. It is important to understand how resettled farmers, during periods of drought, cope in order to determine how best to implement micro level efforts to support resettled farmers part of risk management and resilience building.

Results showed that, to a large extent, resettled farmers in the Muzarabani district were negatively impacted by the drought and experienced yield loss, hunger, loss of livelihoods, food shortages, and loss of livestock, depleted water sources and school drop-outs among other effects. Some of these impacts influenced the coping mechanisms that were adopted, which include selling of livestock, pulling children out of school, reduction of meals, selling of assets and begging for food from neighbours and friends. Results also showed that resettled farmers that were better off before the drought and had better capabilities and assets managed to bounce back quicker and better than others. In terms of preparedness and response, there is a need to capacitate resettled farmers on drought risk reduction through training and sensitization,so that they are able to deal with the effects of drought. The study recommends strengthening the absorptive capacities of resettled farmers in order to improve the stability of farmers when drought occurs through improving knowledge on disaster risk management, access to informal safety nets and savings. The study also recommends that support should be provided to encourage livelihood diversification, asset rehabilitation, protection and accumulation at both resettled farmers and community levels.

Key words: drought, floods, natural disasters, preparedness, mitigation response, resilience

DECLARATION FORM

I, **B200681B** hereby declare that this project is my original work and that it has not been copied or lifted from any other source without acknowledgment.

Signature……

Date……

DEDICATION

This work is dedicated to the Almighty God for the undeserved grace. I also dedicate this dissertation to my parents, family, and friends, who have always been my guiding, light. Their unwavering support, encouragement, and love have been my source of strength and motivation throughout my academic career. Without their sacrifices and faith in me, l would not have been able to achieve this milestone.

I also dedicate this dissertation to my lectures, mentors, and colleagues who have challenged and inspired me to reach my full potential. Their guidance, expertise, and feedback have been invaluable in shaping my research and academic growth.

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Thank you for your contributions, support, and encouragement

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LIST OF ABBREVIATIONS AND ACRONYMS

C P U	Civil Protection Unit
DPC	Department of Civil Protection
ECHO	European Civil Protection and Humanitarian Offices
GPS	Geographical Positioning System
UNDP	United Nations Development Programme
UNDP	United Nations International Strategies for Disaster Reduction
WASH	Water Sanitation and hygiene
ZIMVAC	Zimbabwe Vulnerability Assessment Committee
ZIMSTAT	Zimbabwe National Statistics
W B	Word Bank
ZINWA	Zimbabwe National Water Authorities
ZDF	Zimbabwe Defense Forces
ZRP	Zimbabwe Republic Police

CHAPTER 1
INTRODUCTION

1.1 Background to the Study

Natural disasters are some of the challenges that threaten sustainable development globally (United Nations, 2014). Droughts and floods largely affect areas that have an agriculture base such as Muzarabani, but they also affect other social, economic, and environmental sectors (Manyeruke, et al.2013). Droughts and floods are the most regular hazards that hit natural disasters, accounting for a fifth of all the damage caused by natural disasters (Gerber and Mirzabaev,2017). Available estimates on the impact of drought show that drought events were reported across the world from 1900 to 2013 (Masih, et al,2014). These affected over 2 billion people, resulting in 12 million deaths and cost a total of 135 billion dollars in response and mitigation (Masih,et al 2014) . The impacts of drought have been recorded in both developing and developed countries, although more significant impacts in developing countries (Eriyagama, et. al 2013) Developing countries are most vulnerable to droughts because their economies are agriculture-based, have limited infrastructure development, and lack of institutions capacity to overcome and reduce the negative impacts on droughts effectively (Gerber and Mirzabaev, 2017).

In Africa, drought is a more frequent occurrence than other natural disasters because of climate change (Masih et. al, 2017). Studies have found that the main cause of drought in Africa is the sea surface area El Nino Southern Oscillation and the sea surface temperature (Masih, et al, 2014. According to (Paek, et. al, 2017) Southern Africa experiences natural disasters during the warm stages of El Nino. During the 2015 to 16 agriculture seasons have experienced the strongest wind, drought flood (FAO, 2016).

The drought affects people both in urban areas and households, in rural areas people depend on agriculture and are mostly affected because their main economic activities related to agriculture According to (Manyani, 2014), agriculture associated risks such as drought, crop diseases, and pests attack affect farmers and increase their vulnerability. In Zimbabwe droughts and flooding are big threats and farmers are prone to the impact of these natural disasters because of the lack the resources to cope with natural risks on farming (Gerber and Mirzabaey, 2017). Muzarabani has some areas with high rates of poverty so they use

agriculture as their source of income, Mbire and Muzarabani represent flood-related hazards resulting the effects of disasters (World Vision , 2021).

Natural disasters are increasing in frequency and intensity; they are often unforeseen, serious, cause threats, and may bring injury and death in worst cases (Stanley & Williams 2019). Earthquakes, landslides, floods, drought, fires, and hailstorms are some of the natural disasters that occur every year, at any point, and anywhere, causing threats to the livelihoods of farmers and their food security. Disasters can cause loss of human and animal life, field crops, stored seeds, agricultural equipment/ materials, and their supply systems (e.g. infrastructure) as well as associated indigenous knowledge, thus disrupting not only the immediate growing season but also future seasons as reported by Zimbabwe National Statistics Agency (ZIMSTAT) (2021).

In Muzarabani district which is remote, with high concentrations of mass poverty, food insecurity, and illiteracy hence access to food, shelter, and communication related to relief and recovery is a challenge after a disaster. Farmers strongly rely on natural resources and have no alternative source of income or employment, making them more vulnerable to a crisis. Women and children, those most responsible for on-farm labour in that area, are most affected by post-traumatic stress after a disaster. Zimbabwe, located in Southern Africa, is prone to experiencing various natural disasters due to its geographical location and climatic conditions. The country faces a range of hazards, including droughts, floods, tropical cyclones, earthquakes, and wildfires. These natural disasters have a significant impact on the lives and livelihood of the people of Zimbabwe, as well as on the overall development of the country. Zimbabwe's economy heavily relies on agriculture, with a large portion of the population engaged in farming activities. Natural disasters, particularly droughts, and increased poverty levels. Over the years, Zimbabwe has faced several severe drought episodes, resulting in widespread crop failures and livestock. Additionally, floods in Zimbabwe have caused extensive damage to farmers in that area. Disasters can either be slow-moving in their onset or sudden and unexpected (Peek ,2013). Floods are amongst the most devastating natural disasters in the world and Zimbabwe, in particular, where they have claimed lives and caused property damage over the past decade. The most vulnerable, yet understudied, group when disasters occur are school children. Flood effects on the socio-economic well-being of children have been well documented; yet, the impacts on children's access and right to quality education have received little attention (Masese et al. 2012). This

has resulted in a lack of studies on the effects of floods on school children and infrastructure in Zimbabwe.

1.2 Statement of the problem

In Zimbabwe, natural disasters are the most significance threat and major risks facing resettled farmers . Resettled farmers are more vulnerable to natural hazards that may occur and they also lack resources to mitigate the impact of natural disasters in farming production and resettled farmers are left vulnerable. Little has been done to assess the impact of natural disasters on farmers rather than the society as a whole yet the agricultural sector is the most important in the nation's economy.

1.3 Purpose of the study

To explore the impact of natural disasters on resettled farmers in Muzarabani district.

Objective

To explore factors affecting resettled farmers on the impact of natural disasters

To develop hazard maps as mitigation tools for lower plain land in Muzarabani

To identify problems associated with natural disasters in the Muzarabani area.

1.4 Research Questions

What are the problems associated with natural disasters?

What is the relationship between environmental factors and disasters?

What are the problems faced by resettled farmers?

1.5 Research Assumptions

Farmers who have ee resettled are more vulnerable to the effects of natural disasters due to the their lack of resources ad support

The impact of natural disasters is determined y the severity of the evet ad the vulnerability of the farmers

Resettled farmers may have limited access to disasters relief ad assistance which ca exacerbate the effects of natural disasters

1.6 Significance of the study

The research can be used for academic referencing in the future by the other students.

To the researcher:

To gain more knowledge on the impact of natural disasters not just in Zimbabwe but globally as well as equipping the researcher with interview skills.

To Policymakers

To make informed decisions

1.7 Delimitations of the study

Geographical Scop**e**-The study was conducted on farmers in Muzarabani district in the province of Mashonaland Central in Zimbabwe. Delimitations are characteristics of the research that limit the scope and define the boundaries of the study and these characteristics are controlled by the researcher deliberately (Berg ,2019). Delimiting factors often include the theoretical perspective adopted by a researcher (as opposed to other perspectives that could have been used), choice of research questions, variables of interest and where to conduct research (Brewer , 2019).

The first delimitation that the researcher chose was to focus on the impact of natural disasters. The second delimitation was to focus on developed hazard mitigation tool used in Mashonaland Central Province. To identify problems associated with natural disasters in Muzarabani.The researcher's choice of objectives narrowed down and placed limits on what the researcher could investigate and the nature of data that the research process could gather. This helped the research to gather data specific to the area of interns under study.

Content

The study will be a survey on the impact of natural disasters on resettled farmers and provide recommendations on how to overcome such challenges

Period of the study

The period under study was from 2018 to 2024.

1.8 Limitations of the research

There was reluctance by some of the community members to disclose the information because of political tension during the period of data collection; however, the researcher mitigated that by assuring the participants of confidentiality by explaining to them that the

information obtained would not be published in their names and by communicate the aims of the study.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

Zimbabwe, like many other countries in the world, is highly prone to natural disasters such as floods, droughts, and cyclones. These disasters have devastating effects on the livelihoods of rural communities, particularly on resettled farmers who heavily depend on agriculture for their sustenance. This chapter aims to explore the impact of natural disasters on resettled farmers in Zimbabwe in the district of Muzarabani. It will examine the different types of natural disasters and their consequences on the agricultural activities of these farmers. Furthermore, it will analyze the coping strategies employed by resettled farmers to mitigate the effects of disasters and provide recommendations for improving their resilience.

2.2 Theoretical framework

This study employed the Risk Reduction Measures theory. The theory is premised on the understanding that the risks from natural hazards can be reduced through public awareness of natural hazards and their impact on communities. Public education is educating the public on the causes and characteristics of natural hazards. It can be created through sensitization and training programmes for community, architects, engineers, builders, masons, teachers, government functionaries, and students (Pokharel, 2003). Disaster survival requires an integrated risk management program, organizational skills, safety programmers, disaster preparedness, mitigation, and emergency plans (Grigg, 2003).

2.3 Literature

Contaminated land is an issue of concern due to the risks it poses to the health of communities. The health hazards like the presence of potentially carcinogenic substances, the presence of bacterium, and accumulation of explosive or flammable gas are effects of natural disasters on public health of communities (Harris and Herbert, 2013). It is said that the risk factors for increased infectious disease transmission and outbreaks are mainly associated with the aftereffects of natural hazards. These after-effects include displacement of populations,

environmental changes, and increased vector breeding sites. Unplanned and overcrowded shelters, poor water and sanitation conditions, poor nutritional status, or insufficient personal hygiene are often the case. As a result, there are also low levels of immunity to vaccine-preventable diseases, insufficient vaccination coverage, and limit access to health care services (Isidore, Aljunid, Hdistri and Oshitam, 2014). Natural hazards cause a lot of health problems in many countries. In Nepal, post-disaster epidemics and death in the countries are mostly related to the spread of water-borne diseases

Contamination of drinking water sources by flash floods and landslide events. Water-borne diseases were the top ten reasons for hospital visits in Nepal. A large number of hospital visits occur in summer (June to September) every year and most of these visits are related to diarrheal diseases (Pokhrel and Viraraghavan, 2014). Howard, Brillman, and Burkle (2018) pointed out that the public health consequences of flooding include disease outbreaks resulting from the displacement of people into crowded camps and cross-contamination of water sources with fiscal material and toxic chemicals. Flooding is usually followed by the proliferation of mosquitoes resulting in an upsurge of mosquito-borne diseases such as malaria. Earthquakes are found to be the second most reported natural disaster. Out of infectious diseases may be reported when the disaster results in population displacement into unplanned and overcrowded shelters, with limited access to food and safe water. Disease outbreaks may also result from the destruction of water and sanitation systems and the degradation of sanitary conditions. Tsunamis have a similar clinical and threat profile water-related consequences (www.gsa.an/resources/factitestsunami.polf (2018) Connolly, Gayer, and Ryan (2014) indicated that epidemics among victims are commonly related to polluted water sources (faecal contamination). Outbreaks have been related to shared water containers and cooking pots, scarcity of soap, and contaminated food. Diarrheal disease epidemics of more than 17000 cases have been reported after population displacement by flooding in Bangladesh in 2013 (Qadri, Han, and Furuque, 2015). It was seen that diarrheal diseases are a leading cause of death (40 percent) in disaster and camp settings (WHO 2016). Overcrowding is common in populations displaced by natural disasters and can facilitate the transmission of communicable diseases, measles.

2.4 Types of Natural Disasters in Zimbabwe

Zimbabwe experiences various types of natural disasters, including floods, droughts, and cyclones. Floods occur mainly during the rainy season and destroy crops, and infrastructure, and the loss of livestock. Disaster classification UNIDSR (2014) defines a disaster as a

serious disruption of the functioning of a community or society involving widespread human, material, economic, and environmental losses and impacts that exceeds the ability of the affected community or society to coping up using its resources. According to Lee(2021), a natural disaster can be simplified as hazard plus risk, and hazard is defined as a dangerous phenomenon, substance, human activity, or condition that may cause loss of life, injury, or other health impacts, property damage, loss of livelihoods and services social and economic disruption or environmental damage (UNIDSR 2014). Given this definition of a hazard, one can conclude there a various types of disasters and their types depend on the cause of the hazard or disaster. Below et al (2019) state that there are two main types of disasters which are natural disasters or God's acts and technological or human-induced disasters and the natural disasters category can be further divided into the following categories: 1) Hydrological disasters include floods 2) Climatological disasters like extreme temperature-heat waves, droughts, and wild fires 3) Meteorological disasters which include tropical storms and cyclones 4) Geophysical disasters these include earthquakes, volcanoes, and landslides 5) Biological these include epidemics, insect infestation like grass hopers, locusts, worms In light of the above one can note that there are two major types of disasters but they can be subdivided into many sub-categories.

2.5 Drought

According to (Cook, et al., 2013) extreme climate and weather events have increased in frequency, severity, and duration due to climate change. One such extreme weather phenomenon is drought. (Li, et al., 2013) explains that drought is of interest because of its impacts on natural resources and agricultural production which leaves resettled farmers unspared of this calamity. (Wilhite, et al., 2014) agrees by saying that a remarkable increase in the impacts of drought has been noticed in the agriculture, energy, tourism, and recreation sectors as a result of increased frequency, severity, and duration. Drought-related disasters have been more devastating than other natural hazards and the direct effects of drought have been followed by secondary and indirect effects such as famines and epidemics (Panagoulia & Dimou, 2018)

Drought is a complicated phenomenon and can be hard to define. One difficulty is that drought means different things in different regions. Tsengai (2017) defined drought as depending on the average amount of precipitation that an area is accustomed to receiving. For example, in Muzarabani, the average rainfall is about 80-120 cubic meters a year. If significantly less rain falls, there may be water shortages and a drought may be declared.

However, some arid regions may receive less than about 80 ml of rainfall in a non-drought year.

Determining the start of a drought can be tricky. Unlike many natural hazards that bring about sudden and dramatic results—such as earthquakes, tornadoes, and hurricanes—the onset of a drought can be gradual and subtle. It can take weeks, months, or even years for the full effects of long-term inadequate rainfall to become apparent.

The end of a drought can also be difficult to determine. While a single rainstorm will provide short-term relief from a drought, it might take weeks or months before levels of precipitation to normal. The start and end of a drought are often only clear in hindsight. Most droughts occur when regular weather patterns are interrupted, disrupting the water cycle. Changes in atmospheric circulation patterns can cause storm tracks to be stalled for months or years. This disruption can dramatically impact the amounts of precipitation that a region normally receives. Changes in wind patterns can also be disruptive to how moisture is absorbed in various regions.

Scientists have found a link between certain climate patterns and drought. El Niño is a weather event where the surface water in the Pacific Ocean along the central South American coast rises in temperature. These warmer waters alter storm patterns and are associated with droughts in Indonesia, Australia, and northeastern South America. El Nino events keep climate scientists guessing, by occurring every two to seven years.

There is still a lot of debate about the connection between drought and global warming, the current period of climate change. A 2013 NASA study predicts warmer worldwide temperatures will mean increased rainfall in some parts of the world and decreased rainfall in others, leading to both more flooding and more droughts worldwide. Other scientists question the prediction that there will be more droughts and believe global warming will create a wetter climate around the world.

2.6 Floods

Two types of floods affect the area under study. The first and most frequent type of flood is the seasonal flood. This occurs in most years normally in January or February. This is at the peak of the rainfall season. The second and not-so-frequent one is the cyclone-induced flood. This has become more frequent than before. In March 2019 cyclone Idai hit the basin bringing with it intense storms. Guruve and Mzarabani are affected by floods because of their

location. The two are located downstream of Kariba Dam but upstream of Cabora Basa and at the confluence of Manyame and Msengezi. When the Kariba dam rises to a certain level, water is released from the dam to avoid dam failure. Most releases are done between December and February. This causes the discharge in the Zambezi to increase substantially.

Manyame and Msengezi rivers will thus not be able to discharge in the Zambezi as a result water begins to accumulate at the confluence of Manyame and Zambezi leading to flooding in the Guruve area. Further downstream Cabora Basa dam levels continue to rise as releases from the dam are exceeded by inflows due to releases from Kariba and Zambezi tributaries.

The swelling of the Cabora Basa dam leads to flooding in the area under study. This has led to the loss of livestock and human life, crops, and infrastructure have been destroyed leaving the rural folk in general poorer. The actual costs of the flood damages are not available as most of the assessments done so far are qualitative. Women are the most affected since they are responsible for the day-to-day management of the families such as looking after the health of the child and securing food for the family. Diseases outbreaks such as malaria and cholera have been quite common during this period.

2.7 Impact of Natural Disasters

Disasters pose direct and indirect threats to the livelihoods and food security of resettled farmers in Muzarabani. The number of people in need of food assistance often increases after the occurrence of disasters, especially when vulnerable populations are affected. The 2015–2016 El Niño-related droughts and floods, for instance, heavily affected the food security and nutritional status of more than 60 million people FAO 2018). The uncertainty associated with the observed increase in the frequency and intensity of disasters in many developing countries can drive poor farmers to invest in low-risk but low-returning agricultural production technologies and techniques (Cole et al., 2013). In turn, low investments can lead to lower future farm profits and increased food insecurity (Aimin, 2021). Furthermore, the impact of disasters on reduced food consumption, education, and healthcare can lead to long-term negative effects in terms of income generation and future food security (FAO, 2015c).

Agricultural production relies on the availability and quality of natural resources and ecosystem services. Population growth, climate change, and unsustainable management are among the key factors posing a threat to land, water, and biodiversity, which form the natural base of agriculture. In turn, the depletion and degradation of natural resources increase the vulnerability and exposure of farmers to natural hazards, leading to more frequent and more

harmful disasters. Deforestation, water resources depletion, land degradation, desertification, and degradation of coastal ecosystems such as mangroves and corals, all reduce nature's capacity to defend it against natural hazards and aggravate the impact of disasters (FAO, 2013b).

Disasters also have direct and indirect negative consequences on the natural resources and ecosystems that sustain agriculture and resettled farmers perhaps. These might include, among others, surface and groundwater depletion and contamination, increased soil erosion, damage to native forests, mangroves, wetlands, salinization of soils, damage to coral reefs, and biodiversity loss. Furthermore, the displacement of affected people in the aftermath of disasters could indirectly lead to increased pressure on natural resources (e.g. exploitation of forest and water resources) in the areas surrounding displacement camps.

One of the most direct ways in which disasters affect agriculture is through reduced production. This results in direct economic loss to farmers that can cascade along the entire value chain, affecting agricultural growth and rural livelihoods. This chapter examines the extent of crop and livestock production loss due to natural disasters over the last decade. The cumulative effect of over 330 large-, medium- and small-scale disasters is examined and production loss over the entire crop and livestock commodity range is quantified to adduce a holistic estimation of the cost of natural disasters for agriculture in developing countries.

Floods have the greatest damage potential of all-natural disasters worldwide and affect the greatest number of people (UN, 2014). When floods occur in less developed nations, they can effectively wipe out decades of investments in infrastructure, seriously cripple economic prosperity, and result in thousands of deaths and epidemics. Depending on the context, flood flows can be a problem or a disaster. Floods are a problem when the magnitude and impacts of their occurrence exceed the ability of affected communities to cope or they become a disaster when an event leads to a serious disruption of the functioning of a community or society causing widespread human, material, economic and or environmental losses, which exceed the ability of the affected society to cope using their resources.

Such destruction can impact negatively on socioeconomic development of the immediate community the environment and the country at large. The socio-economic impacts of floods include loss of life and property, mass migration of people, food shortages, shortage of clean water supplies (deterioration of water quality), loss of proper sanitation facilities, and increased incidence of waterborne diseases (World Meteorological Organisation, 2017).

Flood losses reduce the asset base of households, communities, and societies by destroying standing crops, dwellings, infrastructure, machinery, and buildings (UN, 2004).

Matiki (2015) observed that flooding also exacerbates poverty because of the loss of property and other necessities which would have been accumulated over a long period, such that any income available in the home when floods occur would have to be used to meet the immediate demands when it could have been used for other necessities. Matiki (2015) also observed that flooding hurts school attendance because school children cannot cross flooded rivers. The environment has its share of problems that are brought about by floods and these include mass migration of wildlife, inundation of ecologically sensitive areas, and environmental degradation.

2.8 Measures to Mitigate the Impact of Natural Disasters

Given these effects of disaster on human beings, one would have a question is there anything that is being done to reduce these impacts? This is the question that this research is going to answer by showing the various prevention and mitigation measures that are being undertaken in the Muzarabani district to reduce the impacts of disasters.

According to the Global Water Partnership (2019), flood management is a broad concept that focuses on reducing flood hazards through a combination of policy, institutional, regulatory, and physical measures, while recognizing that floods can never be fully controlled. This takes into account the beneficial uses of floods, which are difficult to quantify in human and economic terms but which sustain natural systems that also have economic, social, cultural, and ecosystem values and functions (Fox, 2018).

Flood mitigation measures can be implemented to reduce the physical extent of flooding, relieve the effect of a flood on humans and the community, reduce the tendency towards flood damage in different areas, and reduce the risk of flooding and in this way, income stability can be assured. Traditional and integrated approaches are used in flood management. In traditional (structural) flood management, the focus is on reducing or controlling floodwaters and susceptibility to flood damage through the construction of structures such as dams, flood basin widening of riverbeds, weirs, and levees as well as modification of the river channel. The approach however is problem-driven and is carried out in isolation. The nonstructural flood mitigation measures include public education and information programmes, forecast and early warning systems, flood zoning, flood insurance, rescue

operations, floodplain building codes, floodplain buyout programs, and mortgage limitations (Nelson, 2017; Australian Government, 2018).

There is now a growing realization that the predominantly engineering approach to flood control has not provided its intended benefits in terms of protection from floods (Fox, 2018), as a result of the amount of damage that has occurred in recent events therefore the focus in now on Integrated Flood Management (IFM) which is a proactive approach to flood mitigation that combines both structural and non-structural measures. IFM encourages the participation of the affected communities in coming up with solutions to mitigate floods. The Johannesburg Plan of Implementation (JPI) of the World Summit on Sustainable Development (WSSD) highlights the need to mitigate the effects of drought and floods. Some of the measures that are recommended include improved use of climate and weather information and forecasts, early warning systems, land and natural resources management, agricultural practices, and ecosystem conservation to reverse current trends and minimize degradation of land and water resources among others. This therefore means that poor countries face challenges in several ways as a result of floods, which become critical when it comes to the attainment of the Millennium Development Goals (MDGs) especially given the fact that floods result in water quality deterioration and loss of proper sanitation facilities among some of their effects.

Hazards associated with the flooding can be divided into primary hazards that occur due to contact with water, secondary effects that occur because of the flooding, such as disruption of services, health impacts such as famine and disease, and tertiary effects such as changes in the position of river channels. The impact of a hazardous event depends on the elements at risk, such as population or buildings and their associated vulnerability to damage or change as a result of the event.

Through flood hazard mapping one can determine the areas susceptible to flooding when discharge of a stream exceeds the bank-full stage or causes economic losses. Using historical data on river stages and discharge of previous floods, along with topographic data, maps can be constructed to show areas expected to be covered with floodwaters for various discharges or stages (Nelson, 2017).

2.9 Vulnerability of Zimbabwe to Disasters

This section examines the issue that various scholars have said make Zimbabwe vulnerable to disasters. Chigodora (2021) noted that rural areas are vulnerable because they largely depend

on natural resources for their survival and livelihoods which are usually affected by natural disasters. Gwimbi (2019) wrote that rural communities that are cited in flood plains are vulnerable to floods and these areas include Muzarabani and Mbire districts in Zimbabwe. Given the above one can note that Muzarabani is vulnerable to natural disasters like floods and droughts. IFPRI (2013) has it that malnutrition makes Zimbabweans vulnerable to health or biological hazards like cholera, malaria, and HIV/AIDS to mention but just a few. This clearly shows that Zimbabweans, including farmers in the Muzarabani district which is under study, are vulnerable to biological disasters hence there is need to identify and assess the impact.

Effectiveness of the disaster preparedness measures/ activities that are in place for biological disasters/ hazards. Chitiga and Chigora (2013) notes that lack of effective environmental management measures makes Zimbabwe vulnerable to environmental hazards which are caused by climate change. This means that there is also need to look at the measures that are in place to combat environmental disasters in the Muzarabani district in this research. \similarly,

Pearce and Maunder (2020) noted that poor roads conditions, poor law enforcement as a result of corruption and other factors are leading to high vulnerability of Zimbabweans to road traffic accidents (RTA"s). Given this one need to know what is being done in Zimbabwe to hedge against this hazard. This research is also going to look at the preparedness measures that are in place to deal with these road traffic accidents in Muzarabani district.

Another thing that make Zimbabwe vulnerable to disasters is that of low budgetary allocations that are given for the disaster risk reduction programs as the civil protection is reduced to more of a funeral/ burial society that is only affords to partly afford those affected by disasters and record the losses made without doing anything to reduce the risks Madamombe (2014). The low budgetary allocations are a result of corruption, poorly timed policies like the land policy, and Zimbabwe's participation in the DRC war which led to the economic decline of the nation (Hondora 2019). This economic decline led to mass migration of professionals from the country including health workers which worsened Zimbabwe's health sector according to Moss and Patrick (2006).

In light of the above one can note that Zimbabwe's vulnerability to disasters is worsened by the lack of trained personnel to deal with the disaster risk prevention and preparedness

measures or activities. Given the above one can note that Zimbabwe is vulnerable to various disasters as shown in the above paragraphs. One can also note that there is need to group the disasters in categories then look at the preparedness measures that are in place for every disaster and assess their effectiveness

2.10 Disasters that are Common in Zimbabwe

Gwimbi (2009) wrote that floods and droughts a common and continuous problem in Zimbabwe and they lead to food insecurity in the country. Madamombe (2014) notes that most of the floods in Zimbabwe are cyclone induced or a result of heavy rains and they are not extreme as they are in other nations like Mozambique. He also notes that these floods lead to deaths, loss of livestock, property damage and loss, and can lead outbreak of biological disasters like cholera malaria which will claim more lives than the floods themselves. In light of this one can note that Zimbabwe is prone to floods, droughts, and biological disasters like malaria.

According to Mazzeo (2013), most of the droughts in Zimbabwe are caused by Elnino-Southern Oscillation. Maphosa (2015) outlines some of the measures that can be adopted to deal with droughts and some of them are water harvesting, building dams and other water reservoirs, and establishing many irrigation schemes. HIV/AIDS is also prevalent in Zimbabwe; one in every five is HIV positive according to USAID (2015). According to Chadambuka et al (2016) Zimbabwe is also prone to health problems like cholera because of poor water and sanitation which is now old that is the water and sewage systems are now aged and outdated. This clearly shows that Zimbabwe is prone to biological disasters besides the floods and droughts.

According to Clark (2013), earthquakes are very rare in Zimbabwe and when they occur they are very weak, or are of small magnitude and the strongest ever recorded was the one that occurred in 1963 which recorded 5.8 on the Richter scale. UNDP (2017) has it that earthquakes are more often in the eastern part of Zimbabwe but they will be weak. This clearly shows that though Zimbabwe is prone to earthquakes they are not as serious as floods, droughts, and biological hazards like cholera and malaria.

Report, emphasized on the importance of building resilience in communities. It is also important to note that, the social capital of societies also determine their resilience. It is against this background that this research is going to look at the economic activities in Muzarabani. In some areas there is effective communication and warning systems. These

include the use of warnings such as emergency broadcasts, tornado sirens or other risk communication of an immediate danger. According to Pery and Mushkatel (2016) Mexican-Americans use social networks to relay warning information.

Chapter Summary

This chapter is an account of published information on disasters and disaster preparedness. It deals with literature review which serves to acknowledge works of other scholars who have researched in the disaster topics before, this was largely influenced by the fact that this research is not the first one on disasters or disaster preparedness in the world hence why have a full chapter that deals with literature review only. Importance of the study as it shows what have been researched thereby showing the gap that exist in the published literature on the topic which the research

CHAPTER 3

In summary, this chapter generally describes the research methodology, including the population, sample, data collection instruments as well as strategies used to ensure the ethical standards, reliability and validity of the study used and applied by the researcher. The study uses a qualitative descriptive research designed. The stratified sampling shall be used to make purposive sampling will be applied in each of the strata. The researcher use interviews with mainly structured questions and a few questionnaires. The self-administered questionnaires are only delivered to the management staff only whereas interviews shall be conducted to farmers. The population for farmers and the management staff respondents. Consent and permission shall be sought from the management staff and subjected themselves.

3.0 Case Study

A case study is used when the population is too big to be studied in its entirety and the researcher has to come up with a specific area of study that can generate rich and credible data (Garner, 2020). A small sample as utilize by the case study allows for depth, detailed and contexed on the areas of interest under investigation (Turner 2019). A case study can be

one unit (an individual), a group, or institution that is studied intensely to produce quality primary data (Garner 2020).

Due to their nature to collect detailed data, case studies are not limited to qualitative research but can also be used successfully in quantitative research as well (Luna ,2017). Dean (2021) noted that the case study has increased become popular with researchers in recent years as more researcher prefer to use mixed methods, that is both quantitative and qualitative research techniques, to improve the quality of their research outcomes.

The researcher used the case study because it allowed for the use of a smaller and specific sampled that could be study more intensely to produce credible data and also obtain new information from the research process. The case study of a district that is increasingly becoming important due to its located helped the researcher to obtain first hand intimate knowledge of resettled farmers in Muzarabani district. The case study also helps to collect credible data from a small sample that other researchers can also study thereby increasing data validity and reliability.

3.1 Research methodology

The research methodology refers to the theoretical analysis of the methods applied to a field or study and it comprised of theoretical analyzed data of the collected methods used in a field or study and it comprised of the theoretical analysis of the body of methods and the principles associated with a branch of knowledge (Fatima 2020). The research methodology outlines the set strategy in which research is to be undertaken and it also identified the methods to be employed by the process and how data will be analyzed and presented (Brunt, 2019). The research methodology does not set up to provide solutions so it should not be confused with a method as it merely offers theoretical guidance to understanding the methods and practices that are be applied to a specific case (Fatima 2020). There are three major approaches, that is, qualitative, mixed methods and quantitative research. This research used qualitative research methods.

3.2 Research design

Research designs the established plans that provided guidelines as to how often and when data can be collected, and from whom and how to analyze the collected data (Priest ,2022). According to Cruz (2019), research design describes the methods and the procedures used in collected and analyzed measured of the variable that is specified in the research problem. Therefore, the research design determines the study type as it gives guidance as to what the

researcher can and cannot do based on the preferred design (Preist ,2022). Garner (2020) encouraged caution in coming up with research design because it may prove difficult to determined what the study can do and what it cannot do. There are various types of research design and the most common are; correlational research, causal-comparative research, descriptive research, exploratory research, and explanatory research (Li 2018).

Although exploratory research is flexible and can address research questions of all types, it is not typically generalizable to the population at large and it is therefore most suited for specific individuals or members of a population (Cruz, 2019). Li (2018) explained that the main aim of exploratory research is to identify boundaries of the environment in which the problems, situations, and opportunities of interest are likely to reside and also identified any variables that are of interest to the research. Exploratory research is also credited for its ability to lay ground work for future research and also its ability to uncover entirely new areas of potential research (Turner, 2019). The study used exploratory research because it allows for understanding the moods, thoughts, and feelings of people unlike most research that has looked at the role and contributions of traditions leaders in local governance quantitatively. Thus, exploratory research helped to get explanations which help to understand the research problem better.

3.3 Qualitative Research

Qualitative research, according to Bailey (2020), refers to the meanings, definitions, concepts, symbols, metaphors and the description of things. Qualitative research is therefore a scientific method of observation and study which is used to obtain mainly non-quantifiable data (Warden ,2017). Quantitative research is normally used when there is little or no understanding of a problem or what caused it as it used tools that allow for collection of data based on thoughts, moods, feelings, and opinions of individuals that are close to or are affected by the problem under investigation (Fatima ,2020). Thus, not only does qualitative research help to develop hypothesis and ideas, it also lays the foundation for potential quantitative research (Bailey ,2020).

What is unique about qualitative research is that it uses data collection tools that allowed the researcher to create an intended atmosphere to help respondents relax and thereby give accurate and intimate information that they would otherwise be hesitant to share with other tools (Jurisic, 2020). Methods such as focus groups, interviews, and observations are all administered closed by the researcher which gives them room to ask followed up questions

and created the atmosphere they want (Bender ,2020). Being face to face with research participants also allowed the researcher to observe and interpret non-verbal language of the participants as well as record the research which is essential for accurate data analysis and interpretation. However, the data collected by the researcher using qualitative research is subjected because it relied on the interpretation of the researcher themselves which is a significant potential weakness of the reliability of research (Bender, 2020). Not only is qualitative data subject to the interpretation of the researcher, it cannot be grouped to observe trends and group variables (Jurisic ,2020).

The research utilized qualitative research as it helps to file the knowledge goals by helping to explain new phenomena due to the nature of data that it collects (Lamb, 2020). Not only does qualitative research help to reach useful conclusions and recommendations, it also helps to point out new areas of study and this is important for academics and researchers (Graham, 2019). Additionally, qualitative research allowed for sampling methods that allowed for the researcher to pick participants only relevant to research outcomes (lamb ,2020).

3.4 Population

A research population is a well-defined collection of objects or single entities known to have similar characteristics or traits that are or interest to the researcher (Cruz 2019). In research, a population must be well defined and its characteristics understood so that it can study in a specific manner (Dean ,2021). More importantly, when using qualitative research, the researcher must make sure the population is well defined as it informs the sample that issue to collect data. In This particular instance, the research population is the entirety of all people under the lower Muzarabani district, local government officials, and officials from the relevant ministry and civic groups that work in local government in Muzarabani district.

3.5 Sampling

The task of satisfied research objectives and questions is problematic due to the fact that researchers often do not have the time, money and access to all they ideally need to collect data from the population (Dunn ,2020). It is therefore important to come up with a sample that represents the population well as a subset that can be rely upon to collect reliable data (Cruz ,2019). Fatima (2020) defined a sample as a smaller set of data that a researcher chooses or selects from a larger population using pre-defined selection method. Selecting a sample is important to research outcomes so the sampling strategy used has to match the research design (Cruz 2019). The advantage of sampling is that it narrows down the area of

interest to a small but representative group that can produce rich data (Dunn ,2020). Dean (2021) also noted that the advantages of sampling are that it allows for other researchers to repeat the same study and verify findings.

3.6 Non-probability Sampling

Non-probability sampling is a branch of sampling that uses non-random techniques to come up with a list of research participants as it does not focus on representing the entire population equally but instead uses subjective and predetermined judgments in choosing the sample (Ratanji ,2018). Non-probability sampling helps the researcher to retain considerable control over the type of participants the study will use based on what they set out to achieve from the study (Carter, 2021).

There are various non-probability sampling techniques but this research will use purposive sampling. According to Carter (2021), when using purposive sampling, participants are selected carefully based on the assumption that they has expertise and experience with the area under study thereby giving valuable information during research process. Thus, the process of selected participants is subjective but also much precised in terms of the qualities of the participants chosen (Garner, 2020). In this research, purposive sampling was used to identify individuals with in-depth knowledge on resettled farmers that were affected by the natural disasters in lower Muzarabani district. Therefore, the researcher used a sample of 3 members of Civil Protection Unit, 8 members of the district community, 3 members of the local government, 2 members of chiefs, 2 academics, and 2 members of civic groups that work with the District Administrator. This makes a total sample of 20

3.7 Data collected methods

3.7.1 Semi-structured interviews

Semi structured interviews are a type of interview that makes use of open-ended questions meaning they allowed for the researcher to ask follow up questions in order to get clarified on certain issues (Lamb ,2020). Not only do they allowed to ask questions to understand the original question, but they also open up the research process to expand and included some areas the researcher may have overlooked but are relevant to research outcomes as they improve quality of data (Priest, 2022). Semi structured interviews are usually used in exploratory research as they allow the researcher to ask questions like why, how and when which helped to get clearer insight on matters under study (Dean, 2021).

Semi structured interviews are conducted face to face and this allows the researcher to set the tone and make the participants relaxed and establish trust which is important for collecting quality data (Dean, 2021. Furthermore, the researcher is able to also look at body language of the participants as a form of communication on its own which is important to note (Carter ,2021). Researchers may also record interviews, with the permission of participants, which helps to revisit conversations and pick up some information that may slip up during note taking when conducting the interview itself (Jurisic, 2020).

3.7.2 Secondary Sources

Written records are credible published sources of information such as academic journals, concept papers, and presentations (Jurisic, 2020). Written records are very easy to access as one has to simply access journal websites to find them and are a form of desk top research (Dean, 2021). Written records allow the researcher to draw comparisons and contrast from several sources of information and this is helped when making sense of data gathered from primary research process (Jurisic, 2020). The disadvantage with written records in qualitative research is that the exploratory area or phenomenon may be new so there is not much data on the subject matter or data available may be outdated due to changing times and circumstances within the area under study (Carter ,2021). To counter these weaknesses, the researcher made sure that all written records considered where very recent and the search engines used where broad enough to allow the researcher to gather data from a wide range of sources.

3. 8 Validity and reliability

Reliability and validity refer to the repeatability of findings (Lin, 2018). Graham (2019) notes that the question to ask with reliability are that is that if the study were to be done a second time, would it yield the same results. If so, the data are reliable. For instance, IQ tests should not give different results over time as intelligence is assumed to be a stable characteristic (Li ,2018). Therefore, the strength of the tools used is very important with reliability and validity.

To address the issues of validity and reliability the research used semi structured interviews, and written records. Triangulation refers to the use of multiple methods of data gathering data in order to get a comprehensive and balanced understanding of phenomena (Graham ,2019). The advantage of triangulation when it comes to validity and reliability is that one research tools will cover the weaknesses of the other tool and the same with the other tools used thereby improving quality of data gathered.

3.9 Data presentation and analysis

Data analysis involves a systematic application of statistical and logical techniques to evaluate the collected data (Ratanji, 2018). In this particular instance, the techniques used were more logical than statistical because data collected was qualitative in nature.

The interview guide was developed from the research questions that the researcher developed to answer or satisfy the main objective of the research. Key informant was also based on based on research questions. Whilst each of the three research questions was used as a main heading for data analysis and presentation, themes were used to present and analyze data collect base on patterns that were picked up from the data gathered or areas of interest that arose during the data collection process. Therefore, thematic analysis was based on the patterns that emerged across all data gathered but grouped under the main research questions that the data sought to answer.

Data gathered as code simply used numbers (respondent 1 to respondent 20) and because all those interviewed gave their names on condition of anonymity, it was very easy for the researcher to remember which exactly said what which was important in analyzed some of the data that was gathered. For instance, in tried to understand what resettled farmers or households think about the role of chieftaincy in local governance, it was important to look at respondents falling into those categories and what they thought against what other respondents said in order to make comparisons and drew conclusions on data gathering. Furthermore, the research used additional information and data from published sources, civil society reports to supplement and analyze the data gathered from respondents. This was important to get well rounded research.

3.10 Ethical Considerations

3.10.1Confidentiality

Any individual participated in a research study has a reasonable expected that information provided to the researcher will be treated in a confidential manner and, consequently, the participant is entitled to expect that such information will not be given to anyone else (Brewer ,2019). Therefore, the researcher has the obligation to protected the identified of the participant by guaranteed that no one will know what they specifically said during their participation. To ensure confidentiality, the researcher developed tools that did not require any participant to state their name and the participants where coded using numerical symbols. This guarantees anonymity as researcher only quoted or referred to the number prescribed to

each respondent which only the researcher knows, when analyzed and presented the findings of the research. In this research, none of the participants elected to remain anonymous so no names were mentioned.

3.10.2 Informed Consent

Individuals participated in a research study have a reasonable expected that they will be informed of the nature of the studied and may choose whether to participate or not (Brewer ,2019). Fielding (2017) goes on to insist that informed consent also dictates that individuals can choose to pull out of study at any time during the study. Therefore, to guaranteed informed consent, the intentions of the researcher must be clear at the started point and throughout the research purpose so that participants agree and willfully participate. To ensure that there was consent, the researcher drafted a consent form that advised organizations and participants of the scope of the study. After the consent forms were signed, the researcher commenced with data collection. The participants were reminded of their rights before each interview and they were reminded of their right to even decline responded to some questions they did not feel like answering.

3.10.3 Protection from harm

Harm during research, according to Berg (2019) can be physical, in the form of stress, anxiety, diminishing self-esteem or an invasion of privacy. It is imperative, therefore, that the data collection processed does not in any way harm (unintended or otherwise) participants (Gellerman ,2016). The researcher make sure that questions ask to the respondent were as simple as possible and that they did not imply or suggest anything to do with race and gender to avoid the sensitivity of such matters. Interviews were kept short to avoid fatigue or participants getting too tired and they were conducted in comfortable settings of the participant's choice. Some interviews were longer due to participants being keen on provided a lot of information. The researcher made sure that at each level the participants are comfortable with answered the questions by giving them the liberty not to answer what they do not want to answer.

3.10.4 Obtained permission

Obtained permission to conduct or carry out research is one of the fundamental steps that need to be taken prior to commencing with research (Yin ,2018). The researcher obtained permission to conducted research from their institution in writing and the relevant

government department. The consent forms issued out to participants also serve as permission that gave credibility to the research process.

Summary

The research design, which is exploratory research, was used in the study. It allowed the researcher to gather qualitative data by asking question of why, where and how which are important to understand phenomena which not much is known about. Purposive sampling was used because it allowed the researcher to only pick out members of the population that have relevant and in-depth knowledge on the subject under investigation. Semi structured interviews and focus group discussions are qualitative data gathering techniques that allow the researcher to collect data face to face and also ask follow up questions to the participants for clarity. Ethical considerations were also outlined as they help with the credibility of research. The next chapter presents and analyzes the data gathered from this study.

CHAPTER 4

CONCLUSION

Muzarabani district is vulnerable to natural disasters like floods and drought. The vulnerability is not only a question of the natural flood event, but also a result of the intersection of poor socioeconomic conditions generating vulnerability on the one hand, and the physical exposure to natural disasters on the other hand. Chief among the specific, socio-economic determinants of vulnerability include high levels of unemployment resulting in low income and poverty; high levels of occupants of traditional dwellings; low levels of education; poor medical and overdependence of the community on rain-fed smallholder farming.

Physical exposure of the community mainly results from proximity to low-lying floodplain, residing in interfluves, use of traditional huts of pole and dagga without insurance cover, heavy erosion and siltation as well as flood-retreat agriculture as well as drought affect the district in different regions Thus, flood disasters in the districts happen partly because people and buildings are in unsafe flood plains. People with few alternatives put themselves at risk by farming in low-lying floodplains. Floodwaters replenish soils with nutrients and moisture that are necessary for off-rainy farming season. As a result, the resettled farmers are reluctant to relocate from the flood plain partly due to the economic benefits derived from floods.

4.Effects of Natural Disasters to Resettled farmers

4 .1Poor harvest

The resettled farmers experienced yield loss as one of the impacts of the drought. Since the area is dry most households grow small grains, which are known to be drought resistant, but even these failed and dried up in the fields during the drought year .Mudavanhu et al (2015) identify small scale rain fed as the main source of livelihood in Muzarabani district. As a result of yield loss of the resettled farmers experienced food insecurity, as they only got little to no harvests, had no surplus to sell, and had grain that only lasted a few months. About 10% of the resettled farmers also mentioned various other effects of yield loss, which included loss

of employment in the fields, selling assets to buy food, conflict in the family and reduced meals .The remaining did not experience effects from loss of yield.

The Resettled farmers reported that they experienced hunger in the home during the drought. This was due to food shortages because of low harvests and yields. The resettled farmers reported that they experienced food shortages because they had not harvested enough grain to cater for their household needs and to last them until the next season. According to several key informants food was available in the small tuck-shops and the nearest business Centre; however households reported that food became expensive, as demand was high and supply was low. Prices that went up were mostly the maize grain, sorghum grain, and maize meal prices, which is the staple food. People had no disposable income and it was difficult for the poor households to buy food. Besides, because the basic food items were not affordable, people had to travel longer distances to buy food. This included either walking or using money for local transport to go and to buy food, putting more strain on the little available income.

4.2 Water Inaccessibility

Another impact of the drought was depleted water sources fought percent and increased distances to water sources thirteen percent. Depleted water sources resulted in some households having to walk increased distances to the nearest water source, in this case twelve percent of the farmers. Depletion of water sources also caused water shortages that resulted in the deaths of livestock. One of the focus group participants who are also part of the political leadership in the area had this to say: We lost livestock during the drought because they had no other source of water besides the Zambezi River. The rivers now need distillation, so that when it rains these rivers can actually store more water and households can use this as an extra source of water. If these sources are rehabilitated the water can be used for gardening projects, laundry, livestock watering and other domestic activities. Households will not have to rely only on the Zambezi River as the main source of water."

4.3Mitigates the impacts of natural disasters

In a bid to understand preparedness and response mechanisms that are available during times of shocks and hazards such as drought, and floods resettled were asked to indicate any institutions and agencies that act in this capacity in their area. About seventy-four percent of the resettled farmers mentioned community based organizations and non-governmental

organizations, fifty four percent mentioned Government departments, twenty percent mentioned friends and relatives whilst only five percent mentioned their local leadership. The area experiences recurrent droughts, in the case of the El Nino drought, eighty percent of farmers was not well prepared to cope with the drought. The remaining eleven percent reported that they were somewhat prepared. This shows that there is a need for strengthening the disaster risk reduction and mitigation capacities in the area at subsistence levels to assist resettled farmers to cope better and be prepared in times of drought.

4.4 Growing Resistant Crops

The growing drought resistance crops that are able resistant to drought that requires less water to grow, crops including millet and sorghum. Mudavanhu et al. (2015) note that crops grown in in Muzarabani are small grains , cotton and tobacco especially during the years of severe drought .These crops have variety of adaptions that makes them more resilient to drought such as deep root that can access water deep in the soil and the ability to store water in their stems and leaves these crops can help the farmers to continue producing food even in time of drought .In addition to growing drought resistant crops ,there are also other ways to make agriculture more resilience to drought in lower plain land ,use of drip irrigation systems ,it deliver water directly to the roots of plans which reduce water loss through evaporation this can help to reduce the amount of water needed to grow crops and can also increase the yield

4.5 Water Harvest and Storage skills

Another way to mitigate the effects of drought is through the use of water harvest and storage techniques in lower plain lands there are often opportunities to captures and store water .This can be done through dam construction or tanks or by making use of rainwater harvest structures such as swales and bunds, this can store water used for irrigate crops or livestock during times of drought. According to Mudavanhu (2015) the rain seasons is unimodal, extending from mid-November to the end of March .This can help to improve the resilience of resettled farmers and ensure that they have access to a reliable water supply during the period of drought

4 .6 Agroforestry and Soil Conservation

Agroforestry and soil conservation are important measures for mitigating the effects of drought in lower plain land in Muzarabani district .Agroforestry involves the integration of

trees and shrubs into agricultural systems this can help to improve soil health and , increase crops yields and provide buffer against drought other climate risks . Soil conservation practice such as contour farming cover crops and no-till farming can also improves soil health and reduce the risk of drought and water retention ,reduce soil erosion and increase soil fertility

4.7 Early warning System

Early warning system can play an important role in mitigating the effects of drought in Muzarabani district. These systems use weather forecast and other data to provide advance notice of drought conditions this information can be used to trigger timing and effective responses such as the distribution of food aid and the provision livestock feed, or the mobilization of emergency relief efforts by providing early warning this system can help to reduce the impact of drought on livestock people and crops .They can also help to improve preparedness and resilience to drought in the long term

4.8 Community support

Community leaders took the lead in registering vulnerable resettled farmers, so that they could be prioritized for response interventions that were being implemented by the Government and non-governmental organizations. Councilors, village heads, and the chiefs registered and selected the most vulnerable small scale farmers that included child headed households, the elderly and female headed households for first preference in getting food assistance. The chief in the area also donated grain to a few resettled farmers that were in dire need. Community leaders were part of committees set up to coordinate interventions such as food distribution and cash transfers. Community leaders were also involved in the sensitization of communities during gatherings on the destocking program that was being promoted by the Livestock Production Department (LP). However, as a community structure or mechanism the leadership did not have any community programmes or form of community safety nets in place that could be used to support households during the drought.

There are no other ways that the community assisted during the drought. However, the traditional leadership, including the chief, is still using the traditional ways of rainmaking processes and periodic beer making ceremonies to appease the spirits so that rains can come during the rainy '.Some key informants also mentioned that the

"Community used to implement the Zunde Ramambo community safety net, but it has not been working well in the past years as a result of recurrent droughts and harsh economic environments".

However, after the 2016 drought, some villages made efforts to revive this concept in preparation of future droughts. This was supported by one of the key informants who had this to say:

"After the drought experience some village heads realized the need for community and village granaries that were there under the Zunde Ramambo program. As we speak, right now, some granaries are being constructed at the homesteads of village heads to store community grain."

4.9 Flood Risk Reduction Plan

This study has identified four key areas in need of policy interventions to reduce vulnerability to natural disasters. The four policy issues suggested include tacking the source of flood risk, reducing susceptibility to floods, strengthening community resilience and raising the resistance of infrastructure. One of the first steps to reduce flood risk in Muzarabani is to address the underlying physical and socio-economic causes of floods. The underlying physical causes that need to be tackled are related to settlements in unsafe floodplain and interfluves; flood retreat agriculture; erosion and siltation that reduce river capacities to absorb water. These variables interact to produce flood disasters in Muzarabani. Addressing physical vulnerability calls for the protection of the land environment as a critical component of any flood risk reduction plan Environmental laws and regulations against deforestation and floodplain farming should be enforced to reduce flood risk. The enforcement would reduce soil erosion which silts up river channels and consequently reduces their capacity to accommodate flood waters .According to(Madamombe ,2014) most people in Muzarabani are poor farmers who have settled close to river flooding . All the resettled farmers settled in low-lying floodplains should be relocated to uplands even though this might be against their will since they are benefiting from flood retreat agriculture.

In terms of DRM, it is important to change the mind-set of the resettled farmers from short-term coping to long-term resilience building processes. However, this may not be enough and the resettled farmers may not take such positive actions on their own. What may be needed is to revamp the institutions at local level to affect a changed pattern of vulnerability to floods. In authorities to implement land use policies that reduce flood risk. Hence, it may be wise for

decision-makers in Muzarabani to avoid development in low-lying floodplains. Rather, homes, schools, clinics and other infrastructure should be located in relatively higher ground. Reducing flood risk also involves development of effective EWS and evacuation procedures of smallholder farmers that become vulnerable to floods. This calls for the collaboration of institutions like ZINWA and MSD to develop scientific knowledge about the processes and nature of weather and hydrological conditions in Muzarabani. Once this information is collected and analyzed, it should be relayed promptly to communities at risk.

4.10 Precautions against Flooding

One of the ways to limit susceptibility to flood disasters in Muzarabani is to reduce the high levels of poverty. Reduction of poverty is an often-neglected policy option for vulnerability reduction. It implies directing much effort at the material well-being of the resettled farmers if the adverse impact upon them is to be curtailed. To achieve this both the government and the local authorities should strive to provide decent accommodation, employment and raise communities' income levels above the poverty datum line. Research has shown that people are best able to protect themselves and prepare for disasters when their incomes are more than just a subsistence wage.

Improving access to health may also reduce susceptibility to flood disasters. Most resettled farmers in Muzarabani do not easily access health care due to long 3distances and low incomes among others. Matiki (2015) observed that flooding also exacerbates poverty because of the loss of property and income. Health risks associated with floods include GTI such as cholera, typhoid, and dysentery. In response to these risks, health care facilities should be close to communities, while the communities are supported to absorb the WASH impacts. Health care providers are important post-flood sources of relief. Therefore, it may be wise to avail proximate medical services to all communities in Muzarabani.

4.11 increasing awareness of floods

It is not always possible to prevent all flood disasters. Therefore, a policy that strengthens resilience may reduce disaster losses. Flood awareness and preparedness are important in strengthening community resilience because they build response and recovery capacities36. If flood awareness is followed by informed action it becomes the bedrock requirement to reduce vulnerability and build community resilience. Hence, flood awareness should be more than the simple knowledge that floods happen. What is needed is genuine learning to the level where people are prepared to take actions that promote their safety even though this might be against their own interests at that time.

The development of flood emergency plans in the districts should be supported by training and drill programmes to make sure that the communities at risk, civil protection officials, and other stakeholders understand their role and responsibilities during flood disasters. If these measures are implemented, resilience can be enhanced. The idea is to create stronger and more resistant communities following a disaster event (Mannakkara et al, Dube 2020). While flood awareness programmes can strengthen resilience, they should be moved away from the conventional approach of targeting individuals, whether in traditional or religious gatherings. Instead, they should focus on institutions because: (a) institutions remain in the areas whereas individuals may move out; (b) it is effective to educate people through institutions rather than individually; (c) communities are made up of institutions which are conduits through which education can be imparted. The other way of strengthening community resilience is establishing partnerships among all stakeholders: first responders, business people, emergency managers, NGOs, and government departments. This is because flood problems in Muzarabani cannot be solved by the government or local authorities alone.

Partnerships among the disaster institutions in Muzarabani may bring special knowledge or skills to the flood problem. Sharing knowledge and relying on skills of other organizations opens the doors for improvisation when floods strike. Regarding the post disaster period as providing new things such as school shelters and improved health facilities, According to Dube (2020) views this as recovery surpluses since they are add-ons that never existed before . Having access to others' strengths during flood mitigation and preparedness also augments flood disaster resilience. The partnerships may also help the smallholder farmers absorb the sector. Thus, partnerships enhance the chances to improve the absorptive, adaptive, and transformative capacities of communities when floods strike. On another note, improving rural livelihoods strengthens community resilience. Livelihoods provide subsistence, income, and stores of food, materials, shelter, and clothing.

There are various measures that can improve rural livelihoods to enhance community resilience. First, there is need to diversify income sources for the vulnerable groups who are engaged in resettled farming. Agricultural production should be diversified to build up assets of community members. Currently the resettled farmers rely on one cash crop. Because the farming system is rainfall dependent, there is need to introduce irrigation. This would diversify crop production as well. Finally, allocating sufficient resources to institutions involved in emergency management may enhance community resilience in Muzarabani. The United Nations Office for Disaster Risk Reduction (UNDRR, 2017) the use of disaster

recovery, rehabilitation and to increase the resilience of nations and communities through integrating disaster risk reduction. DRR programme in Muzarabani are not fully supported in terms of financial and material resources. As a result, most institutions are inactive especially at ward and village levels. Therefore, giving adequate financial and material resources to disaster institutions may enhance community resilience to floods in Muzarabani.

4.12 Raise strong infrastructures

Increasing the degree of resistance of the built environment can reduce vulnerability to flood disasters. Many homes, schools, roads, and bridges are destroyed by floods in Muzarabani partly due to poor infrastructural design. Disaster risk reduction since it reduces losses associated with future disasters by ensuring that the reconstruction of infrastructural can resist more disaster events (Hallegatte et al .2018). There is need to enforce the building codes so as to ensure that the minimum building standards are adhered to. The traditional dwellings of pole and dagga should be replaced by resistant buildings. This would limit collapse or cracking of the buildings during flooding. Minimum standards in engineering techniques should also be used when constructing roads and bridges so that they withstand the destructive forces of floods. However, raising resistance of the built environment in Muzarabani may require a lot of resources and changes in some institutional policies. For example, the common building codes that are used for all rural areas in Zimbabwe may need to be improved and contextualized to the local soil and hydrological conditions. The idea is to ensure that the minimum standards are met so as to build a safety culture.

4.1.1 Challenges Associated with natural disasters

Sources of water in normal and drought years Access to water is an everyday challenge for most rural farmers. During times of drought availability and access to water becomes an even bigger challenge as water sources such as rivers usually dry up and the water table goes down due to the lack of catchment rainfall. Resettled farmers resort to unsafe water sources with compromised water quality and usually travel longer distances to look for water. During drought periods livestock have limited water as well and either travel long distances to the nearest drinking hole or die of thirst. Shows a comparison of the sources of water that were used during the drought year versus the normal years. Sources investigated by the study were for drinking purposes, domestic purposes and for livestock. Results show that the sources of water for various purposes did not significantly change between the normal and the drought years.

The main sources of water for both drinking and domestic purposes were mainly boreholes and resettled farmers open wells. Even though the sources of water did not significantly change, some farmers did report that it took them longer for water to come out of boreholes as the water table had gone down. Livestock water sources did not change at all between the normal and the drought years. The sources of water did not show significant changes or remained the same as there were no other sources that could be used or substituted besides the ones that existed. This was supported by one of the key informants who had this to say:

"Drought is a challenge in this area, rainfall is erratic, and most resettled farmers rely on rain fed agriculture, except for a few households who own plots in the irrigation schemes."

According to another key informant, the drought was so severe that livestock perished and no grain was harvested. Some key informant respondents also noted that the drought affected all types of households because it was severe. (Dube, 2020) note that community members can use their indigenous knowledge system to obtain the ends However there were some categories of people and households who were affected more than others. These were women and children, the elderly, disabled, child headed households, and female headed households. These households usually exhibit vulnerability characteristics to shocks and hazards as they lack labour, capital, physical assets and financial assets among others (DFID, 2000). Discussions during data collection revealed that, in the current season, the community has already started noticing signs of drought and are already anticipating that the area might experience a mild drought during the 2017/18 season .Research has revealed that the district apart from being prone to flooding is also subjected to severe drought (Bongo et al, 2018) the signs that were witnessed was high temperatures and below to normal rainfall. As a result of the drought crops failed and people had little to no yields. They also had no income that they sometimes get from selling their harvest in good years. Most of the work that gives them an income is farm related work, which was limited during the drought year.

4.5.2 Serious implications for public health and livestock

Impact experienced during the drought was diseases and pests that impacted twelve percent and seven percent of the farmers respectively. Livestock, such as cattle, were affected by diseases called D22, and some children under six were affected by malnutrition related diseases. According to (Armas and Gavris ,2013) not that, people must protect able to protect themselves and prepare for disaster because of the high temperatures crops such as sorghum were attacked by pests in the field, which in turn reduced yield.

4.5.3 Loss of vegetation and soil degradation

The resettled farmers experienced loss of vegetation and grazing land. Trees wilted and grass dried up, depleting grazing land for animals. According to key informant said

", the lack of grazing contributed to the death of livestock". A low proportion of the resettled farmers who experienced land degradation attributed this to negative coping mechanisms that people in the area were engaging in, such as digging small shallow wells in the dry riverbeds known as "mifuku' in the local language. One of the key informants supported this by saying:

"People were digging shallow wells in the Save river, and as the leadership we tried to stop them, but they would respond by saying they had no other option to get water to survive."

4.5.4Economic and Social disruption

Another impact of drought that resettled farmers experienced was family separation and relocation. According to some key informants and the participants stress and suffering from the effects of the drought increased family conflicts during the drought year, and in some instances led to divorces and separation. Some resettled farmers heads, mostly males, relocated to the Save river bank to farm there, as that is where water was available for crops. Some moved with their livestock and had to temporarily live there during harvest time. Families were temporarily separated during that period. Family separation and relocation in the Muzarabani study area

The interviewed resettled farmers had one or more family members who relocated as a result of the drought. One member who relocated in search of income generating opportunities and between two and five resettled farmers members relocating because of the drought. Of those households that experienced relocation reported that their male spouses relocated and 4.9 percent of man reported that their male children relocated. These results are similar to a study about the 2006 drought in Japan which resulted in approximately 500 000 people losing their family (Fan, 2013). Most of the resettled farmers reported that the effect of this relocation was loneliness and increased burdens to fend for the family without the support of the spouse or other family members. One key informant had this to say:

"Some women were left by their husbands who went looking for greener pastures during the hard times of the drought. The wives were left fending for the kids and most of these families had children that later dropped out of school."

Loss of livestock and food shortages shows that the number of people who experienced livestock loss as well as food shortages was higher, but not significantly higher than the number of those who did not. It is also important to note that most of the people who did not experience loss of livestock are also the poorest of resettled farmers that did not have livestock at all even before the drought.

Although the number of resettled farmers that experienced livestock loss or food shortages, due to the drought, was not significantly higher than the number of households that did not, the 2016 El Nino induced drought significantly influenced crop yield loss and loss of livelihood opportunities and opportunities to make a living. However, the drought did not result in higher pests and disease incidences and depletion of water sources.

4.5.5 Resettled farmers Skills

The range of resettled farmers based coping strategies that were adopted during the drought. Farmers adopted food rationing strategies as seventy percent of the substance farmers reduced the number of meals taken per day, ninety percent reduced or limited portions of food during meals, ninety percent would sometimes go the whole day without food, and seventy percent would have adults skip meals so that children could eat. Resettled Farmers also adopted dietary change strategies, which are sixty of the farmers who started eating unusual foods and wild fruits. Resettled farmers adopted food seeking strategies with seventy nine percent providing labor in exchange for food, fifty percent borrowing from neighbors and relatives and fought six percent sending members to beg for food. Thirty nine percent of the resettled farmers changed farming methods and crops whilst thirty percent of the resettled farmers reduced cultivation areas.

4.1 3Livelihood based coping strategies

Under livelihood coping strategies resettled farmers adopted both household structure strategies and food seeking strategies. Forty-seven percent of the resettled farmers coped with the drought by begging for food or money to buy food. Forty percent of the resettled farmers reduced non-food expenses, borrowed money, and sold their assets to buy food. Forty two percent of the resettled farmers withdrew their children from school and fifteen percent sold productive assets to buy food. As a way of coping with the drought the majority of the resettled farmers, that is fifty five percent, received food aid from various agencies and the Government as discussed later in this chapter. Other livelihood based coping strategies employed included joining social networks like income savings and lending groups fifteen percentage selling non- productive animals nine percentage and selling houses or land to

buy food six percent .Some of the worrying negative coping mechanisms that came to light included engaging in prostitution nine percent, engaging in illegal activities six percent and marrying off underage children three percent. Other coping strategies adopted, that also came out of the and key informant interviews, these also include both negative and positive coping mechanisms. Resettled farmers lose access to traditional market

The drought shows that after the drought sixty percent of the resettled farmers are better off than what they were before the drought. Twenty three percent have bounced back to the same level as they were before the drought, whilst fourteen percent are worse off than what they were before the drought. This is supported by some key informants who reported that

"Most resettled farmers have recovered to the same situation they were in before the drought. Some of them are now better off than during the drought, since they went through a much improved season during the 2018/ 22 seasons."

The season was a better season because resettled farmers received above normal rainfall and better yields compared to the drought year. A lot of support was also channeled through development partners and the Government led Command Agriculture program after the drought. The resettled farmers started practicing conservation farming methods, such as basins, and grew small grains based on climate smart agriculture training received from the Government and development partners. However, the most vulnerable resettled farmers are now worse off after losing livestock, selling household assets, and using up savings as coping mechanisms.

The situation of resettled farmers after the drought is best summarized by one the key informant participant, who had this to say:

"Farmers are now better off because of a better season in 2018/22 and because everyone worked hard to recover".

The Government and donors came together and conducted training and distributed inputs". People adopted conservative agriculture to increase harvests, especially those without draught power. They were also trained on how to plant drought resistant crops that can thrive in the dry periods. However, this worked for resettled farmers that had capabilities and assets before and after the drought. The resettled farmers that were better off before the drought and had assets and social standing managed to bounce back. For poor and vulnerable resettled farmers the elderly, the disabled and child headed households it was not as easy, they still have no

means and assets such as labour and land to utilize the inputs and training that was received after the drought. There have not been any changes in these types of resettled farmers and no one is assisting them, since the majority of the small scale resettled farmers are now doing well

4.1 4Resettled farmers sell their animals

To cope with the effects of drought resettled farmers sold their livestock to get an income to buy food. Ownership of livestock, such as cattle and goats, define the wealth status of resettled farmers. Ownership of livestock also elevates the wealth status and community standing of a household. Resettled farmers resorted to selling off their livestock, which reduced their livestock unit and livestock asset base. Livestock sustains their lives by being a source of power and a source of income, fulfilling resettled farmers projects such as building houses and providing an income during emergency situations such as illness. During the drought year livestock lost weight and resettled farmers had to sell them for a quarter of the actual price.

"People sold their livestock for sick money, some exchanged their livestock for one 25L bucket of maize, just for them to get by" said one the key informant.

During the drought year cattle were sold for as low as USD50.In a good year, and depending on the weight and quality, cattle sell for between USD300 and USD500.

Resettled farmers thought it better to sell off livestock, like cattle, and get the little money they could before the cattle died.

4. 1 5 Pull their children out of school

During the drought some parents did not have enough money to buy food and cover other basic expenditures such as health in the household. Food expenditures also increased, compared to previous years, as there was no food from the harvest. As a coping measure some resettled farmers pulled children out of school, as they could not pay school fees at all. According to a key informant the girls suffered the most, as they were the first ones to be removed from school by the family before the boys.

Although there was an insignificant number of resettled farmers that reported child marriages in the household interviews, revealed that, besides dropping out of school, cases of child marriages were on the rise. According to (ZimStat, 2015) about sixty percent of girls left school is higher in in rural areas than in urban areas. The girls became vulnerable and some

parents were more than willing to let some children get married with the assurance that the child will be well taken care of. For some resettled farmers it was a reduction in the number of mouths to feed and a benefit for them when the lobola money was paid, bringing in much needed resources in a very difficult time. This was supported by a participant who had the following to say:

"Children entered into early marriages so that they would get someone to take care of them, which is against our culture and the law. Some girls went looking for work as housemaids

4.16 Conclusion

The main objective of this chapter was to present the impact that the drought and floods had on the resettled farmers in Muzarabani lower plain land. The chapter also presented the flood risk reduction plan and that were adopted as a result of the drought, and some of the factors that influenced the adoption of these coping strategies. From the results obtained the resettled farmers primary occupation is farm related activities. Main sources of income are derived from informal work that is carried out on the farms as well as gardening and informal trading. The major socio economic impacts of the flood and drought were yield loss, hunger, loss of livelihoods, food shortages, and loss of livestock. Other socio economic impacts experienced were loss of vegetation, depleted water sources, and school drop outs. Some of these impacts influenced the coping mechanisms that were adopted that include selling of livestock, early warning systems , water harvest , reduction of meals, use of dry resistance crops selling of assets and begging for food from neighbors and friends. In terms of preparedness and response there is a need to capacitate resettled farmers on flood and drought disaster risk reduction through training and develop mitigation tool for lower plain land , so that they successfully deal with the effects of floods and drought.

CHAPTER FIVE SUMMARY, RECOMMENDATIONS, AND AREAS FOR FURTHER RESEARCH

5.1 Introduction

Chapter Five provides a comprehensive overview of the research conducted on the impact of natural disaster on resettled farmers in Muzarabani district. The chapter includes a summary of the research, drawing conclusions from the findings, presenting recommendations based on the data, discussing implications for policy and practice, and identifying potential areas for further research that may arise from the study.

5.2 Summary

Chapter One: Introduction

Chapter one provided an overview of the research study on the impact of natural disaster in Muzarabani. It outlined the research topic, its significance, and the objectives of the study. This chapter established the context for the research, presented the research questions or hypotheses, and provided a brief outline of the thesis or dissertation structure.

Chapter Two: Literature Review

Chapter Two focused on the literature review, which involved an in-depth analysis and synthesis of existing scholarly works, research articles, and relevant literature related to the topic on the impact of natural disaster in low lying areas in Muzarabani district. The literature review aimed to provide a comprehensive understanding of the theoretical frameworks, concepts, and previous research conducted in the field. It identified gaps in the existing knowledge, highlighted key findings from previous studies, and formed the foundation for the research methodology.

Chapter Three: Methodology

Chapter Three outlined the research methodology employed in the study. It described the research design, the selection of participants, and the data collection methods utilized to gather information on the impact of natural disasters in Muzarabani district. The chapter also discussed any ethical considerations, limitations, and challenges encountered during the research process. It provided a clear and transparent account of the methodology, ensuring the validity and reliability of the study's findings.

Chapter Four: Presentation of Findings

Chapter Four presented the findings obtained from the analysis of the collected data. This chapter organized and presented the qualitative or quantitative data, or a combination of both, depending on the research design. The findings were explored in-depth, focusing on the factors affecting resettled farmers, challenges, and problems associated with natural disasters were highlighted, and they provided valuable insights into the research topic.

Chapter Five: Summary, Recommendations, and Areas for Further Research

Chapter Five served as the concluding chapter of the research study. It began with a summary, providing a concise overview of the research conducted, the objectives, the methodology employed, and the main findings obtained. Following the summary, the chapter presented conclusions based on the research findings, discussed whether they supported existing theories, and provided plausible explanations for the obtained results. Recommendations were then provided, offering practical suggestions based on the research findings. These recommendations were directly supported by the data and addressed the constraints or challenges identified in the research. The chapter concluded by highlighting potential areas for further research that could arise from the findings, methods, or concepts used in the study, indicating potential directions for future exploration in the field.

Conclusions

Objective 1: To explore factors affecting resettled farmers on the impact of natural disasters.

The research findings concluded the factors affecting farmers on the impact on natural disaster challenges and problems facing with resettled farmers. The study revealed that these resettled farmers experienced various factors such as, during times of floods and drought availability and access to water becomes an even bigger challenge as water sources such as rivers usually dry up and the water table goes down due to the lack of catchment rainfall. Resettled farmers resort to unsafe water sources with compromised water quality and usually travel longer distances to look for water. During floods and drought periods livestock have limited water as well and either travel long distances to the nearest drinking hole or die of thirst. Shows a comparison of the sources of water that were used during the floods and drought year

2: To develop hazards maps mitigation tool for lower plain land in Muzarabani.

The research findings concluded that they to develop hazards maps mitigation tools for lower plain land in Muzarabani district. Mitigation tools for disasters occur during times of floods and drought that need to be applied are , they faced deceptive practices such as water

harvest , improve early warning system , agroforestry and soil conservation , and use of dry resistance crops . The research also identified factors such as lack of regulation and oversight in the agriculture sector pertain resettled farmers, weak legal frameworks, and the vulnerability of resettled farmers on plain land in Muzarabani district. The conclusions drawn from the research findings resonate with existing theories and prior research on the impact of natural disasters on resettled farmers in Muzarabani district.

Objective 3: To identify problems associated with natural disasters in Muzarabani area.

The research findings revealed the problems associated with natural disasters in Muzarabani area. The study found that these resettled experienced health problems due to lack of balance s and depletion of water sources, loss of livelihood, school dropout and loss of vegetation. They also suffered from mental health issues such as anxiety, depression, and post-traumatic stress disorder as a result of the traumatic experiences they endured. The conclusions drawn from the research findings align with existing theories and prior research on the problems associated with natural disasters in Muzarabani, highlighting the detrimental effects on the well-being of survivors.

Recommendations

The study has documented the impact of natural disasters on resettled farmers, to develop a mitigation tool for lower plain area in Muzarabani and recommended strategies to improve resilience to floods and drought. However, the study leaves a gap, further research is necessary in understanding the extent to which these recommended interventions for strengthening resilience capacities can achieve the desired outcomes, such as food and nutrition security. Another area for further research is an in depth analysis of the sustainable non-agricultural related livelihood options that can be explored in the distric to promote agriculture, and to achieve food security. In addition to developing a mitigation tool for Muzarabani's lower plain area and suggesting measures to increase resilience to floods and drought, the project has investigated the effects of natural disasters on farmers who have been resettled. The study does, however, create a gap in our understanding of the degree to which these suggested treatments for enhancing resilience capacities can lead to the intended results, such as security of food and nutrition.

1.An extensive examination of the sustainable non-agricultural related livelihood possibilities that can be investigated in the district to support agriculture and achieve food security is another topic that needs more inquiry.

In light of the study's research and findings, several recommendations are made in this section. Recognizing the wealth of data and literature that previous researchers have amassed over the years regarding the effects of drought and floods coping mechanisms is part of making recommendations. But in the face of El Nino, communities and systems who are suffering from greater frequencies of shocks like drought and are constantly exposed to them find that the effects of drought and floods and their sensitivity to them keep changing and growing. A major conclusion of the study is that, when the natural disasters struck, the farmers who had been resettled were either not prepared at all or only partially prepared results indicated that resettled farmers lack the absorptive capacities to respond to natural catastrophes without suffering negative consequences, which suggests a lack of risk mitigation capabilities in the communities. Drought is a reoccurring shock in their community.

2.The study suggests that in order to increase farmers' stability in the wake of disasters, resettled farmers' absorptive capacities should be strengthened.

3.To reduce exposure to shocks and stresses, the government and development partners should create programs that increase district-wide awareness of disaster risk management, enhance access to informal safety nets, and facilitate savings. Among the treatments that can be reinforced in the research area are local weather forecast, early warning systems, timely information access, social networking, and saving groups to foster stronger social bonds and social capital.

According to the report, the area's resettled population has few physical assets, restricted land tenure, and low human skills and knowledge. Negative tactics are used less frequently when productive assets, such land and livestock, are available.

4.The study suggests interventions that support climate-smart agriculture and good agriculture by expanding on the information already possessed by farmers through extension education and training. Drought-tolerant crops, like millet and sorghum, for instance, ought to be supported more extensively and given access to ready markets on par with maize, the main staple grain.

Additionally, assistance should be given to support the diversification of both on and off-farm livelihoods, adaptation to climate change, asset accumulation, asset restoration and protection, and improved access to financial services for farmers who have been resettled. As a result, farmers who have been resettled will be better able to make proactive decisions based on their knowledge of the market, evolving circumstances, and potential sources of income.

5.To prevent undermining them with outside interventions, fostering aid dependency, and producing other unintended negative outcomes, it is also critical that outside agencies, such as nongovernmental organizations, comprehend the local coping strategies that resettled farmers typically use during drought periods. More active leadership in directing drought mitigation plans at the community level should be assumed by local leadership and the community disaster risk reduction committees.

6.They should not be limited to their current role in distributing food aid. In response programs, communities should not only be the recipients of charity, but also active participants. In order to serve as first responders before requesting outside assistance, this will encourage the development of community-led response.

An environment that is supportive of communities' and relocated farmers' transformative potential should exist on a national level. This can be achieved by making investments in good governance, resolving the resource shortages that public institutions face, enhancing formal social protection, and expanding access to infrastructure, markets, and essential services. The study has provided information on how natural catastrophes affect farmers who have relocated and has suggested ways to increase their resistance to such events. The study does, however, create a gap in our understanding of the degree to which these suggested treatments for enhancing resilience capacities can lead to the intended results, such as security of food and nutrition. An extensive examination of the sustainable non-agricultural linked field is another topic in need of additional investigation.

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